

Toward a 2.0 Compact for the Liberal Arts

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New demands on learning coupled with new concerns about a changing world have resulted in a new focus on what constitutes a durable learning experience in a liberal arts setting. While the noise of a crisis in the liberal arts can be distracting at times, what we learn is that different types of schools continue to answer the question of why the liberal arts remain an effective educational option. This essay argues that they are only beginning to address what is durable and adaptable about the liberal arts in the face of automation. While many have endorsed the LEAP (Liberal Education and America's Promise) framework developed by the American Association of Colleges & Universities, which called for the liberal arts to be in the nation's service, the original framework did not fully anticipate the rate, scale, and far-reaching impact of automation. What is needed is a liberal arts 2.0, one that prepares learners to become robot-proof in a world in which many will find themselves with robotic helpers.

Different types of schools have tried to answer the question of why the liberal arts remain an effective educational option, but they are only beginning to address what is durable and adaptable about the liberal arts in the face of automation. While many institutions previously endorsed the American Association of Colleges and Universities' (AAC&U) LEAP (Liberal Education and America's Promise) framework, which provided a foundation for understanding the purposes of a liberal arts education and has helped guide hundreds of colleges and universities to grapple with the intended objective of providing a liberal arts education, the original framework could not have fully anticipated the rate, scale, and far-reaching impact of automation. What is needed is a 2.0 version of the liberal arts, furthering the AAC&U's mission to promote undergraduate education in the service of democracy and, more important for the purposes of this essay, preparing learners to become robot-proof in a world in which many will find themselves with robotic helpers.

Students have long flocked to the liberal arts for a multitude of reasons, even in periods in which the value of the liberal arts is openly questioned. In

the fall of 2017, the *Times Higher Education* strove to inform its international audience about American liberal arts colleges by reporting discussions with students from several small elite institutions about their experiences. One such student, Eleni Smitham, an international studies and Spanish double major at Haverford, offered: “I appreciate that from the first moment we step on campus, Haverford students are given a lot of trust and agency to shape our own college experience.”¹ Rather than being a mere consumer of higher education, Smitham valued being an architect of her learning experience.

The testimonials of students representing some of the United States’ most selective liberal arts colleges explain why some students so tenaciously seek the liberal arts curriculum. Often the curriculum begins with broad exposure to the arts and humanities and to the social, biological, and physical sciences in years one and two, followed by discipline-based concentration in years three and four. Swarthmore English literature major Katie Paulson spoke for others when she professed, “In these small classes, we fully engage with the subjects we study. Rather than listening to a professor summarize the points made by philosophers, students take charge of discussions, citing passages in texts and asking questions that move the class forward.”²

Many praised the style of learning offered, which more often leaned toward integrative learning than simple mastery of an academic subject. Students sensed that future success might depend on problem-solving across domains of knowledge, thinking that required the learner to stitch together new answers to old and new problems. April Xu, a Pomona undergraduate from China, captured this idea precisely:

I am often connecting different academic fields together and being a liberal arts undergraduate allows me to do just that. Schrödinger’s cat from physics and bilingual literature from an upper division Spanish course, along with other disciplines such as political theory and theatre inspired my first novel. Ice cream socials at the college president’s house and dinner invitations from my professors bring about thought-provoking exchanges that I may not get otherwise, even as a frequent visitor to professors’ office hours.³

These students are not oddities. Over a prolonged period, interest in the liberal arts has risen and fallen, but never gone away. National data captured by the American Academy of Arts and Sciences’ Humanities Indicators project, which maps student interest over time, show that recent claims of a waning interest are overstated. For example, bachelor’s degrees in the humanities, one area of the liberal arts, have declined relative to a high watermark around 2003, but the 2015 percentages of total humanities degrees granted are comparable to 1987 levels. By contrast, the percentage of fine and performing arts

degrees as a percent of total degrees has remained relatively flat (3 and 5 percent, respectively) between 1987 and 2015, while natural sciences degrees increased from 6 to 11 percent of overall degrees awarded during that period. Most important, from 1987 to 2015, social and behavioral science degrees went from 13 to 15 percent of all degrees. This is to say that student interests have waxed and waned over the years, but the numbers don't support the conclusion that the liberal arts are in wholesale decline.⁴

Of course, worry about crises in the liberal arts is not new. Over four decades ago, the historian James Axtell returned to an earlier era in the history of American higher education, when prognosticators predicted the demise of the liberal arts college. The death ostensibly began in the crucible of the Civil War, which engulfed the nation and threatened the longevity of the heretofore-dominant political economy of slavery. The death was to be slow, lasting nearly one-quarter of a century, bookended by the transition from the agricultural age into the industrial age. During the decades in question, factories, mass production, labor unions, and conflicts between management and labor erupted on a predictable cycle; at the same time, the country lurched from one recession to another, which resulted in laws, political parties, and public figures championing a new America for a new day. Against these broader macro-social, -political, and -economic changes, higher education, too, would change. And, indeed, after the Civil War, the nation invested in land grant colleges, supported by the Morrill Act, and by the century's close, attention had shifted from smaller liberal arts colleges to a handful of research universities, schools poised to advance scholarship and offer the new doctorate in philosophy (Ph.D.). The combination of the research university and land grant institution was as much ballyhooed in its day as online education is today. At some level, they were the imagined disruptors, altering the higher education landscape.⁵

Axtell, in "The Death of the Liberal Arts College," exposed the tendency to write off an enterprise that had yet to expire and that, by all indications, was healthy and adapting. From the vantage point of 1970s America, Axtell knew the liberal arts college had not disappeared – not after the Civil War, nor World War I, World War II, or the Korean War. Even through the tumultuous years of Vietnam-era student activism and social conflict, representatives of the species endured. In fact, many of them rivaled their university companions in prestige, student demand, leadership development, social experimentation, and quality of the student experience. In the years since, many liberal arts colleges have gone on to brag that a larger percentage of their students graduate within six years, fill worthwhile jobs, and lead productive lives than those who attend nearby public universities.

In fact, rather than die, the liberal arts as a form of learning expanded significantly, on pace with the expansion of higher education. After World War II, the number of higher education institutions grew twofold, going from 1,708 in 1940 to 3,535 by 1990. Former teacher colleges became state colleges and universities. New state systems appeared to handle a new demand for post-secondary education, spurred in part by the GI Bill and the growth of a managerial class after the war. The nation had always needed experts, but the 1950s and 1960s witnessed the cultivation of the expert culture in government, social policy, and even childrearing advice.⁶

The expansion of the higher education landscape broadened the range and ways of receiving a liberal arts education after World War II as well. Too often we are too quick to talk about the liberal arts experience. Over time, at least six variations on a theme formed: the small, selective private liberal arts college; the public liberal arts college; the private research university with a liberal arts college; the large public research university with a liberal arts college or colleges; and the small- to mid-sized private and comprehensive public school that offers a liberal arts curriculum. If we judge their contributions by the old criterion of offering access to opportunity, the larger public institutions have been the most successful. New research on higher education as an escalator to social mobility emphasizes the outsized work done by these institutions compared with the traditionally highly regarded private colleges and universities. Economist Raj Chetty and colleagues have found that California State University, Los Angeles, for example, sends more graduates who entered college from the lowest economic quintile into the top quintile than more selective schools, which disproportionately pull students from higher socioeconomic classes.⁷

What worked in the past may not be a great predictor of what is needed in the future. As we enter a period of accelerated change, higher educational institutions will most certainly require a sharper articulation of purpose and value. After all, students starting elementary school today face a starkly different future by the time they graduate high school and enroll in college around 2030. McKinsey & Company, the global consulting firm, projects a loss of nearly 800 million current jobs worldwide within four decades. Its consultants go on to predict that in the United States, fifty-four million of today's jobs will disappear by 2030, roughly one-third of the current American labor force. The explanation? Automation. The rapid introduction of machine-readable applications and artificial intelligence (AI) are slated to replace routine work in all sectors.

McKinsey's report dramatizes the extent of disruption to be expected from AI. The advent of the driverless or semi-autonomous vehicle is a familiar

example. Approximately two million men and women make their living driving tractor-trailers, cabs, limousines, and other vehicles. Nearly three times as many make their living supporting the drivers as operations managers, logisticians, dispatch operators, and customer service representatives. While no one knows for sure when semi-autonomous vehicles will command the streets and highways of America, few doubt this day will occur.⁸ This conclusion usually leaves leaders considering how to plan for future work.

Often the answer to the foregoing question is a college education. And for good reason. Coming out of the Great Recession, the data seem to show that some college, let alone a baccalaureate degree followed by a graduate degree, inoculated the majority of holders from prolonged periods of unemployment. In fact, as education scholar Anthony Carnevale and colleagues at Georgetown University have shown, by 2015, of the 11.6 million new jobs created, 8.4 million went to individuals with at least a bachelor's degree. An additional three million went to those with at least some college. High school graduates and non-graduates made little headway, claiming only eighty thousand of the net jobs.⁹

While no one knows for sure what new jobs are in the offing, the McKinsey report hints that a college education alone is not a sure protector. In a 2015 study, the firm estimated as many as 45 percent of current jobs could be automated. We are led to believe that any job that can be routinized will be automated. On the streets of San Francisco, one can already find cafés run by robots; Phoenix heralded the first robot-operated McDonald's; and one can easily imagine, in time, Alexa and company becoming as capable of laying bricks as they are of arming security cameras.¹⁰

As a counter to such existential uncertainty, Northeastern University President Joseph Aoun, in *Robot Proof: Higher Education in the Age of Artificial Intelligence*, has made the case for a learning model that builds on the core elements of the liberal arts, integrating the arts, humanities, and branches of the sciences (social, physical, and biological) rather than what is learned from science, technology, engineering, and math (STEM) or medicine fields alone. Stated another way, if we find ourselves visited by extraterrestrial beings, as biologist E. O. Wilson has imagined, it is laughable to think they will want a tour of our technologies: their arrival signals their technical superiority. They may, however, want to know something deeper about humanity. These space-traveling visitors may be interested in music and other aesthetics, how we record history, what we consider art and beauty, how languages evolve, or how myths and narratives tie and divide us. They may want to know why we can boast that all humans share 99.9 percent of the same DNA, yet document the ingenious ways we conquered or annihilated one another over a measly 0.1 percent of noted difference.¹¹

If STEM alone is not the answer, then what else should guide us, even if we aren't visited by extraterrestrials? Aoun has argued for a learning model predicated on creative, critical, and systems thinking and on entrepreneurship, cultural agility, and mastering the new literacies of technology, data, and what he calls human literacy or the ability to discern and create space for creative problem-solving. Similar to complex systems scholar Scott Page, who has found in culling numerous studies that complex problems are better solved by diverse teams of actors, Aoun believes a degree becomes robot-proof – which serves as metaphor for employability, since many workers will have robotic helpers in the future – when it equips its holders with the tools to think horizontally rather than vertically.¹² The vertical thinker can only marshal tools from his or her subject-matter toolbox and apply those tools in a linear fashion. The horizontal or systems thinker looks across knowledge domains to assemble teams with diverse subject-matter expertise. Here, the key is knowing which questions to ask and knowing what is needed to provide adequate answers.

Also looking to the future, literary scholar and academic administrator Cathy Davidson has argued in *The New Education* that education in the twentieth century shifted from the founding “mission to train ministers toward the selection, preparation, and credentialing of future leaders of new professions, new institutions, and new companies.” She has concluded that the new education “means refocusing away from the passive student to the whole person learning new ways of thinking through problems with no easy solutions. It shifts the goal of college from fulfilling course and graduation requirements to learning for success in the world after college.”¹³

In other words, a forward-looking liberal arts curriculum should begin with attention to the whole person. The learning experience should promote intellectual challenge, personal development, and exposure to diverse people and diverse ideas as well as scientific and humanistic methods. A student should gain some knowledge of at least the rudiments of coding, but they should also know something about art and creativity. Ultimately, they must acquire a penchant for taking domain-specific knowledge and applying it skillfully in a digital environment.

In light of the changing social, economic, and political landscapes, are liberal arts colleges and universities effectively embracing the implications of automation? Here, the evidence is less persuasive. The heterogeneity of the American higher education landscape requires us to take a more nuanced look at the liberal arts model across institutional types because while talent is evenly distributed across the nation, access to opportunity is not.

Some students learn early on to compete for attendance at the most selective national institutions; others are encouraged to seek out a school closer to home. Others still may believe any college education is beyond their reach. As a result, it is important to know how distinct schools, representing specific types, across varied geographies, explain the liberal arts approach or approaches they deploy. What they say, and how they say it, tells us a great deal about how prepared they are for a 2.0 compact for the liberal arts.

To gain at least partial insight into what institutions claim, I surveyed the websites of several schools representing the six types – the small, selective private liberal arts college; the public liberal arts college; the private research university with a liberal arts college; the large public research university with a liberal arts college or colleges; and the small- to midsized private and comprehensive public school – and in some cases, spoke with institutional leaders. After all, these websites provide the documents a prospective student and his or her parents would consult before applying and enrolling.

Our exploration begins with three institutions whose roots lie in liberal arts education. At one private Lutheran-affiliated liberal arts college, academic and administrative leadership put forward the aim of educating the whole self, whole life, and whole person in anticipation of new demands. Concordia College in Moorhead, Minnesota, is fueled by its commitment to its founding mission as a Christian, church-affiliated liberal arts college. It does not possess a large endowment valued in the hundreds of millions of dollars, nor with the exception of a distinct period in the 1970s, has it been blessed with a notable racial and economic diversity. Instead, it has long relied on recruiting young people who came of age in the upper Midwest states of Minnesota, North Dakota, Montana, Iowa, and to a lesser degree, Wisconsin. And from its beginnings in 1891, it embraced a curriculum combining the classical liberal arts and commerce or business.

With its traditional demographic pool in numerical decline, Concordia, tuition-dependent and faced with an ever-growing discount rate (the amount of financial aid required per student to offset the tuition list price), finds itself explaining the value of a liberal arts education somewhat differently than it did a generation ago. One-quarter of a century ago, success depended on luring students as freshmen and graduating 70 percent or more of them within six years. The school could sell intangibles such as a world-class choir, competitive small-college athletics, higher-than-average medical school placement rates, and a faculty willing to spend inordinate time grooming students. Compared to less expensive nearby state options, Concordia could claim that a student had a greater likelihood of graduating in four to six years there than from North Dakota State University or Minnesota State University Moorhead.

More recently, Concordia's administrative and faculty leaders have come to recast the value of the overall educational experience. The school advertises what is called the PEAK (Pivotal Experiences and Applied Knowledge) experiences during the undergraduate years. As of 2017, entering students are required to register at least two PEAK experiences in their portfolio for graduation. The experiences can range from creating a documentary to participating in a cell biology research project, from building a house through Habitat for Humanity to working on a sanctioned service-learning project. The effort hopes to showcase the connective tissue of integrative learning and actualize the tagline "Building your best future at Concordia is about being thoughtful and experienced, not just informed."¹⁴

Mission and vision statements often illuminate the issues faced by prospective students trying to assess what it means to attend a given school. The University of Minnesota–Morris, founded in 1960 as one of thirty public liberal arts colleges, proclaims on its website that a liberal arts education "develops your creative, analytical, investigative, and intellectual strength." If you are a college-bound student or a student's parent, you may ask, how? How do you demonstrate that a course of study, or a combination of curricular and extracurricular activities, will catalyze creative, analytical, investigative, and intellectual talents? Morris's homepage does not answer this question directly. But in reading beyond the first page, you discover that Morris boasts an Office of Academic Success and employs success coaches to help first-year students settle into campus, learn how to seek appropriate help, and navigate the relationship between personal concerns and academic accomplishment. Moreover, it is the only school I examined that has explicit resources for Native American students.¹⁵

By contrast, Berea College, founded by abolitionists in Kentucky in the nineteenth century, as the country inched ever closer toward civil war, steadfastly holds on to its original identity as a college created to advance the mission of service to Christianity, and we are left to infer that religious exposure, in a liberal arts context, shapes learning, values, and the self. Without saying so explicitly, Berea professes, in the language of Cathy Davidson, to educate the whole person. It does so through a set of "great commitments" that speak to the value of a Berea educational experience, experiences that promote the value of diversity, community service, democratic engagement, concern for Appalachia, and a residential college environment. Not only are these commitments publicized, but they also serve as a tacit contract between the school and the student, obligating the one to the other. Berea fulfills its mission in a racially and economically diverse learning environment. Remarkably, no Berea student pays tuition, 96 percent are Pell Grant eligible, and the

student-faculty ratio is 10:1, enabling faculty and staff to know students and become personally invested in their learning and maturation.

Concordia, Minnesota–Morris, and Berea are members of the AAC&U LEAP College Action Network. They are not only aware of the AAC&U's commitment to promulgating the value of a liberal arts education, but they have also pledged to further that work. And it can be said that their websites nod toward one or two, if not all, of the framing concepts noted earlier. Yet at this time, one senses the need for a liberal arts education 2.0.

What should a 2.0 version of the liberal arts look like? There are several key elements. Each school would do more than trumpet the value of a liberal arts education and more clearly sketch a pathway for the learner. For example, schools know the value of exposing students to a world beyond the geography of the campus. Emphasizing study abroad opportunities have been one way to address this pedagogically. For many low-income students, the hurdle begins earlier. Few, if any in their circle of family or friends, travel internationally, unless they are in the military. A 2.0 campus might make it a requirement that all students who are eligible will acquire a passport in their first year, with assistance from the college, if needed. Of course, under current conditions, Dreamers would get a pass until legislation makes it possible for them to participate. With that hurdle cleared, then an action plan for studying outside of the United States can be crafted. As University of Michigan football coach Jim Harbaugh has shown, programs can be designed for student athletes, too.¹⁶

More than sending students out into the world, liberal arts 2.0 approaches learning differently. Instead of broad subject-matter exposure in the first two years, it would emphasize broad exposure in year 1, more tailoring and subject-matter focusing in years 2 and 3, followed by concrete problem-solving work in year 4 that is tied to a major or course of study. In all likelihood, calls for robot-proofing will hinge on demonstrated abilities to work in teams, often-times with robotic helpers, across knowledge domain fields, in real time and on real problems. As in the past, institutions must play a role in shaping new learning possibilities.

Institutions that lead the way will do something more. They will pioneer a shift from a STEM-plus approach to education and learning (that is, STEM plus the arts or STEM plus the humanities) to an emphasis on the interplay among the humanities, engineering, arts, technology, and science (or HEATS). STEM-based learning is important and other essays in this issue of *Dædalus* discuss how to do it well. In a 2.0 world in which STEM education is important but perhaps not sufficient, a HEATS approach portends a new and possibly

important innovation, as a recent National Academy of Sciences study provisionally suggests.¹⁷

This means developing a new list of required curricular elements. In addition to the long-standing focus on sound and broad exposure to critical writing, mastery of the fundamentals of sciences, second-language acquisition, and cultural exposure, a 2.0 education would require students to study digital tools and essentials, such as coding and design opportunities for them to work with individuals from varied racial, ethnic, religious, and national backgrounds. A 2.0 education assumes that not all students will be eighteen-to-twenty-two-year-olds, that some will be in residence but others may come to classrooms virtually, and that a hybrid learning experience may soon become the norm (online plus in-residence learning). Finally, liberal arts 2.0, with guidance, gives students more say in the structure of their educational journey and more latitude in its construction as long as there is a capstone experience enabling synthesis.

Hints of what's achievable can be found in current practices at some institutions. Much larger than Concordia, Morris, or Berea is Emory University, located just outside of Atlanta. Founded in 1836, Emory now houses schools of medicine, business, law, nursing, and public health, as well as a graduate school, school of theology, and two liberal arts colleges: one four-year, Emory College, and the other two-year, Oxford College. Unlike almost any other research university in the nation, Emory runs its own version of a "posse program" at scale. Posse refers to a New York City-based program that pairs selective colleges and universities across the nation with hand-selected students of color and economically needy students from many of the nation's largest urban areas. Typically, the Posse Foundation programs send ten students to a given campus per year.¹⁸ By contrast, each year, nearly 450 freshmen enroll at Oxford College, twenty-plus miles outside of Atlanta and the main campus. There, in a bucolic exurban setting, students are exposed to a liberal arts-intensive curriculum, free of the structures of a dedicated major. The university makes a pledge to each Oxford College student, that upon successful completion of a two-year course of study, they will have a seat waiting for them in either Emory College of Arts and Sciences, the Goizueta Business School, or the Nell Hodgson School of Nursing.

At Oxford, faculty interests in students are well noted, but what is also noticeable is a social milieu that develops more than the academic self. Because Oxford boasted no upperclassmen or upperclasswomen, students began filling leadership roles in their first year. Liberal arts 2.0 will demand more leadership development opportunities for students as well. What if more conscious

attention is given to forging leadership opportunities in the first year or two rather than waiting for students to become juniors and seniors?

For example, one leadership measure is election as student body president. Prior to the early 2000s, Oxford transfers were not allowed to stand for election, an honor typically bestowed upon a native Atlanta student in the junior or senior class. When students voted to erase this distinction, treating all as native students unless they came from a non-Emory campus, the Oxford students mobilized and elected one of their own as student body president. The four-hundred-plus students moving from Oxford to Atlanta each year (the number was closer to three hundred in 2005) also formed a kind of posse, as they moved from Little Emory to Big Emory. Friendships, study networks, peer counseling, support groups, and all of the attributes usually associated with the posses absorbed by a select number of the country's leading colleges and universities played themselves out in what I call the "Oxford experiment." In addition, students found they could mobilize the network to form a bloc and win student government elections. Such leadership development moments speak to one of the factors that will make future college graduates robot-proof and need to be more than organic achievement; instead, schools must design conscious pathways for leadership opportunities in the future.¹⁹

Boasting a larger undergraduate population than Emory's seven thousand students is Bridgewater State University in Massachusetts. Founded as a "Normal School" for the preparation of teachers, it educates about 9,500 undergraduates. In its materials, the university acknowledges its continued commitment to preparing and educating a teaching force for southeastern Massachusetts, while making clear that it has broadened its scope over the years. Its website maintains:

Since its founding in 1840, Bridgewater State has remained steadfast in its commitment to empower individuals and instill in its community an abiding desire to advance the public good. Our rigorous and dynamic academic environment encourages students and faculty to develop their strengths and become leaders in their fields. At the same time, we strive to lead by example. As the university continues to build momentum, we continuously reinvest in the success of our students and our region.²⁰

Bridgewater offers traditional liberal arts courses and majors in the arts, humanities, and all branches of the sciences, but its mission statement, rather than offering an independently crafted commentary on the purpose and value of a liberal arts education, directs attention to the range of postcollege opportunities and career paths a Bridgewater education provides. A video introduction

to the liberal arts champions its centrality to the educational experience and argues that the liberal arts offer flexibility for a rapidly changing world.

Bridgewater joins Emory as one of two schools in the sample not to have joined the LEAP network as of yet. Does that imply that a Bridgewater State (or Emory, for that matter) is less prepared than its peers for a 2.0 version of the liberal arts? No. In fact, what they propose on websites and in published materials is in keeping with mainline positions on the liberal arts. References are made to critical thinking, effective communication, learning to work in teams, and preparing for lifelong learning. Like a number of schools, Bridgewater boasts an honors program, an undergraduate research opportunity program, service-learning opportunities, and a paid internship program. The latter seeks to connect students with experiential learning in actual workplaces. Given its history of adaptation, a case can be made that Bridgewater may be better poised to anticipate 2.0 needs, and drive innovation and experimentation that redounds to all of higher education.

In recent years, a number of historically Black colleges and universities (HBCUs) have seen an uptick in applications and enrollments. Some attribute this to the highly visible racial incidents on historically White campuses and general social unease since 2016. Whatever the factors, HBCUs should not assume the past is a single predictor of a salutary future. Like others, they and the handful of remaining same-sex institutions will need to prepare for a 2.0 world, too.

With the exception of Emory, few of the schools so far discussed would share an admission pool with the University of Michigan and its College of Literature, Sciences, and the Arts (LSA). Michigan boasts several options at the undergraduate level and two ways of claiming an arts and sciences or liberal arts education. Broadly speaking, a student can receive an undergraduate degree in a host of units, from engineering to social work, from business to public policy, from arts and sciences to music, architecture or art. An arts and sciences student can either enter through the LSA or the more focused Residential College (RC) nestled within the LSA. The RC offers a distinctive interdisciplinary approach to learning and living. Created in 1967, faculty there offer the arts, humanities, foreign languages, and natural and social sciences in an integrated manner. Or as they say in promotional materials on the website:

The RC curriculum is interdisciplinary and engages students in creative exploration of the humanities, the social and natural sciences, intensive foreign language study, and the visual and performing arts. We seek to foster a genuine appreciation and lifelong passion for learning; not merely individual quests for knowledge, but preparation and encouragement that lead to effective and responsible engagement in the real world.

The LSA is the largest school on the University of Michigan's Ann Arbor campus. With more than seventeen thousand students spread over four years of study, the school insists,

The College of Literature, Science, and the Arts at the University of Michigan delivers a purposeful, pragmatic liberal arts education that provides students with adaptable skills to solve problems in an era when new fields disappear as quickly as they emerge. The College's faculty are on the frontlines of new ideas and pioneering research across every discipline. LSA provides a limitless education that emphasizes curiosity, collaboration, and adaptation.

There are noted references to internships, undergraduate research, community-based partnership and learning, and working with world-class faculty on the cutting edge of research breakthroughs. There is no easily digested statement about pedagogy and approaches to learning, although the above referenced quote uncovers traces of a 1.0 approach morphing into a 2.0 design. Here the College anticipates the call for robot-proofing education without outlining the specifics of a curriculum redesign as of yet.

One pathway forward may build on the current assessment of the link between learning and postgraduation opportunity. More powerfully than many, the LSA captures the value of an education through a visualization of majors and resulting jobs.²¹ What the research reveals is a plethora of majors that fuel an endless array of job and career possibilities. A rich educational experience seems the primary predictor of success rather than a discrete major. It is no surprise economics supplies a number of workers in the finance industry, for example. Yet the data show that jobs in finance went to other social science majors as well as humanities and arts majors. At a university in which 90 percent of undergraduates complete their course of study in six or fewer years, and in 2017, 96 percent recorded either a job or admission to graduate school by graduation, the distribution of jobs seems to depend on the match between opportunity and human talent. As a result, biology accounts for one strong path into medicine, but doctors majored in a wide variety of disciplines in the LSA, from communications studies to history, from psychology to women's studies.²²

In fifteen or twenty years, what might that visualization feature contain? Is the twentieth-century reliance on a major sufficient in a world that will ask new questions about not just work, but the dignity of work? Would a new tool contain not only a course of study, but also a matrix showing courses taken that array along a scale from novice to intermediate to accomplished learner? What if that tool included a way to capture both academic and nonacademic engagements? Could you imagine a time in which a redesign of the senior

thesis or capstone experience is factored into not just one's first job after graduation, but also a range of jobs and careers? Moreover, rather than a snapshot, this is a continuous assessment that connects individual reports, IRS data, employment records, and other data that show the link between learning and future endeavors.

The University of Redlands in California cannot claim two hundred years of history, as does Michigan. Its niche in the higher education ecosystem turns on its status as a mid-sized private university with three thousand undergraduates devoted to the liberal arts, but with a strong preprofessional emphasis, boasting majors in accounting, business administration, and computer science alongside the more traditional liberal arts. Like its counterparts, the school welcomes a curious, diverse group of learners seeking to understand the interplay between knowledge acquisition and leadership development. In their statement, the university offers, "Redlands emphasizes academic rigor, curricular diversity and innovative teaching." This statement of purpose says less about the attributes of success and more about the overall ethos of the institution. Characteristics of that ethos are further amplified in a broadening statement about the campus, its culture, and the composition of the community:

Redlands fosters a community of scholars and encourages a pluralistic notion of values by challenging assumptions and stereotypes in both classes and activities. A Redlands education goes beyond training to embrace a reflective understanding of our world; it proceeds from information to insight, from knowledge to meaning.

Welcoming intellectually curious students of diverse religious, ethnic, national and socioeconomic backgrounds, the University seeks to develop responsible citizenship as part of a complete education. Redlands encourages a community atmosphere with exceptional opportunity for student leadership and interaction. For working adults, the University offers innovative academic programs at convenient locations and times.²³

Fundamentally, the education is designed to foster leadership development and citizenship traits. In that sense, Redlands proclaims education is best when it produces scholar-citizens.

Students on all campuses find their own paths to academic, social, spiritual, and personal success. Redlands offers about two hundred students per year the option of the Johnston experience, in which hierarchies are flattened, learning is student-driven, and the university is outward-facing. Johnston students connect with their surrounding communities and take pride

in integrative learning. As part of a living-learning community since 1969, Johnston students draft their own educational experience. That commitment comes in two stages. As sophomores, students “map out a plan that brings together classes from multiple departments, experiential learning, and cross-cultural experiences to fulfill an educational vision.” Entering their senior year, they transform the graduation contract into a statement of accomplishment or graduation narrative. The latter “describes what you studied, what you learned, your plans for the future, and how your time in the Johnston community and the wider university impacted your education.”

This hands-on ownership of one’s education results in not only an individualized course of study, but also one founded on the principle of domain knowledge and horizontal thinking. Domain knowledge refers to the ability to probe a subject area with sufficient thoroughness to command all basic concepts and to understand advanced practices, philosophies, and findings. Horizontal thinking, as discussed earlier in the context of “robot-proofing” undergraduates, reflects an ability to see across subject areas and to mobilize discrete information to solve complex problems, either alone or in partnership.

It is noteworthy that a successful Johnston student has a pedagogical tool to do both. Many colleges invite students to write an original research paper that blends their command of basic knowledge with advanced, independent inquiry. Johnston students are invited to write expansively and reflectively about how four years of coursework, projects, and experiences connect. This is an advised process, with students receiving feedback from peers and from professors. The dozen or so recently submitted final products found on their website provide powerful examples of critical thinking, synthesized learning, and clear explication.²⁴ Students illustrate what they have learned, by naming their learning experience and explaining why it matters. Of all of the public presentations of a successful experience, the sampled set is exemplary. And it is the closest application of a 2.0 design that I found among the schools examined, hinting at what is possible.

In sum, each of the schools referenced in this essay offers some version of a liberal arts education. Except for Emory and Bridgewater State, each is a member of AAC&U’s LEAP network. They have not succumbed to worry about the future of the liberal arts, but have instead dedicated themselves to advancing liberal arts in the nation’s interests by preparing women and men for their roles as workers, citizens, and heirs to a democratic society.

Yet, with perhaps one exception, none has fully anticipated the need for a 2.0 version of the compact. Automation is poised to alter the future of work. Dramatic reductions in known jobs are forecast, and while new jobs are

anticipated, no one can say what they will be. This places higher education at the center of an emerging discussion of who will work, what preparation is needed, and how many will need to be trained or educated. Joseph Aoun has led the way in calling for colleges to imagine what it will mean to produce a so-called robot proof education.

The next generation's Elenis, Katies, and Aprils may find that a liberal arts education 2.0 is exactly the recipe for a thoroughly educated worker-citizen. Like their contemporary selves, they will have a hand in designing their educations. But in the future, the educational experience will emphasize more tailored opportunities, with breadth quickly followed by deep subject or domain knowledge acquisition, followed by intense applications through internships, research projects, or policy-directed activities. Fortunately, all schools will have a say in a 2.0 version of the liberal arts in the nation's service – that is their opportunity to claim.

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ENDNOTES

¹ “What Is It Like to Study at a Liberal Arts College?” *The World University Rankings*, October 19, 2017, <https://www.timeshighereducation.com/student/blogs/what-it-study-liberal-arts-college#survey-answer>.

² Ibid.

³ Ibid.

⁴ American Academy of Arts and Sciences, Humanities Indicators, “11-1b : Shares of All Bachelor's Degrees Awarded in Select Academic Fields, 1987–2015,” <https://www.humanitiesindicators.org/content/indicatordoc.aspx?i=198#fig198>.

⁵ James Axtell, “The Death of the Liberal Arts College,” *History of Education Quarterly* 11 (4) (1971): 339. With a hint of sarcasm, he offered the following faux obituary:

Washington, D.C., 2 July 1862. The American Liberal Arts College died today after a prolonged illness. It was 226 years old. Born on the salty backwashes of the Charles River in Cambridge shortly after the Massachusetts Bay Colony was founded, the scion of Puritan Reform and Renaissance Civility grew to sturdy usefulness in the colonial years by overseeing America's leaders prior to their war for independence.

When the new nation emerged, however, demanding a larger, more expert citizenry, The College was unable to overcome its aristocratic origins and shortly contracted the disease that eventually led to its demise - arteriosclerosis. In the 1820s, when Jacksonian Democracy was urging needed reforms on American Institutions, The College's role in society contracted into a stance of pugnacious conservatism with the Yale Report of 1828. Even a number of its own reform-minded members could not edge it into the American Mainstream of Technological Growth and Democratic Expansion.

Today, after a recent cardiac arrest, its heart stopped on the floor of the House of Representatives, just as the roll call for Justin Morrill's Land-Grant Act had ended. The vote was 90–25.

For more on the research university, see Jonathan Cole, *The Great American University* (New York: Public Affairs, 2009).

- ⁶ Thomas D. Snyder, ed., *120 Years of American Education: A Statistical Portrait* (Washington, D.C.: U.S. Department of Education, National Center for Education Statistics, 1993), 65–67; and James Axtell, *Wisdom's Workshop: The Rise of the Modern University* (Princeton, N.J.: Princeton University Press, 2016). On the rise of the expert culture, see, for example, Alice O'Connor, *Poverty Knowledge* (Princeton, N.J.: Princeton University Press, 2001); and Ann Hulbert, *Raising America: Experts, Parents, and a Century of Advice about Children* (New York: Vintage Books, 2004).
- ⁷ New efforts by The Andrew W. Mellon Foundation to support researchers attempting systematically to document the value of a liberal arts education may prove a notable intervention. The first dividends of that effort can be gleaned from reviewing research reports at the Andrew W. Mellon Foundation, "Research Reports," <https://mellon.org/research/research-reports/>. See also Raj Chetty, John N. Friedman, Emmanuel Saez, et al., "Mobility Report Cards: The Role of Colleges in Intergenerational Mobility," 2017, https://opportunityinsights.org/wp-content/uploads/2018/03/coll_mrc_paper.pdf.
- ⁸ James Manyika, Susan Lund, Michael Chui, et al., *Jobs Lost, Jobs Gained: Workforce Transitions in a Time of Automation* (New York: McKinsey Global Institute, 2017), esp. 9–10.
- ⁹ Anthony Carnevale, *America's Divided Recovery: College Have and Have-Nots* (Washington, D.C.: Georgetown University Center on Higher Education and the Workforce, 2016).
- ¹⁰ Around the corner from the mounds of human discard on Market Street stands Cafex, on Sansome. There a robotic barista and its human helper provide coffee. Meanwhile, McDonald's heralded its first all robotic restaurant in Phoenix. See Sam Francis, "McDonald's Shares Reach Record High as It Launches New Wave of Automation," *Robotics & Automation News*, June 26, 2017, <http://roboticsandautomationnews.com/2017/06/26/mcdonalds-shares-reach-record-high-as-it-launches-new-wave>

-of-automation/13111/. On robots as bricklayers, see Quoc Trung Bui and Roger Kisby, "Bricklayers Think They're Safe from Robots. Decide for Yourself," *The New York Times*, March 6, 2018, <https://www.nytimes.com/interactive/2018/03/07/upshot/bricklayers-think-theyre-safe-from-automation-robots.html>.

- ¹¹ Joseph Aoun, *Robot Proof: Higher Education in the Age of Artificial Intelligence* (Cambridge, Mass.: The MIT Press, 2017), esp. introduction, chap. 1–3; Edward O. Wilson, *The Meaning of Human Existence* (New York: Liveright Publishing Corporation, 2014), esp. introduction, chap. 1.
- ¹² Aoun, *Robot Proof*, introduction; Scott Page, *Diversity Bonus: How Great Teams Pay Off in the Knowledge Economy* (Princeton, N.J.: Princeton University Press, 2017).
- ¹³ Cathy N. Davidson, *The New Education: How to Revolutionize the University to Prepare Students for a World in Flux* (New York: Basic Books, 2017), 3, 8–9.
- ¹⁴ I have knowledge of Concordia as an alum and as the current chair of the board of regents. Additional information about the PEAK program and other aspects of the school and its academic program can be gleaned from its website. See Concordia College, <https://www.concordiacollege.edu/about/>.
- ¹⁵ See University of Minnesota–Morris, <https://www4.morris.umn.edu/>. See especially the home page and academic and student success sections.
- ¹⁶ Here I am referencing University of Michigan football coach Jim Harbaugh's success in taking more than 150 football players abroad each spring to see another part of the world and to learn.
- ¹⁷ See David Skorton and Ashley Bear, eds., *Branches from the Same Tree: The Integration of the Humanities and Arts with Sciences, Engineering, and Medicine in Higher Education* (Washington, D.C.: The National Academies of Sciences, Engineering, and Medicine, 2018).
- ¹⁸ My knowledge of Emory is augmented by nearly nine years of service as its provost (July 2004 to December 2012). For additional information, see Emory University, <http://www.emory.edu/home/index.html>. Size is explained at Posse Foundation, "Program Components," <https://www.possefoundation.org/shaping-the-future/program-components>.
- ¹⁹ Observed during my several years as provost.
- ²⁰ Bridgewater State University, "History & Tradition," <https://www.bridgew.edu/the-university/history-tradition>.
- ²¹ University of Michigan, College of Literature, Science, and the Arts, "What Will You Do with an LSA Degree?" <https://lsa.umich.edu/lsa/academics/what-will-you-do-with-an-lsa-degree.html>.
- ²² University of Michigan, College of Literature, Science, and the Arts, "Mission and Tradition," <https://lsa.umich.edu/lsa/about/mission-and-tradition.html>.
- ²³ University of Redlands, "Mission Statement," <https://www.redlands.edu/meet-redlands/mission-statement/>.
- ²⁴ University of Redlands, "Johnston Center for Integrative Studies," <https://www.redlands.edu/study/schools-and-centers/college-of-arts-and-sciences/johnston-center-for-integrative-studies/about-johnston-education/>.