CAMPUSES 2060: FOUR FUTURES OF HIGHER EDUCATION IN FOUR ALTERNATIVE FUTURES OF SOCIETY

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Introduction

Considerable time was spent first in our project on understanding the historical coevolution of society, education, technologies and the environment across many cultures. Historical lessons learned were combined with theories and methods in futures studies to develop four fundamentally different "alternative futures" of society across a series of common "driving forces" (i.e., population, energy, economy, environment, culture, technology and governance) and then to deduce plausible educational futures for each of the four futures across a set of common "dimensions" (i.e., mission, participant, resource, pedagogy and the physical campus). The resulting information has been displayed in written documents, posters and three-dimensional models of a "campus" and "prototypic buildings" for each educational system in each future.

It is very important to understand that none of the four alternative futures is intended to be a "preferred" future of society. None of the four universities is offered as a preferred future of higher education. Rather, each of the four universities is intended to make the point that thinking about and planning for the future of universities must always be done within the context of a prior assessment of the futures. Regrettably, this is seldom, if ever, done. Typically, a future that is more or less a continuation of what is thought to be happening now is assumed, and improved processes of higher education are planned for it.

Our extensive experience in the field of futures studies has made it crystal clear that consideration of plausible alternative futures is an absolutely necessary step that must be undertaken prior to trying to imagine and move towards preferred societal futures or preferred educational processes. Without a careful consideration of alternative futures, one's
stated preferred future will most likely be a response to current or past problems and may have little to do with actual problems and opportunities yet to come. In this case, one’s stated preferred system of higher education may be fit for the past, but not likely to be as fit for the futures as it could and should be. This paper depicts one way that alternative societal futures might be developed and how systems of higher education created specifically for each alternative might be developed. After this has been done, it is then possible to move towards conceptualizing preferred futures and systems of higher education for them.

**Background of the Campuses 2060 Project**

In September 2008, Professor Ray Yeh (specializing in architecture) and Professor Jim Dator (specializing in political science/futures) jointly held a graduate class in political futures studies and an advanced course in architecture in a newly-designated "Futures Room" within the School of Architecture of the University of Hawaii at Manoa to begin thinking about alternative futures for universities. Extensive material about the past, present and futures of higher education was collected and discussed.

Four teams were then formed combining architects, futurists and educators. Each team was dedicated to elaborating one of the four generic alternative future scenarios of 2050—Grow, Begin, Sustain and Transform—for the Hawaiian Islands and University of Hawaii in each of the four futures. Each of the resulting three-dimensional models and their respective implications were responsive to the societal future in which they were situated. In the following semester, continuing and new students advanced this work which they presented at a workshop at Windward Community College, Honolulu on the *Four Futures for Manoa in 2050: What Might They Mean for Windward Community College?*

Throughout the fall 2009 semester, continuing and new students prepared for an international conference to be held in Honolulu in November by elaborating on the four alternative futures (now aimed at 2060) for Hawaii within a global context and developing more fully a version of the University of Hawaii at Manoa appropriate for each future. The four alternative future versions of the University were called “al-Madhi University Hawaii” (University of Hawaii at
Manoa 2060 Grow), “New Beginnings in Manoa” (University of Hawaii at Manoa 2060 Begin), “The Global Green University of the Pacific” (University of Hawaii at Manoa 2060 Sustain) and “Transform You in Manoa” (University of Hawaii at Manoa 2060 Transform). Through the Learning by Design Process, each scenario was explored through general physical design representations with scenario-specific design attributes. Several professors from the University of Hawaii at Manoa College of Education, especially Joanne Cooper, Professor of Higher Education, and Peter Leong, Professor of Educational Technology, also advised us in this process. What we believe is unique about our project is the combination of written and visual representations of futures of universities in four generic alternative versions developed jointly by advanced students and professors from political futures studies, architecture and education.

In the spring of 2010, students varied the focus from higher education and the University of Hawaii at Manoa, and worked with a private school, Kauai Pacific Academy, on the island of Kauai, that wished to expand from an elementary school in a Montessori mold through high school. They had been given a large plot of land and wanted to develop a campus that would facilitate a curriculum that combined both preparation for complete local self-sufficiency on the one hand with preparation for high-tech proficiency within an increasingly virtually interconnected global political economy on the other. They also wanted us to focus on a shorter time span—2030.

Finally, in preparation for this report at the Global Higher Education Forum in Penang in December 2011, a group of architect students under Professor Ray Yeh along with Seongwon Park and Professor Jim Dator in political futures studies further elaborated on the description and display of the four futures of Hawaii and the University of Hawaii at Manoa during fall 2011.

While the information generated by this ongoing project may be useful to the University of Hawaii at Manoa, the campus setting of the University was used only in order to have a specific physical space to explore in some detail one particular university's possible response to four significantly different alternative futures within a specific community. The more
general purpose of our work is to develop and refine information about and theories and methodologies for alternative futures design that can be used by and adapted to any university and community anywhere in the world. The Campus Futures Project intends to continue raising awareness among educators, administrators, funders and consumers of higher education of the need to take a long-term view in comprehensive campus planning, mindful of the many and uncertain possible alternative futures for society and higher education. With some notable exceptions, almost all existing thinking about and planning for the future of higher education plan only for the one future of continued economic growth. This single vision may result in higher education that is tragically unable to respond and thrive in other potential futures.

**What Have We Done So Far?**

In this paper, we will focus on the activities of the 2050/2060 campuses of higher education part of the overall project.

**Four Interrelating Elements: Society, Knowledge, Technology and Environment**

We began our work by surveying the historical interrelationship of the following four elements in Asia, Europe and the United States from the earliest establishment of "universities" to the present: society, knowledge and skills, technology, and the biophysical environment (see sources listed under History and Present of Higher Education in the Appendix [Further Reading]). We observed that as each of the four changed, the other three changed more or less appropriately. As a crude example, the knowledge/skills, technologies and biophysical environment of a hunting and gathering society were similar to but different in important ways from those of an agricultural society, which were similar to and different from an industrial society, which were similar to and different from an information society, and thus, may be similar and different in significant ways as society continues to evolve. Different societies require and develop different knowledge and skills for survival and success; possess and invent different enabling technologies; and exist within different biophysical environments to which they must adjust and/or strive to modify.
Three kinds of technology

We believe it is imperative to reflect on the role of technology in order to understand the past and anticipate alternative futures of higher education (see sources [especially Dator, 1983] listed under Technology and Social Change in the Appendix [Further Reading]). We accept the definition that "technology is how humans do things" and distinguish between three kinds of technology:

(1) **Physical technology**

Physical technology refers to a specific physical tool (what most people popularly mean when they refer to technology) such as the "learning pill", or biotechnologies which enable such things as test-tube babies or a bulldozer.

(2) **Social technology**

Examples of social technology include schools, the legal adoption of children or faith that moves mountains.

(3) **Biological technology**

Examples of biological technology include learning by watching and imitating, sexual intercourse to produce children or manual labor.

Historically, most technologies were initially social and/or biological, and then (and especially recently) were increasingly challenged and often eventually replaced or marginalized by physical technologies.

The three examples of technology for each of the three kinds of technology above illustrate the following: bulldozers have more or less displaced faith and manual labor as ways to move mountains; *test-tube babies* may replace adoption or sexual intercourse as a way to make babies; and learning pills may replace schools and imitation as a way to learn.

Since each of the three kinds of technology has its own accompanying hardware (tool), software (rules for use) and orgware (supporting humans and organizations), when a new technology threatens to replace an established one, conflict occurs, and eventually, society changes. It is not just one tool replacing another; it is an entire way of life, and the people, who live it, being threatened and/or replaced by different people with different
technologically enabled behaviors. Usually this also means that new skills are needed and old ones become less vital while new knowledge displaces older knowledge and thus, new modes of teaching and learning arise.

Environments

Stability and changes in both the biophysical ("natural") and now, overwhelmingly the artificial (built) environment are also very important in understanding the past and in envisioning futures of higher education. For most of human history, humans took their natural environment as a given and devised ways to learn from it and adjust to it whether it be the snows and winds of the Arctic; the sands and winds of the deserts; the heat, humidity and lush growth of the jungles; or the measured four changing seasons in the so-called "temperate" zones of the Earth. Each environment provoked different technologies, skills and knowledge, and social structures.

As the natural environments "naturally" changed, societies fell or thrived, in part, by their ability to change in all three areas. Now, humans have arguably moved from the geological Holocene period of their origin and early development to the recently emerged Anthropocene period where all once natural processes are increasingly influenced by human action. "Sustainability" is now a new (and probably belated) cry, calling for new technologies and knowledge related to sustainability that will enable us to conserve a viable Mother Nature for future generations. Education, especially higher education, is now expected by some people to suddenly change from being an engine of endless economic growth to instead (or also) becoming the producer of knowledge and technologies that will enable sustainability and survival. It is doubtful that the higher education systems of any previous society were ever called upon to perform such a function.

The Six "Dimensions" of Universities: Societal Assumption, Mission, Participant, Resource, Pedagogy and Physical Structure

In our historical, contemporary and futures-oriented research, we focused specifically on six
dimensions of institutions of higher education over time: societal assumption, mission, participant, resource, pedagogy, and physical structure and configuration.

Societal assumption designates the basic assumptions made about the society in which the institution of higher education is located. Is it an agricultural, industrial or a "dream" society? Does it have a clean and abundant natural environment? Is there environmental degradation or an entirely artificial environment?

By mission, we mean the manifest and latent functions, purposes, goals and raison d'etre for institutions of higher education in different societies. What are universities supposed to "do" to or for the societies within which they are embedded? What missions have persisted? What changed and why?

Participant refers to everyone who is involved in some direct or important indirect way in higher education—what we might now call students, teachers, administrators, supervisors, legislators, funders, alumni, parents and the like. Issues of governance are included under the category of participant. We use the generic term participant so as to not privilege the terminology of one historical moment over others. Indeed, this was true of all six of the terms we used, and was especially important because we aimed at showing profound differences in society and institutions of higher education in the four alternative futures. We did not want to become a captive of language and hence, features of one period. This was difficult to do.

Similarly, we use the term resource to refer not only to money—a key resource presently—but also to human and natural resources of various kinds as appropriate for each alternative future. For example, energy is a resource that has varied in form and utility in the past. It has greatly shaped our ideas and institutions in the present because of the abundance, flexibility and low cost of oil, and is highly problematic in all three categories of the futures. Differences in assumptions of energy supply and cost are important factors across all four societal futures university responses.

Pedagogy is intended to refer to what is taught or learned, how and why. It includes both the overall curriculum and specific syllabi as well as the mode of delivery and/or knowledge or skill
acquisition. It not only includes the content of a class or course, but also the "educational technology" used, whether it be one human speaking to others; intense reading of texts; audio-visual electronic technologies, direct brain-to-brain or database-to-brain transfer; etc. We also include what is now called basic and applied research, and the production of new knowledge and technologies in the term pedagogy.

Finally, we very heavily focused on the physical structure and configuration of the places of learning—campfires, classrooms, campuses and holograms—particularly the way in which they reflected, facilitated and/or hindered the mission and pedagogy, especially when new skills and knowledge were needed as societies and technologies changed.

We noticed in our survey that most studies of higher education focused on only one or two of the following features: 1) what should be taught in the future, perhaps with what new technologies; 2) how institutions of higher education should be funded and administered; 3) what their mission should be (for example, is higher education for personal, societal or economic enhancement, or for sustainability and the preservation of certain values, behaviors and beliefs?); or 4) what their physical presences should be. We believe that we are one of the very few who has tried to combine six dimensions of higher education in an alternative futures context.

**Historical Examples of Interrelationships: Korea, England, the United States and Hawaii**

With these factors as our guide, we studied the way the interrelation of society, skills/knowledge, technology and the physical environment on the one hand, and of mission, participant, resource, pedagogy and campus on the other, played out in different societies over time in different parts of the world.

Take Korea as an example. Korean education systems have been affected by dominant knowledge systems, the geopolitical environment, and national strategies for survival. For example, the Goryeo Dynasty (918–1392) was much influenced by China’s Tang Dynasty (618–907). As a result, there was a national language school (Sayokone) where the Chinese were
taught. This language school published a textbook, *Noguldae*, for teaching the Chinese, and this publication was also used as a textbook in the Chosun Dynasty (Jeong, 2004). Among other things, Chinese language skills were useful for facilitating the selling of products such as ginseng and celadon porcelain. Proficiency in spoken or written Chinese in the Goryeo and Chosun dynasties was directly linked with accumulating wealth through successful business practices. Many Koreans adapted to Chinese writing, culture and scholarship in many ways.

Other religions and belief systems also played an important role in shaping and reshaping the Korean education systems throughout history. For example, for many centuries, various forms of Confucianism were dominant in education and governance, and are still influential. However, in the late 19th century, Christian missionaries effectively worked with Koreans and led them to be aware of “the importance of Western practical and scientific knowledge…and democratic and female education”, introducing to them “Western institutional administrative systems” (Lee, 2002, p. 97). Ewha Woman’s University and Yonsei University are prestigious schools that were founded by Western missionaries at that time.

Korean higher education was also heavily influenced by a series of rapidly succeeding events that the Korean society went through in the 20th century: first, it was the Japanese colonial annexation of Korea (1910–1945) including the Second World War, followed immediately by the Korean War and the military government of the United States in Korea (1945–1948). These external elements changed Korean education in terms of systems, curricula and administration by interacting with the Korean internal circumstances (Lee, 2004). Even now, Korea is still strongly under the influence of American culture and policies, after experiencing a series of dictatorships before achieving democratic governance in 1988. During this time, Korea has been single-mindedly focused on a policy of economic development aimed at "catching up" with the most advanced economies of the world as soon as possible—a goal that has been largely achieved.

Consider *England*. We studied in a little more detail the evolution of institutions of higher education in England (Graham, 2002), noting the relationship between societal assumption, mission, participant, resource, pedagogy and the structure of institutions of higher education
in Britain, from the establishment of the first two colleges, Oxford and Cambridge, in the late 12th century oriented towards training the clergy and aristocrats, through the establishment of a third university, London, with a broader mission in the mid 19th century, 700 years later. It is important to reflect on how long the university was a slowly "emerging issue" in England before it finally caught on with the creation of industrial “Red Brick” universities, with their practical educational mission, which were created during the late 19th century; the high technology, postindustrial “Plate Glass” universities of the 1960s along with the highly innovative open university; and finally Thatcher's bottom-line-focused “New Universities” in the 1990s.

We looked at the situation in the United States in yet more detail (see Cohen, 1998; Geiger, 2000; Hofstadter & Smith, 1961; Lucas, 2006; Rhodes, 2001; Smith & Bender, 2008; Thelin, 2004). All of the first few universities were not public universities but were created by one Christian denomination or another. They were based largely on the Oxford model in terms of faculty, curriculum and campus design. The very first, Harvard University, was established in 1636 to “produce not only ministers but Christian gentlemen who would be civic leaders” (Hofstadter & Smith, 1961, Vol. 1, p. 2). By 1800, it had one president, three professors and six tutors. By 1900, it had 450 faculty members. In 2011, which was its 375th anniversary, it had 2,100 faculty members.

William and Mary was created in 1693 with the mission to "raise youth ‘in good Letters and Manners’ and propagate Christianity among the Western Indians” (Hofstadter & Smith, 1961, Vol. 1, p. 2). Yale (1701) was intended to produce men “fitted for Public employment in both Church & Civil State” (Hofstadter & Smith, 1961, Vol. 1, p. 2). The curriculum of all three was British-style classical, based on the Latin and Greek language and literature. Moreover, while the British colleges of the time were self-governing, none were in the United States where all were ruled by a board of overseers made up of magistrates and ministers whose duty it was to see that the teachers and scholars kept the faith of their founding denomination.

There was a flurry of new private universities in the immediate prerevolutionary period: Pennsylvania (1740), Princeton (1746), King's (that became Columbia; 1754), Rhode Island
(that became Brown; 1764), Queen's (later called Rutgers; 1766) and Dartmouth (1769). All of these were broadly Christian-based but not narrowly denominational, this being a low period in American Christianity where a kind of Newtonian deism was widespread.

The first state university created after the American Revolution was Georgia (1785), followed by North Carolina (1789), Tennessee (1794) and South Carolina (1801)—all in the south of the United States. Interestingly, the United States has never had a national university, much less a set of national universities spread throughout the nation, although one was suggested by Washington, Madison and a committee of Congress in 1812.

The first specifically secular university in America was the University of Virginia (1817) with Thomas Jefferson as its architect in all senses of the word. It was also the first university in the United States with what could be considered to be a "modern" curriculum—not based on the ancient classics but on more practical and liberating arts and sciences.

The 19th century marked the rapid expansion of the United States from the Atlantic seaboard across the mountains to the Midwestern prairies. The University of Michigan was established in 1817, 20 years before Michigan became a state. In 1819, the United States Supreme Court issued the seminal Dartmouth College Case that established private colleges as "corporations" and declared that corporations have individual human rights, not subjected to state abrogation—both decisions still of current controversy.

The 19th century also saw what is called "The Great Awakening"—a mighty religious revival that swept across the frontier and the South. This resulted in the revitalized flowering of small denominational and private colleges in the early 19th century. Thirty-seven church colleges were created in Ohio alone from 1833 to 1852 and many more elsewhere in the Midwest and South.

Throughout this period, there was considerable controversy about the content of the curriculum—should it be mainly classical or practical, or religious or secular; about "lazy students", "educational quacks" and grade inflation; and about governance (who controls the
curriculum—the faculty or funders?).

American universities initially were almost exclusively for upper-class White men. Some freed slaves attended, and there were classes for women which led to the creation of "seminaries" and "finishing schools" for women in the East and South. Eventually women's colleges rose: Vassar, Smith, Wellesley and Radcliffe. Some colleges in the Midwest were coeducational (admitting both men and women) from the very beginning, Oberlin being the first (1833). By 1880, more than half of the American universities were coeducational.

Some were also "racially integrated" (such as Antioch [1852] and Iowa [1856]). Before the Civil War (1860–1866), there were few opportunities for formal higher education for African-Americans: The Cheyney Institute (1837) was established for freed slaves. Wilberforce University (1856) was the first college created for African-American women.

One of the most important developments in higher education in the United States was the Morrill Land-Grant Act, passed by the United States Congress in 1862 during the American Civil War when the absent southern representatives could not object to the federal government's "interference" in the right of each state to control education within its borders. According to the Act, 30,000 acres of land for each member of Congress were to be set aside in each new state to fund colleges of agriculture and mechanics, which also teach the humanities and practical arts, to uplift ordinary citizens. Michigan State University (1855) was one model. Cornell University (1865) in New York was another. The mission of each land-grant university was to be a secular place of higher education dedicated to creating through research and teaching a powerful, industrial nation and state.

Alcorn State University (1870) in Mississippi was created explicitly as a Black land-grant college. The Second Morrill Land-Grant Act of 1890 specified that any state using federal land-grant funds must either make their schools open to both Blacks and Whites or allocate money for segregated Black colleges to serve as an alternative to White schools. Sixteen exclusively Black institutions of higher education received land-grant funds in 1890. The American Missionary Association and the Freedmen's Bureau also set up Black colleges until 1910.
Among these were Fisk (1866), Howard (1867), Morehouse (1867), Hampton (1868) and Tuskegee (1881).

Developments in Germany during this time also greatly influenced the direction of higher education in the United States. In many ways, Germany was the first consciously industrializing state—the first to use higher education to transform a loose agricultural state into a focused industrial state. Germany did this, in part, by creating the first research universities and graduate schools, such as Berlin (1810), based on *Wissenschaft, Lehrfreiheit and Lernfreiheit*—the ideals of Wilhelm von Humboldt and Friedrich Schleiermacher. "A German university has one and only one object: to train thinkers. It does not aim at producing poets, painters, sculptors, engineers, miners, architects, bankers, manufacturers. There are other schools for that” (Hofstadter & Smith, 1961, Vol. 2, p. 571).

In the United States, Johns Hopkins (1876), Stanford (1885) and Chicago (1890) were created based on the German model while Harvard, Yale, Princeton and many more redefined their mission, participants, pedagogy and the rest according to that model. Higher education was now to be based on science, specialization, departmentalization, professionalism and academic freedom (with many struggles, especially between advocates of "liberal education" and those of professionalization). In 1800, there had been nine colleges with 750 students in the United States. By 1900, there were 450 colleges and universities.

A major development after World War I (1914–1918) was the rise of a "general education" core curriculum that all students needed to master, along with a "disciplinary major", in order to get a college degree. "In 1918, roughly one-third of the college courses at Columbia was prescribed; by 1938 it had become one-half" (Hofstadter & Smith, 1961, Vol. 2, p. 896).

However, following World War II (1940–1945), the so-called "G.I. Bill" revolutionized higher education in terms of the number of "college age" persons actually in college. For the first time in history, the American government subsidized the expenses of college for the people (colloquially called the "GIs") who had served in the Armed Services during the War. This gave many thousands of men and women a chance for higher education who had never even
imagined of such a thing before.

In *Brown v. Board of Education* (1954), the United States Supreme Court declared that racially "separate but equal" schools were unconstitutional. From this point on, to receive federal aid, education at all levels must be racially integrated, though some of the historically Black (and women's) colleges were exempt for a while. The 1965 United States Higher Education Act marked the first time that there was substantial federal funding for higher education for all.

During the 1960s, in part, because of these developments and the large number of college age members of the massive "baby boom" generation, there was an explosion of mass education universities, along with the creation of two-year community colleges and of colleges of continuing education (also called outreach colleges or colleges of adult education) to further live long higher education opportunities.

From the 1980s onward, higher education in the United States has moved in yet another, different, direction—from local, state or national in orientation to global in focus; and from national and state in funding to private or a self-funding base. It is often said that what could once fairly be called "state" universities, because they received most of their funding from a state legislature with student-paid tuition either nonexistent or very low, have become at best "state-assisted" universities where taxpayers pay less and less of the overall expenses, to what are now really just "universities in a state" with public funding near or almost zero.

At the same time, with the rise of computer networks and the internet, distance education transformed from being a decidedly second-class stepchild of higher education, dependent entirely on reading, writing and mailing of assignments and answers, to a high-tech and often highly personalized and appealing adjunct to face-to-face classroom education, perhaps replacing campus-based education almost entirely in future.

Moreover institutions such as the University of Phoenix and other for-profit universities serve students unserved, underserved or only bureaucratically served by traditional universities, with standardized pedagogies, poorly-paid and untenured faculty and highly flexible times,
places, and delivery systems, of varying quality. From store fronts to holograms, higher education is rapidly becoming a global business with global focuses and standards. Many people, thus, believe that the next step in American higher education is the end (or severe marginalization) of campus-based delivery systems and the rise in global virtual educational modes, governance, funding and accreditation. Nonetheless, as we will see, this is not inevitable. There are alternatives that need to be considered.

*University of Hawaii at Manoa*

Finally, in order to base our alternative futures on some real place with a real past and future in order to have a geographic location for our architectural renderings, we decided to focus on the University of Hawaii at Manoa. We gave serious consideration to other locations, including Mars where we most truly could "start anew", but decided it made more sense to focus on a place we knew and could therefore imagine a past and future more vividly. However, as we have said, our purpose is not primarily to discuss futures of the University of Hawaii per se, but to develop a template for the study of futures of institutions of higher education anywhere, with Hawaii as one model.

*History and present of the University of Hawaii*

Hawaii is presently a state within the United States. Hawaii lost its independence as an internationally recognized sovereign nation in 1898 when the United States Congress annexed Hawaii as a territory, following the forceful overthrow of the last Hawaiian queen, Liliuokalani, in 1893. During this time and until well after the Second World War, Hawaii’s society was a kind of feudal oligarchy with an economy based largely on agriculture and plantation for export under the control of White land owners and using the labor of immigrants brought to Hawaii largely from Asia (Kent, 1993; Smith & Pratt, 1992; Trask, 1999).

During this time, higher education was a privilege of the children of the ruling classes who sent their sons (sometimes their daughters) to colleges on the mainland, United States. However, there was also recognition that talented children of plantation workers and others deserved
some kind of higher education opportunity in the Islands. In 1908, the prospectus for establishing the College of Agriculture and Mechanic Arts in the territory of Hawaii said that “the leading object shall be, without excluding other scientific and classical studies including military tactics, to teach other branches of learning as are related to agriculture and mechanic arts…in order to promote the liberal and practical education of the industrial classes in the several pursuits and professions of life” (Kamin & Potter, 1998, p. 9).

From the beginning, plans for the University (then called a college) aimed at having it be a congressionally recognized land-grant university under the Morrill Act of 1890. The catalog for 1908–09 showed that the College consisted of three small departments: agriculture, engineering, and arts and sciences.

Amazingly enough, from the very beginning, the University of Hawaii was open to all who applied and were academically qualified for higher education, declaring that “no person shall, because of age, sex, color or nationality, be deprived of the privileges of this institution” (Kamin & Potter, 1998, p. 10). This is amazing because most universities in the United States, at this time, certainly did discriminate against applicants on the basis of "age, sex, color or nationality."

The first president, John Gilmore, and most members of the first faculty of Hawaii College had studied or taught at Cornell University, a prestigious land-grant university in upper New York state. Thus, a university in a cultural and physical environment, as different from Hawaii as is possible to imagine, became the model for the University of Hawaii in curriculum and campus style and layout.

A design for the campus was completed by the engineering Professor John Mason Young in February 1909. The plan anticipated buildings not only for agriculture, engineering and the liberal arts but also for architecture, law and medicine. Young planned for a geometrical array of structures on the campus that were squared to the cardinal points of the compass, strongly resembling the quadrangle of the Cornell campus. In fact, all of the permanent buildings on campus, beginning with the Hawaii Hall in 1911 (designed, in part, by Young and still in use),
were neoclassical and would have matched the architecture of Cornell or many other mainland college campuses of the time. There was no sense of a Hawaiian place in any aspect of the University—save its coeducational and multiethnic student body.

The White oligarchy that ruled Hawaii for so long was peacefully overthrown after the Second World War when the Japanese and other non-White local men and women served in the United States military with enormous distinction and loss of life. When they returned, they demanded justice and equality, and created a new multiethnic democratic party that ousted the ruling republican party at the ballot box, eventually leading to the statehood for Hawaii within America in 1959 (statehood is a very problematic and contested achievement now because the option of independence should have been placed on the ballot in 1959, but was not, the only options given being either continuing as a territory or becoming a state of the United States).

During the 1960s, processes that impacted the mainland, United States, including the creation of opportunities for mass higher education, were felt even more strongly in Hawaii. A series of community colleges were created for all islands of the State and a four-year institution was established at Hilo on the "Big Island" (the island is officially named "Hawaii" but called the Big Island to avoid confusion with the entire state). The government in Hawaii also poured enormous amounts of money into creating a "world-class" university out of the old Manoa campus in Honolulu with a massive new building program and the hiring of scores of well-established older and promising younger faculty members—almost entirely of White men and largely from the mainland, United States. At the same time, at the urging of the faculty members of the University of Hawaii and prominent local political and business leaders, the United States Congress created and placed, under the control of the United States Department of State, The Center for Cultural and Technical Interchange Between East and West (East–West Center) in the University campus. The East-West Center brought many scholars and students throughout Asia and the Pacific region to the University, giving the University a regional and global prominence it would not otherwise have.

From that time onward, the University of Hawaii at Manoa has expanded or stagnated
depending on the economic fortunes of its home: A tiny set of islands—the most remote populated place on planet Earth—with a population now of only a little over one million and an economy entirely dependent on fragile tourism and volatile military funding from the United States Congress (Dator, 1999; Yount, 1996). At the present time, the University of Hawaii at Manoa is the "flagship" of a multicampus, multi-island university system with a potential capacity of 60,000 students. The University currently has 20,000 students (14,000 undergraduates)—70% of them are from Hawaii—and 1,200 full-time faculty members. In-state tuition at the University currently amounts to about $8,500 per year and out-of-state tuition, about $23,000 per year. Tuition is much lower at other campuses of the University of Hawaii system. Once, tuition was almost free everywhere. Although the University of Hawaii is still supported by the Hawaiian state legislature at higher levels of funding than is true for most other "state" universities in America now, the University has moved toward becoming a university "in Hawaii" rather than "of Hawaii."

The University of Hawaii at Manoa is a Carnegie I research institution as well as a land-grant, sea-grant and space-grant university, indicating national and international prominence in agriculture, ocean resources, and astronomy and space sciences and exploration. The University considers itself a "bridge between Asia and the West" as exemplified by the cultural diversity of its student body along with extensive courses in Asian, Hawaiian and other Pacific communities' history, culture and languages. Its academic programs are accredited by the Western Association of Schools and College. Of equal importance is that the University of Hawaii at Manoa competes in many sports at the highest "National Collegiate Athletic Association Division I" level.

The Manoa campus presently sits on 320 acres in the lower region of Manoa Valley. The campus no longer reflects any architectural style. Its buildings are a hodge-podge of structures built with little regard to each other or to the magnificent climate and culture around it. Nonetheless, the University of Hawaii at Manoa is the dominant institution of higher education on the island of Oahu (Honolulu) and the entire state. Private universities in the State are much smaller—Chaminade University, Hawaii Pacific University, Brigham Young University (Hawaii) and Tokai University. There is also a rich assortment of extension and for-profit
universities such as the University of Phoenix.

**Characterizing the state of Hawaii within the global community at the present time**

Our alternative futures exercise requires that we know something about the past, present and future of the world generally, and of specific communities, before we can imagine the futures of institutions of higher education within the world and those specific communities. The following is a brief description of the essence of Hawaii within the global community at the time of our research in terms of the seven driving forces of the alternative futures:

**Population**

When modern universities were conceived and created in the middle of the 19th century, the population of the world was for the first time about one billion people. Now, 150 years later, the population of the world is seven billion people and still growing rapidly, even though in some parts of the world (especially in Europe, North America and East Asia), the population growth rate is stagnant or declining—in some places, very rapidly declining. Population is growing slowly in Hawaii.

For most of the world's history, the "typical human" has been Chinese—China has almost always had a larger population than any other region. However, by the end of the 19th century, the number of White people and non-White people in the world was roughly equal for the first time in history because Europe had been able to "export" its surplus population to the "new worlds" of North and South America and Oceania in the 18th and especially 19th century. The balance was short lived. Because of fertility differences between White and most non-White cohorts over the 20th century, the percentage of Whites in the world has substantially declined to about 20%. Current fertility trends suggest that the White proportion of the world by the middle to end of the 21st century might be between 1% and 5% of the global total, portending big differences in cultural and perhaps economic/political dominance.

Following the rapid die-off of native Hawaiians after their first encounters with the Western culture, diseases and technologies (from perhaps one million in 1790 to about 40,000 in 1905),
Hawaii has had a culturally mixed population with no single ethnic group a numerical majority. This trend is still continuing, with new ethnic groups arriving at the Islands (along with fertility differentials among established ethnic groups in Hawaii) to change the mix. Intermarriage among the ethnic groups remains very high, a trend that led Hawaii’s first democratically elected governor (John Burns) to proclaim that the residents of Hawaii were becoming “the Golden People of the Pacific.”

**Energy**

The so-called "developed" parts of the world run overwhelmingly on abundant and cheap oil—first discovered to be and exploited as an energy resource in the mid 1850s. Without cheap and abundant oil, almost nothing that is part of the modern and postmodern world would exist. Our food, transportation, communication, health, goods—everything—is heavily dependent on it. If anything were to cause oil to be scarce and expensive before equivalent energy sources could be fully brought online, "development" and "continued economic growth" would end very quickly. While most decision makers seem to assume that cheap and abundant oil will exist forever (within their ken of "forever"), more and more people fear the effective "end of oil" soon, and well before equivalents are available.

Even though Hawaii has abundant resources of alternative, renewable energy (solar energy, wind, tide, wave, ocean, geothermal energy and biogas), Hawaii has been overwhelmingly dependent (80%–90%) on imported oil for many years. Indeed, Hawaii is more dependent on oil than any other American state. Tourists, food, automobiles and all consumer products flow into the State on oil. Hawaii could not feed itself without the inflow in more than a week or two. It is extremely vulnerable to anything that might interrupt the flow of cheap and abundant oil into the State. Current efforts to reduce the dependence on oil in Hawaii are very timid and have been energy-intensive themselves so far.

**Economy**

Since at least the 1980s, and driven by the economic theories and policies of the United States, the economy of the world—all of its developed and developing parts—has been ruled by "global neoliberalism" that discourages and strives to prevent government regulation of the
economy, leaving it up to the "invisible hand of the market" to distribute resources, jobs and wealth on a worldwide basis.

In addition to being one of the most politically "liberal" places in the United States, Hawaii is also fully a part of the global neoliberal economy. It cut its once steeply progressive tax rate, reduced the number and pay of its civil servants, and, since it is not allowed to go into debt according to the State constitution, substantially reduced its once humane social services, including funding for its public schools and university system.

Environment
For most of human history, humans seemed to be at the mercy of "nature", and too few and puny to impact the natural environment upon which they depended for their very life. Several decades ago, some people became aware for the first time that because of human numbers and their technologies, humans in fact were now major factors in determining the future of the Earth—and had been so since the beginning of slash and burn horticulture and sedentary agriculture; only the scale of human impacts in time and space are different now. Geologists label the time period that saw the emergence of *homo sapiens* on Earth as the Holocene. A few years ago, some geologists and others said that it was time to recognize that we had entered into a new geological era they called the "Anthropocene", since humans were a major geological force. About 30 years earlier, Walter Truett Anderson had recognized this fact in his book *To Govern Evolution*, arguing that governing evolution must become the primary political focus of humans. In spite of this, and a host of warnings and policy proposals, humans continue massively to change the biosphere much faster than they understand it. Though we may be "governing evolution", we are doing so unintentionally and with no sense of ethical obligation or social goals in mind, other than continued economic growth. As a consequence, global climate change and the potential rise in sea level are among many major environmental challenges that are almost entirely unaddressed.

Though Hawaii is often viewed as a "paradise", and people in Hawaii take pride in their open and laidback lifestyle, most people in Hawaii are, in many ways, equally as irresponsible and uncaring about their impact on the local environment as are those anywhere else. In part, this
may be because Hawaii has no polluting factories, though decades of plantation agriculture has polluted the soil with pesticides which threaten the thin lens of fresh water between the saline ocean water and the land upon which Hawaii entirely relies. Strong trade winds usually also push visible pollution away. The mid-Pacific Garbage Patch is still invisible offshore. But, Hawaii has no organized recycling program, and future garbage disposal remains an unresolved dilemma. Urban sprawl and highway congestion go largely unchecked. Moreover, Hawaii's economy is based on tourism, and tourism requires a beautiful environment with a balmy climate. Water scarcity, local impacts of the global climate change, and the rise in sea level may threaten that.

Culture
The long-entrained process of globalization, vastly speeded up with modern technologies and ideologies, has destroyed many cultures and languages worldwide. Many people fear (or welcome) a global monoculture, dominated by Western lifestyles and the English language. At the same time, there has been an amazing renaissance of local cultures in recent decades. Although "the world", in 1892, celebrated the 400th anniversary of the "discovery of the New World" by Christopher Columbus, not many celebrated the 500th anniversary in 1992, and many more used it as an opportunity for education as to the true impact of Western conquest on indigenous peoples everywhere.

Hawaii has long celebrated its cultural diversity and the fact that the different groups not only tolerate each other, but also actively celebrate their differences and participate in the rites of many cultures. Still, English language speakers basically destroyed the Hawaiian culture and language by laws and other means until a small group of singers, dancers and young activists, in the 1990s, brought the Hawaiian language and culture back from the very edge of extinction with Hawaiian language immersion schools and other means. The English/American language and culture still dominates and is argued as essential for integration into the global economy.

Technology
We have contended that, in the world we live in now, technological change is the major vehicle for social and environmental change. Programs of development have spread—or tried
to spread—modern technologies to every corner of the Earth. To be alive in the world today means to have the latest gadgets and be attuned to the latest fashions and fads. Humans have never lived without technologies. Humans become and “re-become” humans by interacting between themselves and their environments via some mediating technologies. Nonetheless, technologies now are often far more powerful and intrusive with longer-lasting effects than they were earlier. And, as one technology replaces or marginalizes another, social and environmental change occurs.

Things are no different in Hawaii. Without the jet airplane, internet and credit card, Hawaii would still be a quiet remote place in the middle of the Pacific. Because of these technologies (their hardware, software and orgware) and more, Hawaii’s youth dresses and acts like inner city rappers, and Waikiki hotels feel like hotels everywhere else in the world, with the tourist experience standardized and safe.

Governance

Almost every government in the world today says it is a democracy, be it liberal, social, Islamic or Christian democracy, or democracy the Asian way. All democracies (actually "representative governments") are based on once-great ideas and technologies that are 200–400 years old. They are woefully out of date in terms of contemporary cosmologies and technologies, but few new ideas for governance exist. People are discontented, but few can suggest what will make them content in any nuanced way. In addition, the ruling basis of all polities is the "nation-state", a form of government invented in Europe several hundred years ago to solve European political problems, but spread worldwide through Western imperialism. Nonetheless, few national governments are able to govern effectively anymore. Too many problems (such as those of the economy and environment) are global and beyond the reach of democratic national governments. Many other problems are local, resisting the insensitive "one size fits all" regulations of the national government.

The situation in Hawaii is similar. In obtaining statehood in 1959, Hawaii adopted all the then-modern ideas of governance and, for a while, ran smoothly and effectively. In some ways, governance in Hawaii is reasonably satisfactory, but in others, it is as unable to rule as any
other polity, and no one knows what to do about it but to complain and despair.

*Ideas About the Futures of Higher Education*

With an understanding of the history and evolution of the universities in general and the University of Hawaii at Manoa as well as the state of Hawaii now in hand, we collected and read everything we could find about the present and future of higher education: calls for new forms or returns to earlier ones; how further commercialization and/or the internet and virtual education would destroy old brick and mortar universities; whether universities should serve the needs of business better; and whether universities must change from being focused merely on continued economic growth (as their sole modern purpose and continuing major justification) to include sustainability, which are clearly competing and perhaps mutually exclusive goals and concerns for the most part. We read what people thought would happen and what people said should happen. We then felt that we were ready to begin to look at the futures (see sources listed under Images of the Futures of Higher Education [listed by the four generic futures] in the Appendix [Further Reading]).

*Theories and Methods Underlying Our Study: Four Generic Alternative Images of the Future as a Design Tool*

We based our work on certain theories and methods of futures studies as developed over the years by students and the faculty of the Hawaii Research Center for Futures Studies in the Department of Political Science of the University of Hawaii at Manoa (see sources listed under Alternative Futures Approach [especially Dator, 2009] in the Appendix [Further Reading]). The fundamental perspectives of what is also called "the Manoa School" state that "THE future" cannot be predicted, but that several alternative futures can be forecasted and their implications considered, and then that preferred futures can be envisioned and invented, all the while continuing to scan the horizon for new opportunities and problems which might suggest new visions of preferred futures or reinforce the existing visions.

The Manoa School had developed a typology of four generic images of the future. This
typology had been empirically derived by collecting and evaluating “images of the future” in national and corporate plans for the future, research statements about the future, articles in the peer-reviewed futures journals and conference proceedings, books and other media of futurists, fictional stories about the futures in many media, images of the futures in popular culture including advertisements, annual "state of the state/nation" speeches, and the like. From this empirical base, the Manoa School concluded that all of the millions (if not billions) of images of the future existing in the minds of people can be categorized as specific examples of one of four generic images of the futures. The four generic images are Grow, Collapse, Discipline and Transformation (see sources listed under each of the four generic images, beginning with Images of Continued Growth Futures in the Appendix [Further Reading]).

By far, the overwhelming majority of all images of the future, including the images of higher education, are variations of continued economic growth. Indeed, continued economic growth is the "official" future of all advanced nations and hence of all components of the nations, including universities. The very purpose of the modern university was and is to enable the community it serves to grow and prosper economically by virtue of the research and development it does and by the human resources it produces. It is very difficult for university funders, administrators and researchers to imagine any other future or any other kind of university.

And yet, nothing is forever. Everything that now exists, at one time, did not exist and, at one time, will not exist. Societies and their components constantly emerge, rise, mature, decline and die. Currently, “Collapse” is gaining some popularity as an image of the future as more people than usual worry about the unsustainable environment and economy.

In part to avoid a collapse, and in part in recognition of the impossibility and perhaps undesirability of continued economic growth, many more people now share some kind of a “disciplined” view of the future, often currently expressed as sustainability. Many people believe that it is necessary to adopt certain values and discipline our life and actions around them if we are to survive and thrive.
Finally, many futurists agree that continued economic growth is unsustainable, but insist that many technologies are converging rapidly in such a way as to transform society as profoundly and unpredictably as a caterpillar is transformed into a butterfly, or as liquid water into steam (or ice). A world of abundance and leisure with humans, transhumans and artilects on Earth and the inner solar system is potentially imminent. The timid views and actions of sustainability are unimaginative and uninspiring, they argue (there also are versions of Transform that are based on spiritual and not technological factors).

Please note that these four futures are not simply variations on a common theme such as "high, medium and low" or "optimistic or pessimistic." Each futures makes very different assumptions about a number of common variables. The variables—the driving forces we discussed earlier—that are common to each of our four futures of Hawaii in 2060 are population, environment, economy, technology, energy, culture and governance. It is the quantitative and qualitative differences of each of these seven driving forces in relation to each other that result in four quite different futures.

The four generic images of the futures have two fundamental uses.

One is for deductive forecasting. If one wishes to think about the futures of anything, at the very least, one should begin thinking in terms of the four generic alternative futures. One future should not be privileged over the others. None is a “most likely” or “least likely” future. All lie before us as possibilities every moment of our lives, and need to be kept in mind when making decisions about the future.

Secondly, experience has shown that before members of an organization can think usefully about their future, they need to be shaken from their “crackpot realism” of the present. Until they have had a chance to think more broadly and deeply, most people assume that the future will be more or less like the present. If things are bad now, they will continue to be bad, and it will be difficult to get them to imagine anything else. If things are good now, they will resist worrying about bad times and will assume everything will be fine forever.
Thus, if people are asked to think about the future without prior familiarity with alternative futures, they probably will plan basically for the present, or strive to get rid of the problems of the present, without sufficient thought of what new or renewed problems and opportunities might lie ahead. One way to get people in a frame of mind to envision more robust preferred futures is to have them consider (and, to the extent possible, experience) examples of the four alternative futures.

**How We Worked on the Project**

As we have shown, we began our inquiry by considering the history of higher education from its earliest origins in Asia and Europe through its creation and growth of universities in the United States and the University of Hawaii at Manoa as outlined above. The process of looking at the historical context and evolution of universities across the globe enabled us to understand trends and the implications of our university’s own campus facilities, operations and systems.

Next, we engaged in a review of futures theories and methods, including age-cohort analysis, trend analysis, emerging-issue analysis and alternative futures creation. Under the guidance of Dator’s second law of the future—that in a situation of rapid social and environmental change, “any useful idea about the future should appear to be ridiculous” (Dator, 2005, p. 205)—and the assumptions of the four generic alternative societal futures, we considered a wide variety of patterns and societal activities that could have implications on universities.

We then formed four teams. Each team had three broad tasks: (1) flesh out the details of their assigned alternative future for Hawaii in 2060 according to the seven driving forces, (2) devise one possible "University of Hawaii at Manoa" in response to that future according to the first five of the six dimensions of universities, and (3) develop the sixth dimension by designing and constructing three-dimensional models and associated textboards and illustrations of the relevant campus of the University of Hawaii at Manoa in 2060 as well as one "prototype" building for that campus.
Each team, for several weeks, researched the seven driving forces pushing and pulling higher education for their particular scenario and developed a written description of Hawaii within the world of 2060 for their specific future. Table 1 presents a simplified overview of the distinguishing features of each driving force for each societal future.

<table>
<thead>
<tr>
<th>Futures:</th>
<th>Grow</th>
<th>Collapse</th>
<th>Discipline</th>
<th>Transform</th>
</tr>
</thead>
<tbody>
<tr>
<td>Population</td>
<td>Increasing</td>
<td>Declining</td>
<td>Diminished</td>
<td>Posthuman</td>
</tr>
<tr>
<td>Energy</td>
<td>Sufficient</td>
<td>Scarce</td>
<td>Limited</td>
<td>Abundant</td>
</tr>
<tr>
<td>Economy</td>
<td>Dominant</td>
<td>Survival</td>
<td>Regulated</td>
<td>Trivial</td>
</tr>
<tr>
<td>Environment</td>
<td>Conquered</td>
<td>Overshot</td>
<td>Sustainable</td>
<td>Artificial</td>
</tr>
<tr>
<td>Culture</td>
<td>Dynamic</td>
<td>Stable</td>
<td>Focused</td>
<td>Complex</td>
</tr>
<tr>
<td>Technology</td>
<td>Accelerating</td>
<td>Stable</td>
<td>Restricted</td>
<td>Transformative</td>
</tr>
<tr>
<td>Governance</td>
<td>Corporate</td>
<td>Local</td>
<td>Strict</td>
<td>Direct</td>
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With the scenarios and forces concretely specified, the teams then developed written descriptions of the University of Hawaii at Manoa appropriate for their societal future. Then, they engaged in architectural planning and decision making, leading to a design of three-dimensional models of their particular University of Hawaii at Manoa. Those models not only represented physical elements of the campus, but also conveyed its systems, operations, virtual spaces, pedagogies and communities. The teams employed concepts grounded in the architectural design theory, especially those of Alexander (1964), Cherry (1999) and Pena (2001). The teams created parti or visual representations of each of the campuses, using them to guide their construction of plastic three-dimensional models for each of the alternative campuses, and a prototype building for each.

**The Four Futures of Hawaii and Four Forms of the University of Hawaii at Manoa**

**Hawaii Grow 2060: Grow and Succeed!**

Hawaii is a thriving, growing community within a prosperous and growing world

- Population: World—10 billion; Hawaii—4 million
- Environment: Totally human-dominated; entirely artificial with “no problems”
- Economy: High growth and high tech; extensively dynamic and entrepreneurial
- Technology: Ubiquitous and effective, but with humans in control
- Energy: Plenty of fossil fuels, nuclear energy and renewable sources
- Culture: No dominant culture in Hawaii; few native Hawaiians remain
- Governance: The United States governments weak; entrepreneurs and nonprofits active

**University of Hawaii at Manoa Grow 2060: Al-Madhi University Hawaii**

The old "University of Hawaii system" was acquired by Al-Madhi Futures, a highly dynamic global conglomerate focusing on new technologies, entrepreneurism and entertainment. It is headquartered in Baghdad, Iraq. The primary mission of al-Mahdi University Hawaii is to be a major engine of local and global economic growth through local and global strategic partnerships, by producing creative, adaptable, efficient and critical entrepreneurs who not only develop new high technologies but also create start-up organizations that produce and sell them. Producing entrepreneurs and new technologies is the main goal of al-Mahdi University Hawaii.

Between 50,000 and 100,000 participants are on the Hawaii campus on any given day. Most learners, trainers, researchers, business partners and supervisors participate remotely from around the world though the numerous channels of three-dimensional/multisensory virtual presence. Except for the original Hawaii Hall quadrangle, all buildings of the old University of Hawaii at Manoa have been torn down and replaced by modern, efficient office towers. The bottom floors and surrounding courtyards resemble a crowded Persian bazaar in which learning, research, sports and entertainment entrepreneurs hawk their modules and other products continually. Middle levels include flexi-spaces that can be easily reconfigured to serve as real or virtual research and learning areas. Just above them are rooms and apartments for learners, trainers and researchers mixed together, while the top floors are the executive and administrative suites and residencies for the al-Mahdi supervisors and directors.

**Assumption**  Hawaii is a thriving, growing community within a prosperous and growing world.
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<tbody>
<tr>
<td><strong>Mission</strong></td>
<td>Al-Mahdi University Hawaii is part of a highly dynamic global conglomerate focusing on new technologies, entrepreneurism and entertainment.</td>
</tr>
<tr>
<td><strong>Participant</strong></td>
<td>Many learners, trainers, researchers, business partners and supervisors participate remotely from around the world though the numerous channels of three-dimensional/multisensory virtual presence. Only courses that sell are offered except for a few <em>loss-leaders</em>.</td>
</tr>
<tr>
<td><strong>Resource</strong></td>
<td>Ample money, fossil fuels, nuclear energy and renewable sources.</td>
</tr>
<tr>
<td><strong>Pedagogy</strong></td>
<td>A blend of methods that facilitate learning activities in virtual spaces aimed at producing high tech commercial products.</td>
</tr>
<tr>
<td><strong>Campus</strong></td>
<td>The university operates like a corporation where experts in business and fiscal management run the administration.</td>
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*Description of the campus of the University of Hawaii at Manoa Grow 2060, and its prototype building*

The design of al-Madhi University Hawaii mega buildings is for *high growth total flexible architecture*. Total flexible architecture offers total freedom of spatial configuration—not only flexible instant plan changes but also volumetric modifications. All spaces are open to reconfiguration and modification according to the needs of the users. However, buildings still have a permanent exterior skin as well as permanent structural elements.

The difference between our design and what already exists (such as the open floor plan design that has been practiced through various architectures such as Toyo Ito’s Sendai Mediatheque and the Centre Pompidue by Renzo Piano and Richard Rogers) is that of volumetric freedom. Changes in ceiling height (from various heights to no height at all) as well as plans maximize usage as a magic box that is able to contain any program.

The ability to achieve this type of volumetric freedom allows the walls themselves to act and become a changeable entity while facilitating entrepreneurship through advertisements. We are all accustomed to boards on walls with information on what they are trying to promote and sell. In our design, we go beyond boards, and make advertisements become one with the wall, structure, façade and skin. Our building is a place of liveliness that people come to experience as if shopping in a mall. People have the opportunity to experience walls that are virtual, can be projected or even be formed by the touch of a hand. The spaces will have the
ability to form quickly according to the wants and needs of the users.

**Prototype building**: In accordance to our future scenario, we have generated a building that is able to adjust and change throughout all events. The building itself does not have a specific function. It can be reorganized according to the program of each event. The building form no longer limits its uses. Freedom of plug-ins for interior spaces will permit any shape, context or program.

**Hawaii Begin 2060: Survival +**

Hawaii is a thriving, self-sufficient, postcollapse community of new beginnings.

- Population: World—3 billion; Hawaii—400,000
- Environment: Still severely contaminated; sea level rise; severe climate change
- Economy: Agriculture and aquaculture based on manual labor and simple machines
- Technology: Recycled technologies; new technologies that enhance food production
- Energy: Manual, renewable with some biofuel and local hydro or solar electricity
- Culture: Focused on survival and enhancement with old and new technologies
- Governance: Island-wide council of local representatives; no “chiefs”

**University of Hawaii at Manoa Begin 2060: New Beginnings University in Manoa**

After many years of chaos and conflict following the global economic and environmental collapse of 2015, some of the remaining inhabitants of Oahu converged on Manoa Valley on New Year’s Day 2030 to survey and reclaim the remains of the old University of Hawaii campus there. Unlike the old University of Hawaii at Manoa, this new center of learning (New Beginnings, as it was to be called) provides a place for storing, learning, creating and sharing the knowledge and technologies necessary for creating and sustaining a new, smaller, vibrant and completely self-sufficient Hawaii.

The mission of the New Beginnings University is to preserve and pass on useful knowledge and artifacts from the past, and to cultivate and transmit new information and techniques that will
benefit the survival and enhancement of the Oahu community as a whole. On any given day, there may be between 5,000 and 6,000 participants at New Beginnings. Initially, most participants were of two kinds—teachers and learners—though most often, each individual played both roles—teaching what one knew and learning what one did not. Now there are also 1) formal teachers, 2) preservers of old knowledge, 3) experts especially adept in certain skills and 4) people who create new knowledge and technologies.

Of special interest at the University of Hawaii at Manoa are advanced techniques for agriculture, aquaculture, energy generation and transmission, and transportation, with an increased focus on how to utilize every piece of material and all the natural processes for enhanced living. Each learner—as well as each teacher, preserver, adept and creator—is expected to spend some time tending the gardens and animals, preparing food, recycling wastes, cleaning the environment, repairing the learning areas and all the other things necessary for a healthy and meaningful communal life. The entire campus is a living and breathing environmental and cultural experiment for the benefit of the entire island community.

Assumption  Hawaii is a thriving, self-sufficient, postcollapse community of new beginnings.

Mission New Beginnings in Manoa is a learning center that provides a place for storing, learning, creating and sharing the knowledge and technologies necessary for a completely self-sufficient Hawaii.

Participant Teachers and learners play both roles and as teacher, preserver, adept or creator.

Resource Manual, renewable with some biofuel and local electricity.

Pedagogy Indigenous ways of learning take place within the natural environment where a group or an individual seeks out a mentor to learn something necessary or desired.

Campus The physical campus itself comprises the buildings, structures and resources of the old University of Hawaii at Manoa which were abandoned after the disaster of 2015 and reclaimed in 2030, plus new shelters.

*Description of the campus of the University of Hawaii at Manoa Begin 2060, and its prototype building*
The campus of the New Beginnings University in Manoa is a space for collaboration and shared knowledge between all members of society so that the community can survive and thrive. There are no longer any boundaries restricting integration of the wider community with the university community. Any old technologies that are still functional, along with that which has been created recently, are used to enhance survival.

The university is a realm of collaborative research among all members of the community as they search for ways to ensure community survival in an environment of almost complete isolation from the rest of the world. Though the campus focuses on the preservation and progression of higher education, it is also the hub of community gatherings where all active inhabitants of the island can come to have their concerns addressed. This collaborative structural system, one without any underlying hierarchies or classification restrictions, allows for an open and inviting atmosphere where issues facing the community find mutually beneficial solutions.

**Prototype building:** The New Beginnings prototype building is a synthesis of two intersecting structures. The base structure is the exoskeleton of an old campus building. It functions as the collaborative hub for evolving campus knowledge reinforced through the layout of the building. The first floor is used for food storage and preparation, and as an indoor/outdoor social-gathering space. The second floor is utilized as open areas for learning and expanding community knowledge. The top floor has been adapted as an archival space for collecting and preserving the information of the society. The second structure is a new construction. It is a movable structure composed of rubble and other adaptive reusable materials found on and around campus. It is seen as the focal-gathering location for the entire island community and can be used just as easily by 100 people as by 5000. This flexible and malleable nature of the structure further expounds on the importance of making the most of each and every resource in New Beginnings. The design approach resembles that of Sam Mockabee’s Rural Studio, producing primal, sophisticated modernist structures out of recycled material.

**Hawaii Sustain 2060: Slow...but Steady!**

Hawaii is struggling towards environmental, energy and food sustainability.
Population: World—down a third to 5 billion; Hawaii—down one half to 600,000

Environment: Severely degraded; sea level rise; climate change; food shortages

Economy: Necessary growth without waste; modest expansion through efficiency

Technology: New and old technology for environmental sustainability

Energy: Few fossil fuels; research for reliable renewable sources

Culture: From consumerism to conservation; from materialism to spiritualism

Governance: By scientists, engineers and other experts aimed at sustainability

University of Hawaii at Manoa Sustain 2060: The Global Green University of the Pacific

The collapse of the global economic system, catastrophic regional food shortages, and the multiple energy and ecological crises that plagued the early 21st century led to mass starvation, many episodes of extensive violence and death, and the migration of millions of environmental refugees around the world. Thus, a new global governance system emerged from an economic gathering of the G-20. The G-20 created a network of transnational research universities around the globe, funding them substantially to do the research and development needed for survival. The old University of Hawaii at Manoa was designated the Global Green University of the Pacific (GGUP) and soon became one of the most important of them all.

Now, in 2060, the GGUP specializes in learning how to utilize the resources of the ocean, earth and space to solve energy, food, environmental and related challenges. The total number of participants on the GGUP campus is roughly 20,000 to 25,000. The GGUP has recruited outstanding global scientists, leaders, visionaries, engineers, designers and economists in the fields of ocean, earth and space sciences. There are also humanists, philosophers, ethicists, spiritual leaders, poets, singers and dancers who roam the campus providing emotional/aesthetic critique and depth to the severe science/engineering based enterprise. Competition to become a learner at the GGUP is intense. Only the very best are chosen—people who are disciplined, well trained and hardworking. Learners do not passively attend lectures. Rather, they become interns on projects, immediately working on practical ways to solve specific energy, environmental and food problems. While the G-20 provides substantial financial support from its limited budget for research, we need to be very frugal and efficient
Learning starts with the self-awareness of one's own mind. Advances in brain science and the functional information about the human genome have set a new course for learning.

**Assumption**  
Hawaii is struggling towards environmental, energy and food sustainability.

**Mission**  
The GGUP is a representative of the new world order as captured in the phrase, “Tighten your belts and save, and produce more than you consume.”

**Participant**  
Outstanding global scientists, leaders, visionaries, engineers, designers and economists in the fields of ocean, earth and space sciences as well as humanists and anesthetists are recruited.

**Resource**  
Fossil fuels are limited and expensive. The G-20 provides substantial financial support.

**Pedagogy**  
Learners are interns on projects, immediately working on practical ways to solve specific energy, environmental and food problems.

**Campus**  
The campus has energy-efficient buildings, living quarters and classrooms that are used for multiple purposes.

*Description of the campus of the University of Hawaii at Manoa Sustain 2060, and its prototype building*

The campus of the GGUP is a showcase of the latest and greatest energy conservation and generation technologies, comprised of many smaller buildings, with high recyclability, which can be renovated or replaced to ensure they are running at maximum energy and environmental efficiency. The larger scale buildings of the campus are designed for a lifespan in excess of 100 years with exceptionally durable materials and flexibility. *Carbon neutral* or *zero-energy* buildings are not just an ideal to aspire to—they are the minimum standard. With its prominent Pacific location, the GGUP also serves as the gateway between Eastern and Western civilizations and philosophies, all aimed at conservation and sufficiency.

Many classrooms and research facilities have been removed from Manoa and placed near where they serve: the medical school near the hospitals; business school downtown; travel industry at the airport; School of Hawaiian Knowledge near Kamehameha, Kalihi; and so on. They are linked by the City’s mass transit rail system.
The GGUP is a model for energy and environmental awareness. Student housing has a mixed-use environment and is placed at the edges of the campus that border the larger community, creating opportunities for them to meet and mingle.

**Prototype building**: Our design for the main science campus building aims to change the way people view a sustainable lifestyle and architecture. Users are encouraged and conditioned to assume conserving behavior with a Rationing and Energy Card Reward System. Every time a user leaves a light on or forgets to remove a phantom load, points are deducted. Our design aims to make users self-aware of their actions with respect to sustainability. The building features column tunnels that not only act as structure and circulation paths, but maximize volume of air movement and natural sunlight, which will, in turn, cool and light the building passively.

The science center serves to bring together multiple disciplines to work together and test out ideas, creating spaces that can bring together nanoscientists, chemical engineers, philosophers and artists to collaborate and create groundbreaking developments. A flexible, open floor plan allows for reconfiguration of offices and classrooms as necessary. Room configurations can be easily adapted to specific needs and usages.

**Hawaii Transform 2060: Beyond Singularity to Dynamic Cosmic Diversity!**

Hawaii is a dynamic part of a changing, diverse inner solar system.

- Population: Transhumans, cyborgs, and artilects—too numerous and transient to count
- Environment: Entirely artificial; earth a designed and maintained garden
- Economy: Abundance; anything is a resource, and nothing is waste
- Technology: Dominated by intelligent, autonomous robots and mind-controlling, posthuman nanotechnology; limited teleportation
- Energy: Plentiful and cheap; from nuclear fusion and solar satellites
- Culture: Artificial, but Hawaii tries to remain a real and yearned-for “paradise”
- Governance: Hive mind via bioelectronic networking; intelligent government chips
Ray Kurzweil, Hans Moravec, Ian Pearson and all of the other high technology optimists were right! In spite of the economic recession in the early 21st century, technological developments continued to accelerate at an ever-increasing pace. The consequence, however, was not the “singularity” they anticipated, but instead a flowering of ever-transforming diversity. Hawaii is both a dynamic, ever-changing physical paradise on Earth and an inspiring vision of an “even better world” in cyberspace. It is both autonomous and yet fully integrated physically and virtually with all activities on the globe and the inner solar system.

Hawaii is considered by some seers to be the center of the universe-becoming-self-conscious. Thus, the old University of Hawaii at Manoa has become Transform You in Manoa, a prime place for intelligences to gather who wish to study and develop powers of self and collective consciousness and mind control. Like everything else about the highly flexible Transform You, the number of participants on any given day varies from about 2,000 to the millions, including humans, posthumans, avatars, and artilects.

Transform You in Manoa as well as its pioneering branch campus on Valles Marineris, Mars has become one of the primary places intelligences “go” (physically and/or virtually) to enhance and evolve their consciousness. The University of Hawaii at Manoa has also developed considerable expertise in “special needs” research and applications, and so many older homosapiens ludditus are on campus to learn how to live and love with their artilect companions. Most environmental, energy, and even economic concerns of the past are rapidly receding. There is no such thing as either waste or natural resource—via nanotechnology, molecules can always be changed from one structure to another at will (indeed, increasingly merely by thought).

Assumption: Hawaii is a dynamic part of a changing, diverse inner solar system.
Mission: Transform You in Manoa is the center of the universe-becoming-self-conscious.
Participant: Humans, posthumans, avatars, and artilects.
Resource: Plentiful and cheap. Resources and information are dispersed and available anywhere, anyplace, anytime.
Pedagogy

Learners are diverse, and education is universally interdisciplinary.

Campus

Structures are composed of psychoreactive material that can be configured and reconfigured into poly units, based on human interaction and thoughts controlling nanotechnological processes.

Description of the campus of the University of Hawaii at Manoa Transform 2060, and its prototype building

Clarke (1973) said “any sufficiently advanced technology is indistinguishable from magic” (p. 21). Thus, in a society that is as exponentially more technologically advanced than the present day (as is the case of Transform 2060), almost anything that can be dreamed of can become reality. Information retrieval is instant as the vast majority of humans are biologically enhanced with the help of the nanobot technology and perpetually tied in to the metaverse. For those who have decided to pursue higher education, learning itself has changed from accessing information to applying it in the hopes of gaining wisdom. As for others, it simply means attempting to keep up with the rapid rate of technological change. And still for others, it means learning how to do things the old ways, just for the perverse fun of it. As a result, there exists some redundancy of systems for those who may not be comfortable with the present technology, such as that of using the teleportation nodes as the primary means of public transit.

Prototype building: Once the more optimistic expectations of nanotechnology are achieved, whatever is desired is what the campus can be. Strategically located nanotechnology towers distribute raw materials when and where needed to assemble entire classroom structures based on user preference, climate, zoning, and the scheduling of other activities. Depending on the activities of the day, these sculptural towers will themselves fluctuate. Certain research and residential functions require a more static footprint, and consequently, certain large-scale structures and towers remain in a constant location though their size and shape might fluctuate dramatically over longer periods of time. The administration of the campus is governed mostly by artificial intelligence based on guidelines thought up with the help of
human counterparts. Mind control of matter is advanced, and thus, the function of nanobots, structures, pathways, and everything else on campus can be controlled by the users’ mind so long as their requests fall within the set parameters established by the campus-at-large.

Figure 1 The University of Hawaii at Manoa campus in 2010
University of Hawaii Campus Future Scenarios

Collapse: 5,000 students
Grow: 100,000 students
Sustain: 25,000 students
Transform: 2,000-millions students

Figure 2 Model of each of the four campuses of 2060
Discussion

*Alternative v. Preferred Futures*

It is important to remember that the generic four images of the future—grow, collapse, discipline, and transform—are derived from an analysis over many years of what people have said they hope, fear, expect, or desire the future to be like. Those four categories are different views of the future in and of themselves. What we hope for the future may not be what we expect or even what we desire. What we fear may or may not be what we expect the future to
be like. We analyzed formal plans for the future, popular fiction, images of advertising, books by futurists or others—wherever ideas about the future were expressed, we tried to understand their basis and implications.

The specific futures that we described of Hawaii and the University of Hawaii, however, are only four among the myriad of ways in which generic futures could have been concretely described. We believe each of our descriptions is plausible and logically-consistent with the generic form and its internal construction. But, they are by no means inevitable or exclusive.

Each future was also described enthusiastically and positively from within its own logic. We tried not privilege or denigrate any of the four. We wanted to present each as fairly and positively as possible, but showing the weaknesses and inadequacies of each as well. It is very important that one understands this. Therefore, the four alternative futures, overall, aim at providing people with diverse images of the future that challenge their own views about the future, and challenging them to also create their own preferred future that is better than any of the four.

The description of the university in each of the four futures is also intended to make clear that there is no "best case" future to hope for or "worst case" future to be feared. Universities (and everything else) can thrive or fail in any future depending, in part, on how they were designed. Planners should plan for success across a wide range of alternative futures and only on the basis of a single "most likely" future which may not be likely at all.

Similarly, it is very important to understand that none of the four images is our preferred image of the future of Hawaii or of higher education. As we have tried to make clear, in determining one's preferred future, it is necessary to follow a series of specific steps. We have taken and displayed those steps here. A huge mistake that is commonly made is to ask people to envision and move towards a preferred future before they have seriously considered alternative futures. Thus, we have focused, in our paper, on what is necessary to be done first in order to then envision a preferred future, namely, to develop or embrace some theory of social change; to use the theory to acquire and analyze information from the past and present;
and then to use the theory and data, along with certain methods from futures studies, to develop and somehow "experience" four alternative futures.

Once that has been done, it is then possible to engage in a futures visioning exercise that envisions a preferred future not just of an institution of higher education, but specifically of the environment within which that institution will be situated. In this paper, we thus have illustrated how to take all the steps but the last and most important one—envisioning and then planning, in detail, on how to move towards a preferred future for society and higher education.

**Six Dimensions are Unique, but are They Sufficient?**

Each alternative future of the University of Hawaii at Manoa 2060 considered six dimensions of the university: assumption about the society it is in; basic mission of the institution; participant—broadly understood; resource—human, fiscal, and physical; pedagogy—what is taught and researched, and how; and form of a physical campus. We believe we are unique in considering such a wide variety of dimensions within a four futures format. But, are there dimensions we have missed? Did we try to cram too many things into just six dimensions? We welcome comment on this.

**Participants in the Campuses 2060 Project**

We also believe that our project brings additional and unique value by involving architects, futurists, and educators in every aspect of the project from the very beginning. This has been a true team project with members of the teams changing as the rhythm of semesters moved some members out and new ones in. Thus, we have been and are now very attentive to the interrelationship between function and form in higher education historically, at present, and in the futures. We are not aware of any other such effort elsewhere in the world.

However, in this process, we have faced some problems brought about by the changes of participating members. Each semester brought a different mix of participants, many brand new to the project, some experienced. Moreover, all of the work was voluntary within a classroom environment. There was essentially no funding for any aspects of our project save
for the money that enabled presentations at one or two conferences.

We have been so busy planning and doing our projects each semester that we have not had a chance either to write up our work in detail or seek proper funding for it. We would very much welcome suggestions for possible funding so that we can put this project on a solid academic research basis with paid researchers instead of voluntary students only—though we think the pedagogical experience for the students are extremely valuable.

Response From the Audience

We have displayed our work on three occasions. One was for the faculty and administrators of Windward Community College; one was for a meeting of the faculty of the University of Hawaii at Manoa College of Education; and one was at a small international workshop specifically on the Futures of Campuses for Higher Education Project, which was held on 13 and 14 November 2009, at the School of Architecture, University of Hawaii at Manoa. We received many helpful responses from the audience at these meetings. They helped shape our subsequent work. Here is one example from a careful observer who was an economist at the University of Hawaii at Manoa:

Begin and Sustain: It occurred to me that the “history” behind these scenarios in 2060 might well lead the society members to be particularly concerned about outsiders and/or “new” ideas. In the Begin scenario, the trauma of a near total collapse might lead to a relatively conservative point of view with respect to outside people or ideas. Even the Sustain scenario follows a crisis so that new ideas might be frowned upon or substantially scrutinized for “dangerous” elements. The “discipline” of this scenario might also extend to top-down decisions about permitted verses nonpermitted ideas. In both cases, I wondered if this might get reflected in the future curriculum and even the physical environment of the campus.

Grow: The corporation dominance of this scenario should really be adjusted so that the focus is really on entrepreneurial activity. I wanted to note that one should be careful about starting the analytical story from the goals of business. An economist would argue that, at least in a competitive (multisupplier) environment, businesses will be focused on trying to meet perceived consumer desires. How well businesses
perceive those desires and react to them, and whether fine distinctions can be made between individual consumer desires in a way that is profitable, would be important for characterizing the “desirability” of this future.

Transform: My first reaction to this scenario was that it was not at all clear if there was any need for a physical university in this future. In a real sense, this observation may point out the limitation of connecting futures analysis to architecture (or, in other contexts, other disciplines): If technology makes a particular space unnecessary, then there is not much that architects can contribute to this scenario. This problem may apply to linking futures with other fields as well—there may be limitations defined by the subject matter of those fields.

I enjoyed seeing this real application of futures studies methods, and I found it quite stimulating.

Conclusion

A major purpose of our project is to develop the knowledge and expertise at the University of Hawaii at Manoa to become a major world resource for people thinking and planning the futures of higher education anywhere in the world. We believe that we are well on the way towards that goal and would most sincerely welcome comments and cooperation from others who share our interests.

References

Note: This list of references is of sources consulted and used in preparation of the Hawaii 2050 and 2060 projects described above. It has not been updated to reflect newer sources of which we are also aware as we continue our work.


Dator, J. (1999). UH can be good, but not great. *Honolulu Star-Bulletin*


Appendix (Further Reading)

**Architecture**


**Futures Studies**


**Alternative Futures Approach**


**Images of Continued Growth Futures**


Schuster.


**Images of Collapse Futures**


Rees, Martin (2003). *Our final hour: A scientist’s warning: How terror, error, and
environmental disaster threaten humankind's future in this century--on Earth and beyond.


Images of Disciplined Futures


**Images of Transformational Futures**


Technology and Social Change


History and Present of Higher Education


**Hawaii and the University of Hawaii**

Hawaiʻinuiakea, School of Hawaiian Knowledge, University of Hawaii at Manoa


Stannard, D. E. (1989). *Before the horror: The population of Hawaii before the eve of Western contact*. Honolulu, HI: Social Science Research Institute, University of Hawaii.

**Images of the Futures of Higher Education**

*Continued Growth*


Symonds, W. C. Cash-Cow Universities [about the University of Phoenix]. Retrieved from http://www.businessweek.com/magazine/content/03_46/b3858102_mz021.htm


*Collapse*


*Disciplined*


*Indigenous knowledge as a discipline image*


Goodyear-Ka'opua, N. (2009). Rebuilding the ‘auwai: Connecting ecology, economy and
education in Hawaiian schools *Alternative*, 5 (2), 47-77.


**Transformational**


Young, J. (June 20, 2008) Short and sweet: Technology shrinks the lecture. http://chronicle.com/free/v54/i41/1a00901.htm