

Global Liberal Arts and New Institutions for 21st Century Higher Education

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Abstract. The history of liberal arts both in Europe and Asia is presented, along with a description of the ways in which liberal arts can prepare students for a turbulent future, shaped by rapid change and the COVID-19 pandemic. Aspects of global liberal arts that arise from earlier traditions within Asia are highlighted, with examples of curricula and institutions from India and China. Then a review of emerging new liberal arts programs in China, Japan, Singapore and India is presented, with details of some of the new universities and colleges being created with new curricula in Asia. The emergence of new liberal arts institutions in Europe, Africa, Vietnam and Pakistan is also reviewed, and these programs are connected both to more ancient traditions and emerging societal needs within their countries. The global interest in liberal arts is connected to the demands of the 21st century economy, and a review of the Fourth Industrial Revolution and its exponential technologies is provided and connected to new curriculum that can engage liberal arts to solve global challenges. The resulting emergence of liberal arts arises since the skills of articulate communication, deep reflection and collaboration across cultures are ever more vital in the 21st century, making global liberal arts and its deep cultural roots an ever-vital form of education to prepare students for the future.

Keywords: Liberal arts (China), Liberal Arts (India), Liberal Arts (Africa), Liberal Arts (Europe), curriculum, Fourth Industrial Revolution, technological change

Definitions, history, and evolving ideas about global liberal arts

As we emerge into an increasingly turbulent and uncertain future shaped by the COVID-19 pandemic, increasing political and socioeconomic tension, and rapid technological change, the need for liberal arts is ever more urgent and necessary. The liberal arts has an ancient origin in Asian and European academic tradition that dates back for more than 1000 years. Its main tenets are now being tested, refined and renewed in a dazzling array of international contexts that defy any single definition and that also require a more modern reconsideration of the meaning of liberal arts. In the present age,

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liberal arts can be defined as a civilizational effort to provide holistic and student-centered education that liberates a student's talents and capacities for creative communicative and collaborative accomplishment. The value of this education is finding greater interest across the world, and as new cultures and technologies shape the liberal arts of the 21st century, this form of higher education is certain to receive a renaissance in a more global context. With the benefit of the new global liberal arts institutions and programs, it is also hoped that graduates from such programs can provide an increasingly important influence on shaping solutions to global problems, empowered by the capacities that are well developed within liberal arts.

A typical liberal arts chronology recites the Medieval seven liberal arts consisting of the *trivium* - with Grammar, Dialectic, and Rhetoric and the *Quadrivium*, with Arithmetic, Geometry, Music and Astronomy. Over the past 200 years, the United States developed many institutions that included features of the German research university and an English college, resulting in what are commonly described as "liberal arts" institutions. These US liberal arts institutions can vary in size from Soka University of America (with 500 students), to Pomona College (with 1600 students), to Yale University (with 12,000 students) but all have in common an emphasis on the student's capacity to think freely and to possess the skills needed for knowing why they think what they think. This in turn empowers them and helps them be "free" - the "liberal" in liberal arts.

Robert Pippin, in his *Aims of Education* address at the U. Of Chicago (Pippin, 2000) described liberal arts as "knowledge for its own sake" and emphasized the "liberality of mind" and the ways that liberal arts provide opportunities to expand intellectual processes to know how scientists, poets, sociologists and others interpret the world, and from these explorations to develop one's own interpretation. Pippin also described liberal arts in terms of its opposite - "that liberal arts is not just dogmatism or prejudice, but also any kind of over-specialized technical instruction or vocationalism - as opposed to a devotion to inquiry about the good or best life or to the value of knowledge itself for its own sake." He emphasized that an essential part of liberal arts is to constantly test one's assumptions - through argument and writing - to know why one thinks the way one does - which is an essential underpinning of a truly free will, another definition of "liberal" in liberal arts.

Some may characterize "liberal arts" as a "distinctively American" form of education, as did Steven Koblik, former President of Reed College, in his book of the same name (Koblik & Graubard, 2000). However, the history of liberal arts includes an even longer chronology with its own independent development over the centuries in Asia. As Bill Kirby and Marijk van Der Wende state in the opening chapter in their book *Experiences in Liberal Arts and Science Education from America, Europe and Asia* (Kirby & van der Wende, 2015):

The debate on these issues goes back minimally to those of the nineteenth century between proponents of the Humboldtian ideal of Bildung (the education of the whole person) as distinct from Übung (more practical training), differences that are phrased differently across the world—in China, for example, as the distinction between a broad conception of jiaoyu 教

育 and a narrower, repetitive one of *xunlian* 训练 .

Pericles Lewis, the founding president of Yale-NUS College in Singapore, noted that the traditions within Buddhist, Confucian, Daoist, Hindu, and other Asian philosophies train students to have “great spirit, compassion, intellectual agility, and virtue.” According to Lewis, “Mencius taught that compassion is the root of all human development and achievement.” He goes on to quote “the mind’s feeling of pity and compassion is the beginning of humaneness (*res*); the mind’s feeling of shame and aversion is the beginning of rightness (*yi*); the mind’s feeling of modesty and compliance is the beginning of propriety; and the mind’s sense of right and wrong is the beginning of wisdom” (Lewis & Rupp, 2015). Li Cao, from Tsinghua University in Beijing, recounts the long tradition within Chinese education for cultivating “cultivate virtue,” which we in the West might interpret as Liberal Arts. She recounts that “*The Great Learning (daxue 大学) states, ‘the way of great learning lies in illuminating one’s virtue, loving the people, and abiding by the highest good’ and ‘those who wish to illuminate virtue should cultivate themselves first before putting the family, the state and the whole world in order’*” (Cao, 2015).

Within India, the great Nalanda University was founded over 1500 years ago as a center of Buddhist scholarship, and was the largest university in the world by the year 670, before any of the major universities in Europe existed. Nalanda housed an enormous library, extensive classroom complexes, and provided housing for as many as 10,000 students and 2,000 faculty and visiting scholars, along with meditation halls. The scholars to Nalanda came from all over the world, including China, Japan, Korea, Tibet, Indonesia, and Turkey, during a period several centuries before the first European universities were founded.

During the late 20th century much of the discourse on liberal arts, especially in the US, centered on controversies regarding curriculum, and the need for more inclusion and awareness of non-Western cultures, as well as an emerging and urgent need for greater involvement from previously marginalised communities of colour and discussions of more diversity. Patti McGill Peterson, from the American Council on Education, has written about the history and evolution of liberal arts in the late 20th century, and how the definitions of liberal arts both in the US and abroad evolved to challenge assumptions from past epochs of higher education. By the end of the 20th century, US liberal arts emerged from several decades of activism which resulted in new core curriculum programs that diverged from earlier programs that featured exclusively Western texts. While the compromises in curriculum did not satisfy everyone, they did broaden the curriculum to be more inclusive of women, authors from non-Western regions, and to validate the importance of Asian and other non-western classic works as a central part of a shared global intellectual tradition. As Peterson puts it, “the end result was a broader canon of knowledge as the keystone of general education program” which is “encouraging broad cultural engagement and a wide range of educational activities” (Peterson, 2012). Meanwhile, across the world, various countries were emerging from post-colonial educational systems

and seeking new models to replace outmoded, overspecialized models.

Emerging from both Asian and US universities was an awareness of the increasing globalisation of our economy and culture and the need for universities to provide a more “cosmopolitan” approach to liberal arts. This idea of cosmopolitanism is one that was expressed well by Nussbaum, who in a 1997 piece tied the roots of cosmopolitanism to early Greek and Roman philosophers, where the notion of being a “citizen of the world” can be found in the speeches of Diogenes, Cicero, and Stoic philosophers such as Marcus Aurelius. Nussbaum argues that the project of expanding liberal arts to include global perspectives enables us to discern the “essential features of human personhood that transcend national boundaries” which ultimately will strengthen our sense of identity within a nation as it embodies our national unity through practicing the “moral ideals of justice and equality” and by recognizing the primacy of what we share as “rational and mutually dependent human beings” regardless of our national origins (Nussbaum, 1994).

Asian liberal arts

With this recognition of the value of more global perspectives from both US and Asian colleges and universities, a number of new programs in general education and liberal arts began to be developed across Asia - in Singapore, in China, Japan, as well as India. I will highlight just a few of them, which represent programs established (like SUA) in the current century, and also who embody new models for liberal arts that promise to improve the education and development of Asian countries as well as the educational models within US institutions.

China

In China, Yuanpei College at Peking University, the Fudan College at Fudan University, Boya College at Sun Yat-sen University and Xinya College of Tsinghua University formed pioneering efforts for Chinese General Education in the middle and late 20th century. Each of these were what we might call “University Colleges” and featured some models of general education. Hong Kong’s Lingnan University, established in the early 20th century, shared a president (Charles K. Edmunds) and many of the same liberal arts ideals with Pomona College, a US-based liberal arts college. More recent initiatives include the ambitious HKU general education program (made possible by a 2010 Hong Kong educational reform adding a fourth year to bachelor’s programs HKU) and the Chinese University of Hong Kong curriculum. CUHK features courses such as “In Dialog with Humanity” (featuring works from Plato, Confucius along with excerpts from the Bible and the Koran and political philosophers from East and West) and “In Dialog with Nature” which includes readings from a history of Western and Chinese science (CUHK, 2020). Hong Kong also has a number of interesting residential liberal arts programs such as the New Asia College at CUHK, founded in 1949, as an

“educational institution which combines the essence of the scholarship of the Song and Ming academies and the tutorial system of Western universities. With humanism as its basis, the College also aimed to facilitate cultural exchanges between East and West and to promote peace and well-being of the human race” (CUHK New Asia College, 2020).

A new liberal arts college in China, Duke-Kunshan University, combines the talents of faculty from China and the US to create a new kind of institution that fosters “rooted globalism.” The notion of rooted globalism is DKU’s contribution to global citizenship, and is “to cultivate informed and engaged citizens who are knowledgeable about each other’s histories, traditions of thought and affiliations; and skilled in navigating among local, national and global identities and commitments.” DKU’s curriculum is formed around seven “animating principles” that include “independence and creativity, collaborative problem-solving, lucid communication, research and practice, wise leadership, and a purposeful life.” The DKU calendar features an interesting 4-term system with two “mini-block” courses taken at a time, which enables for full-day courses within each of the four terms. The university will include 2000 students and 200 faculty and has just opened with 265 students during Fall of 2018 (Pickus, 2018). And it is important to note the founding of Wuhan College in 2003, which with generous support from the Chen Yidan Foundation became a private university in 2015, and includes five departments including a Department of Liberal Education (Wuhan College, 2020).

Japan

In Japan, the International Christian University (ICU), founded in 1949, has offered liberal arts curriculum and courses for decades, and additional liberal arts programs at Waseda, Tokyo and Soka universities have since been developed, building on the increasing interest in liberal arts in Asia. In Japan, Waseda University launched a School of International Liberal Studies in 2004, and the University of Tokyo reorganized its Faculty of Arts and Sciences in 2011 to “promote thinking across disciplinary boundaries.” Additional programs in Japan include a program in Liberal Arts at Sophia University, a new Akita International University dedicated to “well-rounded humanities education” (Akita International University, 2020), the International College of Liberal Arts or iCLA at Kofu, which is a four-year, American style liberal arts college in Yamanashi Prefecture offering a degree in International Liberal Arts with a year of study abroad among over 55 partner universities from around the world (iCLA, 2020), and Soka University of Japan (SUJ), which has a new Faculty of Liberal Arts that allows students to study across disciplines to gain “understanding of complex problems and issues” in one of three fields that include History and Culture, Politics and International Relations, Economics and Business (SUJ, 2020). Like Soka University of America (SUA), Soka University of Japan emphasizes cross-cultural perspectives, and global awareness to help students strive for peace and prosperity. It is important to also note that while SUA is an American University, SUA is a sister to SUJ and inherited many of its founding principles, and shares many of the same core values

with SUJ. SUA is dedicated to “developing a steady stream of global citizens committed to living a contributive life” and provides a unique synthesis of Asian and Western interdisciplinary ideas in its Core and GE curriculum, including discussions of the philosophy of China, India and Greece in the Core I course, and a wide range of eastern and western thinkers in SUA’s Core II and Modes of Inquiry courses.

Singapore

Singapore took an early interest in liberal arts programs and began with a new GE curriculum in 1998 and a liberal arts residential program known as the University Scholars program in the late 2002. The NUS Core Curriculum was modeled after the Core Curriculum at US institutions such as Harvard University. The development of the Core Curriculum included several visits from US academics during the 1990s and 2000s to provide input into the design of the curriculum such as the visit by Harvard’s Henry Rosovsky in 2001. Within the NUS Core Curriculum are learning goals for developing knowledge and skills in “Human Cultures, Asking Questions, Quantitative Reasoning, Singapore Studies and Thinking and Expression.” This GE curriculum was soon followed by an ambitious undergraduate education initiative known as the University Scholars Program (USP), initiated in 2002. Beginning with 20 students, the USP offered unique interdisciplinary courses in the first years, and then integrated these students into their original faculties for years three and four. USP was intended “to nurture a pool of brilliant students by developing their potential for leadership and intellectual excellence,” according to an early report on the program (Penprase, 2017a).

Soon after the University Scholars program, NUS and Yale University launched the most ambitious of the liberal arts projects in Singapore, Yale-NUS College, which arose from a growing awareness within Singapore of the power of liberal arts for training students for entrepreneurship and for creating a more dynamic economy. A government report from the Committee on the Expansion of the University Sector in 2008 outlined the need for a liberal arts college in Singapore. Within the report was the finding that: “liberal arts education serves to develop independent thinkers, effective communicators, and potential leaders for the future.” Looking toward the model of education at leading colleges and universities found in the United States and elsewhere, the national government identified liberal arts education as, “broad-based, multi-disciplinary learning, high-quality teaching and intensive interaction among students and with faculty members.” The President of Singapore, Tony Tan, also came out strongly for liberal arts in several speeches. In 2010, while Executive Director of the Singapore Investment Corporation, he noted that the British-based educational system dominant in Singapore had “served Singapore and Singaporeans well” but that the American liberal arts may be why the United States economy is “more dynamic and entrepreneurial” when compared to European ones, and that the American system “fosters a readier acceptance of change and a greater willingness to take risks” (Penprase, 2017b).

Established in 2011, the Yale-NUS College is designed to meet the overlap of strategic needs of Singapore, as well as Yale University and NUS. Conceived as a true partnership of these two universities, Yale-NUS was designed to provide long-term stability that other “branch campus” initiatives may find harder to achieve. Yale-NUS College was founded by an agreement between the NUS President, Chor Chuan Tan, and the Yale President, Richard Levin. The vision of Yale-NUS College was, in the words of its mission statement to be “A community of learning, founded by two great universities, In Asia for the world.” Yale-NUS College was designed to have “a focus on articulate communication,” “open, informed, and reflective discourse,” and “conversation” between individuals. The Yale-NUS College curriculum report of 2013 describes the goals of the new curriculum that centers on “*a set of conversations about some of the most fundamental questions and problems of human existence.*” The emphasis on conversation is central and one that underlies the architecture, curriculum and academic culture as the College “*transcended East and West and blended individual academic disciplines in new and innovative ways*” (Garsten et al., 2013).

The Yale-NUS Curriculum features an ambitious and interdisciplinary Common Curriculum that includes two semesters of Literature and Humanities, two semesters of Philosophy and Political Thought, a course entitled Comparative Social Inquiry and another Modern Social Thought course. It also includes Quantitative Reasoning, and two semesters of Scientific Inquiry courses.

India

In India a group of philanthropists came together to try to revive a tradition of more liberal arts within universities and several new institutions were founded. These include Ashoka University (the Yale of India), Shiv Nadar University, O.P. Jindal Global University, and Azim Premji University. Additional programs have been founded in the recent years in Chennai such as Krea University (Krea University, 2020) and discussions are ongoing to create other new private universities within India, including one group known as Nalanda2, which aspires to create the “Stanford of India” (Nalanda 2.0, 2020). I will give some more details from just two of the universities – Ashoka University and Azim Premji University, both of which sent representatives to our Soka University of America Globalized Liberal Arts conference in June 2018.

Ashoka University was founded by a group of US-educated entrepreneurs, such as the Yale alumnus and philanthropist Ashish Dawan, who also created the Central Square Foundation dedicated to providing education to children within slums in India. Ashoka University aspires to be the “Yale of India.” Among the founders of Ashoka University is Pramath Sinha, founding Vice Chancellor of Ashoka. The Ashoka University founders began by establishing the “Young India Fellowship,” a one-year multidisciplinary postgraduate program in Liberal Studies and Leadership. The Young India Fellowship includes a year of study with lectures from a wide variety of disciplines in humanities, sciences, and arts. Fellows complete a project at the end of the year that blends liberal

arts with an internship and mentoring from the instructors in the program. The program has grown in its three years to 200 fellows from its initial batch of 58 students, and is now housed at the new Ashoka University campus. The Ashoka University opened in 2014–15 with its first class of 65 men and 68 women, and it is admitting its second batch this year in 2015. The Ashoka curriculum includes 12 Foundation Courses, which offers a diverse mix of sciences and humanities. Students then choose a major, which consists of 12–16 courses in about 12 different fields. Ashoka University has developed its curriculum with academic partnerships with Carleton College, Sciences Po (France), Penn Engineering, the University of Michigan, and King’s College (UK). The Ashoka STEM curriculum includes Principles of Science (focusing on ways of knowing and scientific inquiry), Mind and Behavior, and Introduction to Mathematical Thinking. The plan is for Ashoka to grow beyond 2000 students in the coming years, with both undergraduate and graduate programs.

Azim Premji University is another example of private philanthropy creating a new form of higher education in India. The Azim Premji University has been created by the multi-billion-dollar Azim Premji Foundation, and as an institution is committed to making “significant contributions through education towards the building of a just, equitable, humane and sustainable society” (Azim Premji University, 2020). Azim Premji is one of the world’s wealthiest men, listed as 41st richest in the world, with a personal fortune of \$17.2 billion. He founded his foundation in 2001, and pledged to contribute \$2 billion to have a major impact on the 1.4 million public schools within India. Azim Premji also has joined Bill Gates “Giving Pledge” program to give most of his wealth to charitable causes along with Warren Buffet and Richard Branson. Azim Premji University programs are designed to create talent, knowledge, and also social change, and are focused in several interdisciplinary programs. Azim Premji University offers Master of Arts in Education or Development, conducts research in education and development, and houses a continuing education center for teachers. The Azim Premji curriculum includes interdisciplinary explorations of socially relevant themes. Examples include courses in “Law, Governance and Development,” “Mind and Society,” “People and Ideas,” and “The Philosophy of Education.” The undergraduate program at Azim Premji is similarly interdisciplinary and opened with its first batch of undergraduate students in 2015. It offers major concentrations to undergraduates in four areas—Physics, Biology, Economics, and Combined Humanities—and in each of the majors, the curriculum emphasizes the connections between these disciplines and India’s culture and society (Penprase, 2015).

Other new liberal arts initiatives – Vietnam, Pakistan, Ghana, and Europe

As liberal arts expands around the world and is practiced across Asia, additional new institutions are being created that fuse together cultural influences from the local country with some of the emerging new ideas that this wave of global liberal arts has inspired. In the past five years, entirely new institutions in Vietnam, Pakistan, Ghana and the Netherlands have been created with unique liberal

arts curricula that offer inspiration for the future of liberal arts. These programs exemplify the new wave of liberal arts institutions that are gaining support across the world.

Vietnam's new Fulbright University was chartered in 2017, and is being constructed within Ho Chi Minh City for a planned opening in 2022. The program began as part of the Fulbright Economics Teaching Program (FETP) in 1994 through the Harvard Vietnam Program, which was initially funded by the U.S. Department of State. In 2012, a non-profit organization known as the Trust for University Innovation in Vietnam, began planning the project, using 15 donated hectares of land. The Fulbright University aspires to provide "a 21st century liberal arts education that spans engineering, arts and letters, and the sciences," and "address the pressing needs of Vietnamese society, and ultimately point the way toward a new approach to high quality education in developing countries." The institution opened its first full academic year in Fall 2019 (Fulbright University, 2020).

Pakistan has created its first liberal arts university, Habib University, established in 2014. The Habib University is a privately funded institution rooted in the Islamic philosophy of Yohsin, which as described on the institutional web site, "encompasses five major paradigms: striving for Excellence; appreciating Aesthetics (beauty); nurturing Passion; Respecting others; and Serving the communities in which we reside." The liberal arts education at Habib University is focused on developing not only technical knowledge of students but being intentional in education to craft the nature of a student's interactions with nature and society to positively impact the community and the world (Habib University, 2020a). The Habib University Liberal Core Curriculum that includes humanities and sciences, with an emphasis on developing perspective about modernity in its context within history, as well as a course on "The World of Urdu" that explores the literary heritage of Pakistan (Habib University, 2020b).

Ghana's Ashesi University is a private, non-profit liberal arts university founded in 2012 outside of Accra, Ghana. The university was founded by Patrick Awuah, a Swarthmore College alumnus who has since received a MacArthur Foundation "genius" award for his work pioneering liberal arts education in an African context. Ashesi means "beginning" in the Fante language, and was intended to challenge the traditional colonial higher education within Africa to also develop new leaders for the continent. Awuah studied business at the Haas School at UC Berkeley and was convinced that a university within Ghana that could merge some of the elements of Swarthmore's liberal arts pedagogy and curriculum with the business administration skills would be of great demand. As stated by the Ashesi Foundation: "Our mission is to educate a new generation of ethical and entrepreneurial leaders in Africa; to cultivate within our students the critical thinking skills, the concern for others and the courage it will take to transform their continent. Our vision: an African Renaissance driven by a new generation of ethical entrepreneurial leaders" (Grant, 2017).

The emergence of new models of liberal arts in Europe, the birthplace of the liberal arts tradition in the West, in some ways brings the reconsideration of liberal arts full circle. The European

Consortium of Liberal Arts and Sciences (ECOLAS) lists 35 members in countries that include both Western Europe (UK, Germany, Netherlands, France, etc) as well as Eastern Europe (Lithuania, Bulgaria, Belarus, Poland, Estonia, and the Czech Republic). Many of the listed liberal arts programs include University Colleges, which often are standalone residential colleges offering a liberal arts curriculum within a larger and more traditional university, and others are degree programs heavily focused on humanities and social sciences, often providing unique capacities for interdisciplinary inquiry.

The Netherlands provides several excellent liberal arts programs in the form of the University College. One example is the Leiden University College (LUC), a new Honours College of Leiden University, located at the Hague. Opened in 2010, LUC features small classes and residential education with extensive co-curricular activity. Their motto is ‘Building Knowledge for a Better World’ and they feature students and staff from 40 different nations. The curriculum is built on themes related to The Hague, Peace & Justice, and has extensive service-learning and internship opportunities within the many organizations based near their campus. Unlike most institutions, where the curriculum features majors aligned with academic departments, LUC offers BA and BSc degrees in Global Challenge areas that include Human Diversity: Culture, History and Society (BA), International Justice (BA), World Politics (BA), Earth, Energy and Sustainability (BSc), Global Public Health (BSc), and Governance, Economics and Development (BSc) (Universiteit Leiden, 2020). LUC is the most recent of several new innovative University Colleges in the Netherlands, which includes Amsterdam University College (est. 2009), Utrecht University College Utrecht (est. 1998), and University College Maastricht (est. 2002) (van der Wedne, 2016).

In Eastern Europe, several liberal arts programs have been developed through partnerships with US and European institutions, such as the Smolny College of Liberal Arts and Sciences in St. Petersburg, Russia, which was a joint initiative with Bard College in the US and Saint Petersburg University. The program in 1996 when Bard College’s president, Leon Botstein, and Saint Petersburg University’s rector, Ludmilla Verbitskaya, began an exchange program with courses available to students on both campuses, and opened as Russia’s first liberal arts institution in 1999. Both institutions share some common curricular elements and a common philosophy in pedagogy that includes “a commitment to interdisciplinarity, critical thinking and discussion-based learning” (Fischer, 2014). Commentators on adaptation of liberal arts to the Russian context have noted the importance of reframing liberal arts from the mistaken conception as “superficial knowledge about a multitude of subjects” and instead as a form of education “focused on expanding the student’s mind and developing competencies.” They have however noted that liberal arts in Russia may be limited by preference for courses more clearly aligned with career aspirations, limited teaching resources, and the linguistic associations with the Russian term for liberal arts and sciences, *svobodnyye iskusstva i nauki*. The word *svoboda* in particular translates to “liberal” or “freedom” and for many in Russia is associated with disorder and chaos (Bogolepova & Makova, 2018). As a final example from Eastern Europe,

the Collegium Artes Liberales in Warsaw, Poland, provides curriculum with unique interdisciplinary specializations such as “Art in Culture, Ideological and Material Aspects of Social Life, Christianity in Culture, Biological and Cultural Diversity, and Between East and West – the history of culture and thought.” The institution also offers a first-year curriculum, focused on six “directional challenges” that include “Wisdom and Philosophy, Gods and Humans, History of Civic Thought, Memory and Identity, *Theatrum Mundi*, and Ecology of Culture” (KALUW, 2020). These new interpretations of liberal arts within Europe and across the world offer a wide diversity of educational models that blend local cultural sensibilities and global societal issues in new and exciting ways.

Global liberal arts and 21st century challenges

New and established Colleges and Universities across the world expanding and redefining liberal arts to enable students reach their full potential through a form of higher education that fosters student identity and interest and provides breadth and context to their studies. Liberal Arts institutions around the world are synthesizing new models for a more global form of liberal arts that brings together perspectives from previously localized intellectual traditions. This synthesis includes merging ideas of ancient Greece, China, India and other cultures to provide a multi-faceted inquiry about what it means to be human and to live an ethical and rewarding life. These universal questions of all cultures and times are also being paired with some uniquely 21st century challenges. Not only are there global challenges that will require higher education to adapt and respond, but the explosion of information and technology bring new meanings to both “critical thinking” and the human condition. The tsunami of information – its volume and relentless presence all around us require us to help students develop tools to navigate within the roiling social media and online environments.

The “21st century skills” our students will need include a mix of technical abilities to rapidly sift through large databases, navigate within complex computer systems to enable them to apply a more modern form of critical thinking. These skills will also need to be joined with a deeper inquiry about our collective identities within social spheres that include both in-person and online settings, human and artificial intelligence actors, and interconnected communities that span the globe. These 21st century realities are indeed singular and need to be confronted, along with an informed and thoughtful response to the powerful technologies of the so-called “fourth industrial revolution” that will bring us artificial intelligence, unlimited power for modifying life on a genetic level, and opportunities to craft matter on an atomic level. Liberal arts education, through its ability to cultivate a deeper sense of identity, purpose and meaning to students offers the opportunity for equipping students to respond thoughtfully and wisely to these challenges. The creativity, communication and cultural awareness that is fostered within liberal arts education can enable students to be master the needed collaboration and communication to solve our world’s most complex problems.

Our current Fourth Industrial Revolution is often described as the result from the integration and

compounding effects of multiple “exponential technologies.” Each one of these technologies individually has the capacity for scaling exponentially and revolutionizing our economy and society. Our higher education and societies need to be ready for this transformation, since unlike earlier IR’s this revolution may occur not over several decades but within 5-10 years. Based on recent news, we should also consider one additional new technology in the mix, quantum computing, which just recently was announced to have achieved “quantum supremacy” in which the quantum computer can solve now problems that conventional digital computers might take 10,000 or more years to solve.

If we recall Moore’s Law, which has guided our third industrial revolution, we have seen a doubling of CPU power every 18-24 months which has enabled new supercomputers to reach computation speeds of 300 quadrillion FLOPS (floating operations per second) in the latest supercomputer known as Milky Way 2 (Peters, 2017), an increase in speed of more than a factor of 300,000 in just two decades. Quantum computing offers the possibility of computers millions or even billions of times faster than our best digital computers, which if coupled with new Artificial Intelligence algorithms, could create computers that would achieve either “General Intelligence” (the intelligence of a human being) or even “Super Intelligence” (whereby computers exceed human intelligence by thousands or millions of times) (Bostrom, 2014).

Our current expansion of biotechnology has created the new field of “synthetic biology” which has enabled synthetic organisms built with DNA created within computers and “bio-printed” into host organisms known as a “chassis.” Noting that more than 50% more food will be needed by 2050, within a context of degraded capacity from soil degradation and global climate change, the FIR gives us the promise of developing revolutionary new sources of food production. The use of bio refineries that might utilize cellulose, biomass, and simple sugars to produce a diverse range of fuels, pharmaceuticals and food products in extremely large quantities will enable a shift away from fossil fuels in the coming decades. Synthetic organisms could also be used for environmental mitigation by removing various compounds from the environment such as toxic metals within landfills and even for absorbing CO₂ and other greenhouse gases.

These technologies will need to be central in a student’s education – as they will shape the future those students will live in, and as they advance exponentially to give us amazing new materials, gene therapies, synthetic organisms, and brilliant computers, they will completely reshape our economy. Higher education tends to be one of “curation” in which the lessons of the past need to be transmitted to the future generation. With the future looking very different from the past, we need to merge the curation of past knowledge with capacities to create revolutionary future technologies that will sustain our planet. Within most current university liberal arts curricula, we provide a vehicle to impart wisdom to students from their own cultural traditions as well as from global cultures, along with a deeper understanding of the universality of the human condition across time and space. These lessons, which are found outside of the STEM fields, allow students to develop not only technical capacities but wisdom. Social sciences which enable us to understand theories of the mind and social

groups, the cultural context of our experiences, and the methods which guide our creation of meaning, are even more essential tools in this new kind of education to allow students to predict and guide the social impacts of exponential growth in science and technology. Humanities gives students deep insight into the inner experiences of others, and develops a capacity to define what it means to be human and live a good life, independent of the century and country one lives in.

Ironically, answering “enduring questions” which come from the non-STEM fields will be even more important as accelerating technologies create challenges to our definition of humanity and personhood, of natural vs. artificial, and of mind and intelligence. We need to have these capacities in our future university to enable us as a society to know where to place limits to our power to create technologies. The same technologies that have the potential to turbocharge our economic growth, extend human life, and fuel future industries have the potential to destroy ecosystems and undermine biodiversity, alter human genomics irreversibly, and supplant human intelligence with new AI systems that could leave millions unemployed.

Precisely because the 4IR technologies accelerate – and generate advances exponentially – there is less of the luxury that we have had in past industrial revolutions to gradually adapt and shape our responses to technology through educational reforms decades later. We need not only to equip students with skills to develop these technologies sustainably and ethically. We need to develop higher education to allow students to develop the capacity for wisdom and to impart that wisdom into their AI algorithms, into their plans for artificial organisms, and into other technologies so they can enhance our future. It will discuss how the 4IR technologies will profoundly challenge our human condition, making a mandate for our response to be more than technological.

Liberal arts programs are being launched across the world because many nations are seeing the value of this form of education within the employment marketplace, and are able to bring students with this sort of wisdom into leadership positions where they work collaboratively with teams from diverse disciplinary backgrounds and cultural orientations. Instead of interchangeable and rigidly specialized workers, graduates from liberal arts programs can span across diverse cultures and ways of knowing to help lead others who have less breadth in their training. This becomes even more vital in the context of workplaces that require 21st century skills – to solve the problems and develop the opportunities that will arise in the Fourth industrial Revolutionary economy. The broad inquiry into the nature of the human condition helps liberal arts graduate discern the deeper impacts of industries and technology which can not only enhance profitability of companies but the sustainability of our world. Educating students in these new global liberal arts programs will give them a solid grounding in technology, harnessed with a deep awareness of the complexity of the human condition. This kind of education will enable such graduates to rapidly sift through large databases, navigate within complex computer systems and dig deeply into rapidly changing technologies. In doing so, they can exercise more modern form of 21st century critical thinking. Within this kind of thinking, arising from liberal arts programs, can arise the creativity, communication and cultural awareness that will

enable students to solve our world's most complex problems.

As liberal arts programs across the world are further refined through dialog with each other, the global community of liberal arts institutions in the Americas, Europe, Asia and Africa together can provide new types of intellectual life and discovery that is both timeless and set within the context of our complex world that features exponentially accelerating technological and environmental change.

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