Affording and Quality-Assuring Educational Attainment
The Economic Governance of Educational Attainment

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Greg Mortenson's "Three Cups of Tea" compellingly documents the core human drive to learn and to learn together, even at the geopolitical frontiers of modernity. The human impulse to learn empowers both the philosophy that all people are "created equal" and the burgeoning belief that equitably and affordably scaling tertiary educational attainment to a larger proportion of the population is critical to humanity's future – and possible.

Young moderns also enjoy learning, especially learning together informally in the digital "cloud" of social networking "apps," such as Facebook, Twitter, and YouTube. Their digitally tethered social networks have coalesced into a free self-service, collaborative medium for "knowing" and communicating. They accordingly wonder why formal education is so pricey, inflexible, and "slow." Their digital personae reflect Marshall McLuhan's pithy observation that "those who make a distinction between education and entertainment don't know the first thing about either." Just as entertainment must be *engaging* to be effective, formal learning increasingly will have to be joined at the hip with the flexibility and immediacy of *engaging* digitally with friends, mentors, and the interactive artifacts of modern media. If the "medium is the message," then cloud collaboration has become the message.

Today's education enterprise, alas, is not a digitally tethered network of active and interacting learning communities. It is a patchwork of gated learning communities, each at times insular in its traditions and its aspirations to be best in its peer class and, hence, seemingly indifferent to the roiling world outside. Indeed, some educators appear to regard education reformers as "barbarians at the gate" bellowing for un-gated credit mobility and other forms of educational integration and "interoperability" aimed at returning greater value at lower cost and lower risk to education's external "investors" – students, families, donors, employers, governments, and others. Education and its external investors need to harmonize their commitments to a common future that depends on improving educational attainment.

Yes, "harmonize" has a blue-sky undertone. However, Kris Kristofferson's insightful lyric that "freedom's just another word for nothin' left to lose" speaks to the perils that arise when rights and responsibilities are not in balance. Try therefore to imagine how existing strategies for managing and improving educational attainment in various gated sectors of the modern educational patchwork might be stitched together into an integrated quilt of flexible, scalable, affordable educational experiences bearing the various parties' unified imprimatur of quality assurance – "learning assurance." Imagine an "unbundled" education enterprise in which:

- Students (initially through their guardians) earn and renew government-funded promissory education grants, perhaps need-based, by periodically selecting (from independent non-governmental assessment providers) and completing assessments of core communication fluencies and critical thinking skills at fitting levels of learning readiness.

- Education providers voluntarily report a few common accountability indicators of educational attainment within selected peer and geopolitical groupings.
- Governments allow students to spend their earned grants only with the education providers voluntarily complying with the above educational attainment accountability protocols.

The "hat trick" for such a tri-partite compact of mutually beneficial interdependencies lies in its economic governance model. Cited in her 2009 Nobel Prize in Economics, Elinor Ostrom's "analysis of economic governance, especially the commons" suggested to this author that his first approach in "Waste Not the Learning Productivity Crisis" to balancing economic governance among all of education's stakeholders was on target. Like a river flowing through multiple geopolitical jurisdictions and bounded by property owners with competing interests, the path to educational attainment should be governed by no one government or other education-related interest. The "Learning Assurance Commons" (LAC) is described herein as an economic governance collaboration for securing the greatest common economic and individual good of all: affordably educating humanity for its own sake and for the sake of the planet.

The design goal for the LAC will be to create enabling leverage for the multi-party compact outlined above and to provide a trust mechanism for its growth and sustainability. The LAC will collaboratively identify and manage *non-technical* "interoperability" protocols for tracking progress in educational attainment around the world, while also relying on extant *technical* interoperability standards for education's software applications, digital resource sharing, and data exchanges to help improve upon and account for education's productivity. Technical interoperability enables digital connections within and among disparate learning communities and their apps and data. Non-technical interoperability will encourage education providers and their external investors to embrace and account for the scale, flexibility, pace, and affordable price of educational attainment at a time when, acting alone, no one education provider, government, or other education investor can catalyze and attract participation in such a collective macro feat.

The most powerful leverage for attracting seed participation in the LAC would be government interest in funding students (through *earned* grants). Start-up discussions in any micro or macro context, no doubt, would include such considerations as student financial need, part-grant/part-loan possibilities, workforce-based loan forgiveness possibilities, regional-versus-national interests, and so on.

In return for government establishing student-earned grants as the keystone currency of the educational realm, participating students and the education providers enrolling them would honor flexible protocols for quality-assuring educational attainment and making it affordable as both an individual and common good. Such a compact could also stabilize the government funding available to education providers – to reciprocate for their commitments to minimally invasive accountability protocols. An actionable plan is summarized herein – based on a "learning productivity agenda" for accounting for educational attainment. The plan and the learning productivity agenda were first described in the afore-cited paper.

The "Brains Race"

Failure to educate is a ticking time bomb in the human condition. In 2008 in a "schools-and-skills" opinion piece and a speech to an education association in the U.S., the New York Times' David Brooks cited the high correlation between deficiencies in educational attainment and humanity's most pressing socioeconomic problems. Intellectual capital has never been more pivotal, and Brooks' "educated class" must proactively increase its own ranks within the adult population. Indeed, modern governments some time ago fired the starting gun in a "brains race" that is now at full stride worldwide.

Each government plans to educate more of its people more effectively and more efficiently to advanced levels of learning in order to assure environmental, economic, and civic security within its geopolitical jurisdiction. Such security in any one jurisdiction, however, is intertwined with the "borderless" co-dependencies at work among and within each of the global ecosystem, economy, and equality (of opportunity) – the "3-E" macro challenges to the sustainability of civilization. The brains race must become less a competitive sprint among nations than a marathon for minds in which all nations possess the will and speed to run together toward the elusive greatest common good of all: a socioeconomically stable and environmentally sustainable civilization.

A fourth macro challenge, educational attainment, is stressing the collective financial resources of students, families, and governments, in part because of education's gated insular traditions and non-scalable delivery models. Today's patchwork of educational opportunities, even within a single jurisdiction, compromises the tacit premise of the brains race: that educational attainment can be scaled to increasing proportions of the population by measurably improving affordability, flexibility, interoperability (mobility), and outcomes – *all within current service and revenue models*.

The Zen of Change versus Order

Ogden Nash quipped years ago that "progress is OK, but there's been entirely too much of it recently." He must not have been thinking about education. Indeed, educational stasis is one reason that Nash's insight may prove to be toxic for humankind, as people, organizations, and governments struggle with progress that is outstripping the human capacity for change.

Alfred North Whitehead refined Nash's insight with the "Zenish" observation that "progress requires bringing order where there is change and change where there is order." In Whitehead's terms, education's mission is to improve the human condition by accelerating progress through research and advanced learning, while simultaneously bringing order to the resulting disruptions through the civilizing effects and equal-opportunity impacts of general education. To do so at the scale implied by the brains race, education should bring change to its insular order in order to civilize progress gone wild.

Progress Gone Wild

Progress in science, technology and engineering has been accelerating exponentially while interconnecting everything and everyone. The resulting co-dependencies and their complexities typify globalization and stymie common-good collaborations among governments and the organizations and citizens they govern. Paralysis within traditional governance and funding processes is common in the face of obvious needs for collaboration around the 3-E common-good challenges.

The precariously ill-defined "deal" from the 2009 U.N. Climate Change Conference in Copenhagen exemplifies the near-paralysis that often arises when governments attempt to collaborate for an obvious, but complex universal good. The recent bailout in the U.S. of big banks and other large corporations deemed too complex to unwind into orderly bankruptcy demonstrates how privatization can run amuck in one nation and imperil the global economy connecting all nations – an example of interconnectedness begetting complexity at a volatile extreme. Another U.S. example was the acrimonious stand-off in deciding whether health care should be a universal right assured by some level of government funding or an individual responsibility fulfilled primarily through complicated health-care contracts purchased by individuals and employers from private insurance providers.

The above examples reveal that securing even the most obvious common good these days is stressing governments, markets, and traditional governance mechanisms, while leaving the sustainability of civilization hanging in the balance.

Progress Not Gone Wild

Educational progress is stunted at a time when more education for more people is the best hope for taming progress gone wild. Higher education's revenue model in the U.S., for example, remains rooted in the credit hour attempted, which is an input to the educational process, not an outcome of it and certainly not a good indicator of educational attainment. There are few incentives to achieve the scale of success implied by the brains race.

Education's external investors now value trusted, measurable, student-success learning outcomes more than input-funded educational opportunities. Yet, education is organized and funded on an education-opportunity model, which gives little attention to assuring at brains-race scale the affordability, flexibility, measurable efficacy, and interoperability of organized learning. Policy makers and other education reformers accordingly believe education to be too important to leave solely to educators.

The Perils of Collusion and Insularity

An education-opportunity "business model" persists in U.S. education, in part, because of a "thousand points of 'no'" – a humorous proxy phrase for the prevailing decision-making collaboration between education executives and tenured or unionized faculties. This collegial management paralysis is inaptly called "shared governance." It is a difficult-to-rationalize historical corollary of tenure, which itself is justifiably granted to protect unfettered scholarship and knowledge dissemination (and the institutions that foster them) from ideological assault. Developing strategies to meet mission goals should be a consensus-seeking process at all levels of education, but governance and mission goals are *a priori* the responsibility of governing boards. Internal consensus building is important, but should focus less on deciding education's obligations and more on fulfilling publicly-decided obligations in ways that continuously improve the success of learners and that scale affordably for education's external investors to new levels of educational attainment.

Shared governance gone wild may lead to unintended consequences that have parallels in the history of collusion between management and union at General Motors. Collusion within GM provided comfortable salaries and benefits to management and union employees but led to few product

innovations during the years when, for example, Toyota was redesigning business practices to improve products, productivity, and responsiveness to external forces (such as increasing oil prices and changing economic and environmental conditions). Toyota developed its innovative Prius hybrid technology and expanded its offerings in the global market, from the mass-consumer segment to the prestige segment (via Lexus). Insularly focused with cruise control fully engaged, GM meanwhile coasted along at high speed only to collide with bankruptcy in 2009. GM's cozy relationships with the union and the U.S. Congress instantly became adversarial, and its former political benefactors are now at the company's steering wheel after 2009's major collusion-driven collision shattered the gated GM community.

Management and union at GM ignored the thin line between collaboration and collusion by together protecting a shared-comfort status quo, rather than jointly risking a trust-based progressive transformation to meet the needs of investors and customers and, therefore, also GM's management and union. GM's business and cultural values have been, as my colleague Ron Lang would put it, inside-out, rather than outside-in.

Toyota ironically appears to have slipped recently into inside-out behavioral patterns by accelerating the velocity (pun intended) of its admirably earned market share increases at the apparent expense of its outside-in continuous quality improvement processes called *kaizen* in Japanese. Toyota can't afford to regard customers, governments, the media, and competitors as "barbarians at the gate," who appeared there only to batter its reputation and future prospects. Toyota needs to revert to its outside-in culture to tame progress gone wild.

Sustainable Vision: Best-for-the-World, Not Best-in-the-World, Education

La Roche College President Candace Introcaso is an outside-in leader. She encourages her colleagues to envision their college becoming **best for** the world, rather than **best in** the world. She urges them to think and act from the outside in, rather than from the inside out, and thereby avoid the risk of a GM-like collusional collision with the policy makers who deem higher education too important to be left to the vagaries of shared governance gone wild. Best-for calls to action bring to mind U.S. President John F. Kennedy's exhortation: "Ask not what your country can do for you – ask what you can do for your country." Best-for thinking can disrupt a culture of stasis to the mutual benefit of its various guardians.

Education will become best for the world only by opening its gated, inside-out focus on educational opportunity to offer and account for reasonable assurances that it is the anchor solution to the world's 3-E challenges – rather than one of the world's 4-E challenges. A starting point is to ask from an outside-in perspective how to refine micro and macro agendas in the brains race in order to increase the rate and scale of tertiary educational attainment in the population. Taken together, increasing credential-attainment goals and the demographics of socioeconomic diversity imply that tertiary education will have to serve an increasing proportion of first-generation, underprepared, needy students. This implication introduces other academic and financial factors into the brains race agenda. These factors are described in the afore-cited monograph and can be incorporated into a useful definition of "learning productivity" – a phrase first introduced in a 1993 report by then SUNY Chancellor Bruce Johnstone.

Tracking Educational Attainment as Learning Productivity

That the goal of education is (or should be) certified learning is the outside-in justification for co-opting Johnstone's phrase "learning productivity," rather than relying on "educational productivity" or simply "productivity," both of which might be interpreted within education to refer only to internal business and support functions and their unit costs. A basic outside-in formulated list of four education goals is offered below as a "learning productivity agenda" that would be ***best for*** the world as the macro goal of the brains race. All four goals can also be adapted to any micro level of education. Any adaptation, however, will depend on the meaning of "credential" as a proxy for educational attainment. Although "credential" is not universally well-defined in education, it surely can be defined and confirmed within micro governmental jurisdictions and various sectors or peer groupings of the education enterprise.

The purpose of a "learning productivity" agenda, as outlined below, is to elaborate the broadest goal of the educational attainment agenda (Goal 1) with three additional goals. Two (Goals 2 and 3) offer proxy metrics for addressing the rate and expense of educational attainment provided by education providers. Goal 4 then asks the credential-seeking student and the student's various education providers to participate in periodic learning assessment protocols for tracking the basic communication and critical thinking skills that are at the core of an educated society.

Conditioned by the above remarks and caveats, the ***learning productivity agenda*** seeks to advance and track four measurable educational attainment goals *simultaneously*:

1. *Increase the proportion of tertiary credential holders in the adult population in order to improve environmental, economic, and civic security within each and among all geopolitical jurisdictions of the modern world – the 3-E macro challenges to the sustainability of civilization.*

   This educational attainment goal is driving the brains race at the macro level. Many national and regional governments, along with various educational systems, already have measurable objectives for this goal. In the U.S., for example, President Obama envisions increasing the percentage of the adult population (over 24 years of age) holding a tertiary credential from its current level of approximately 40 percent to 60 percent by 2020, an ambitious 50 percent increase over the next 10 years. At any level of government, similar goals may be further segmented or conditioned by market demand (for nurses, teachers, bio-technicians, and so on) and future economic development goals involving STEM and other research-intensive areas of the knowledge economy. At a micro level, an individual educational institution, tertiary or secondary, may be obliged by mission, or otherwise choose, to set and track measurable objectives for this goal.

2. *Increase credential attainment rates by increasing annual ratios of credentials granted to total student headcount.*

   This is a micro- and macro-level learner-success goal that contributes to, but does not substitute for Goal 1. The denominator of total headcount enrollment is meaningful in almost all educational contexts, from secondary to tertiary and among almost all systems and institutions. The headcount denominator could be replaced by variations on how to count students. Such variations could depend on the interests of peer groupings (two-

versus four-year institutions, for example) or on ways of counting full-time students. Such refinements, however, may seek too much order where change is needed – in order to move from funding the credit hour and FTE student to funding an outcome goal, such as a credential reflecting a quality-assured learning experience.

3. *Reduce per-credential delivery costs by decreasing the annual ratio of total "Education and Related" expenses to total credentials granted*.

   This is an operating-cost factor to inform the pursuit of Goals 1 and 2 at micro and macro scale. "Education and Related" expenses have been reasonably well defined, at least in the U.S. as derived from Federal IPEDS data. E&R removes from annual operating expenses a) those that generate "auxiliary" income (from bookstores, food services, and other "profit-and-loss" centers), and b) the expense of conducting sponsored research and providing community services. E&R expenses are thus meant to approximate as accurately as possible the annual expense of educating enrolled students. Governmental and educational sector variations on how to "count" the annual expense of educating enrolled students may be inevitable, but at least the E&R concept can provide a good start in the U.S. tertiary sector, thanks to the thoughtful work of the Delta Cost Project.

4. *Validate and account for learning and learning readiness by selectively using independent, constructivist, normative assessments to account, not only for professional and workforce learning where external outcome assessments or certifications are already available, but also for the articulation between and effectiveness of secondary and tertiary education as indicated by assessments administered periodically to gauge the "readiness" of the student for the next stage of learning basic fluencies, critical thinking skills, and optional but core subject matter – the general education outcomes commonly proclaimed by education providers to be at the heart of further learning and productive citizenship.*

   Goal 4 envisions an independently assessed quality-assurance process addressing learning readiness across the longitudinal span of educational maturity. Degree mills, after all, can readily report success on Goals 1-3. Goal 4 provides a trust factor that is inherent in assessments developed, scored, and normed independent of any education provider or government. Goal 4 therefore is not intended to imply the need for a national or Federal (in U.S. terms) suite of assessments. Nor does Goal 4 imply a one-size-fits-all lowest-common-denominator assessment. The goal poses a cultural challenge to education but, nevertheless, is inherently sensible from an outside-in perspective. Goal 4 and several practical ways to achieve it are discussed at length in the aforementioned monograph. Primary foci are:

   - a private, secure, longitudinal record of an individual student's readiness to advance to a next level of learning as assessed by independent, constructivist, normative assessments available to and administered by the student's education provider of the moment or administered independent of any provider, and
   - the research enabled through concordance among the above assessments (of common purpose) by longitudinally aggregating the resulting assessment data into privacy-secured "student-as-unit" records.

The learning productivity agenda captures the need to increase educational attainment by suggesting practical education-provider accountability metrics for tracking progress (towards Goals 1-3), along with actionable student learning assessment protocols for independently verifying that students are prepared to learn at the next longitudinal stage of learning (Goal 4). Neither the pool of metrics nor the pool of assessments involved can be or should be dictated by government or any single authoritative source. Instead, the education enterprise and its external investors should study best practices for the economic governance of "commons" and then ask whether and how those practices might be adapted to the noble commons of educational attainment at all macro and micro levels.

Nobel Guidelines for Governing Commons

In awarding a 2009 Nobel Prize in Economics to Elinor Ostrom of Indiana University, the Royal Swedish Academy of Sciences applauded "her analysis of economic governance, especially the commons," and also announced that:

> *Elinor Ostrom has challenged the conventional wisdom that common property is poorly managed and should be either regulated by central authorities or privatized. … She observes that resource users frequently develop sophisticated mechanisms for decision-making and rule enforcement to handle conflicts of interest, and she characterizes the rules that promote successful outcomes.*

Though educational attainment is not "common property" in the form of the sundry natural resources studied by Ostrom, education is an overwhelmingly important common good. Moreover, today's complex patchwork of education providers, governments, and other external education investors would mutually benefit from minimally invasive education interoperability protocols designed and governed as a commons to assure learning quality and collaboration in support of the greatest commons of all: the future of humanity. Education must become a reliable, affordable, integral part of any toolkit for addressing common-good goals, rather than a contributor to the growing list of challenges to the common good. Education will otherwise remain as vexing as the other three 4-E challenges.

Cited in the introduction were "extant *technical* interoperability standards for education's software applications, digital resource sharing, and data exchanges to help improve upon and account for education's productivity." Such technical standards are currently developed and maintained by IMS (the IMS Global Learning Consortium and its local affiliates, such as IMS Korea), PESC (the Postsecondary Electronic Standards Council), and SIFA (the SIF Association). They should consider consolidating their efforts for the common good of education, for they are certainly critical to the technical interoperability required to support the non-technical interoperability advocated here. The common focus should be on educational attainment, not on the segmentation of either the education enterprise or its technical interoperability standards. In any case, these three organizations have taken their governance cues from other successful organizations that address the need for broad technical interoperability as a commons.

Consider, for example, the nature and role of the Internet Engineering Task Force and the World Wide Web Consortium. Each works to establish consensus interoperability standards and collaborative protocols for advancing them – IETF for the network-of-networks transport medium known globally as the Internet, and W3C for the Web's presentation/application/content/data exchange/transaction languages and protocols. Each is a governance-oriented organization designed to represent and enable

the fair-play participation of various proprietary interests (profit, nonprofit, and governmental) in a common-good working agenda that by its nature should not be dictated or otherwise controlled by any one interest. Each is controlled neither by government nor by business. Both are market makers, not competitors in the markets they help make. Each relies on informed expertise for demonstrations of interoperability and interoperability conformance work. Each earns trust through transparent, verifiable successes and through its own operations, effectiveness, and protocols for ensuring fair play among all interested parties – a model that largely conforms to Ostrom's guidelines, though she makes no claim that her findings apply outside the domain of natural resources. The IETF, W3C, the three education-focused technical interoperability groups, and some ideas borrowed from Ostrom suggest the need for and shape of a commons for non-technical educational interoperability in pursuit of educational attainment – a "learning assurance commons," as a macro commons with similarly-intentioned affiliated micro commons reflecting various governmental and peer-group priorities.

The Learning Assurance Commons

The *Learning Assurance Commons* cited in the introduction would be an independent economic governance mechanism representing all of education's participants in a collaborative effort to embrace and track educational attainment through the learning productivity agenda. The LAC would support the brains race, not by favoring a "home team," but through collaboration around two flexible accountability mechanisms for tracking micro and macro progress on the goals of the learning productivity agenda, while harmonizing the rights and responsibilities of today's myriad of education providers with those of their diverse external investors. The LAC would collaboratively identify and maintain a manageable pool of common (but not one-size-fits-all)

1. *education-provider performance metrics* (for tracking Goals 1-3 of the learning productivity agenda), and
2. *longitudinal student learning-assessment interoperability protocols* (for meeting Goal 4 of the learning productivity agenda by selectively decoupling testing from teaching and, thus, also from the education provider employing the teacher).

Education-Provider Performance Metrics

Goals 1-3 of the learning productivity agenda appear to be non-controversial in the U.S. and elsewhere, except when interpreted to imply one-size-fits-all metrics for Goals 2 and 3 – an unintended interpretation. Institutions and systems find themselves in a variety of governmental, mission, and governance circumstances. Alternative metrics behind Goals 2 and 3 accordingly could be identified and aggregated into two folders from which peer groups reflecting common circumstances could select metrics to provide for peer-comparative analyses. In the U.S., for example, tertiary presidential associations are in various stages of separately facilitating such a peer-group concept – the American Association of Community Colleges (AACC) for publicly funded two-year colleges, the American Association of State Colleges and Universities (AASCU) and the Association of Public and Land-grant Universities (APLU, which led the accountability movement) for publicly funded four-year universities, and the Council of Independent Colleges (CIC) and the National Association of Independent Colleges and Universities (NAICU) for independent nonprofit four-year institutions. The LAC could rely on and bring

together these and other such "affiliated" micro accountability efforts and focus them on the learning productivity agenda as a means to foster and account for micro and macro educational attainment.

Concordance among Assessments, Not Absolute Standards

Goal 4 of the learning productivity agenda is controversial in the U.S. and elsewhere. Deeply frightened by standards, the U.S. education enterprise has none. The well-intended Federal "no-child-left-behind" law permitted each state to develop or acquire its assessment of student performance. The process provided little or no basis for inter-state and inter-nation comparisons and, thus, spawned a lack of trust in the validity of the results. Forty-eight of the fifty states have nevertheless agreed on inter-state standards for learning competencies in reading and mathematics skills. Still, Ogden Nash's quip about progress can and should be adapted, at least in the U.S., to assert that "standard-setting is OK, but there's been entirely too much of it over the past 50 years – with little progress."

Standards are often invoked as a red herring to draw attention away from the need to assess and measure *common* learning – not *all* learning. ACT, College Board, Council for Aid to Education, Educational Testing Service, and other assessment providers cover content and basic skills representing core learning competencies proclaimed in common among most education providers, both in a horizontal and longitudinal sense. The College Board's Advanced Placement exams, for example, can be used to decouple testing and teaching and thereby provide for normative comparisons of learning competencies – a good idea for those interested in the validity of the learning outcomes claimed for high-enrollment intro-level tertiary courses. Students in the U.S., for instance, may take the AP Chemistry Exam whether or not they are enrolled in AP Chemistry courses. Upon examining the syllabus for AP chemistry courses or the items in the AP exam, a subject matter expert in chemistry would almost surely find that both course and exam covered at least 80 percent of the competencies that she would ascribe to an intro-level college chemistry course. Examining another assessment of intro-level college chemistry from a different assessment provider likely would lead to the same 80 percent result and to a reasonable assumption of concordance between the two exams – a concordance that could be used for intra-peer group and inter-geopolitical comparisons.

Goal 4 therefore focuses at all longitudinal levels, not on setting standards, but on validating learning outcomes around default standards that are "good enough" because they correspond to broadly accepted, independent assessments for which there are, or could be, concordance tables within like categories. Education providers could select a mission appropriate and learning-maturity appropriate suite of assessments from a collection of LAC-identified assessments that have been developed independent of governmental and institutional control to test basic fluencies, critical thinking skills, and (optionally) common core subject matter, such as basic chemistry. The underlying assumption is that independent instruments purporting to assess learning at a particular level of learning maturity in a specific but common skills or subject area will overlap significantly in the competencies assessed. The overlap constitutes default standards that permit cross-assessment comparisons through concordance among assessment suites of common purpose. Goal 4 thereby addresses some of education's most vexing academic interoperability issues – in the U.S., for example, articulating secondary college-preparatory curricula to college admissions and placement, and also transferring course credit from one

education provider to another, thereby lowering a "gated" barrier to learning mobility and a duplicative cost to students and governments. Assessment providers would have a seat at the LAC table, at least those willing to demonstrate their independence from governments and education providers.

Earned Government Grants: Leverage For and From the LAC

At the macro level of a nation or an inter-nation compact, such as the European Union, pressures to improve educational attainment may lead to increased regulation via policy mandates – the Bologna Accords, for example – reflecting the brains race and some parts of its learning productivity agenda. The LAC is a vehicle for obviating such mandates through voluntary participation in identifying and maintaining the two suites of accountability protocols described above. Even with such potential leverage, the LAC is unlikely to be created spontaneously. Even at the micro extreme of a single U.S. independent college, where the learning productivity agenda could be pursued autonomously, the LAC protocols are unlikely to be adopted – owing to Goal 4 and, to a lesser extent, Goal 3. Small nations and some systems or states in the U.S. nevertheless might be able to establish a micro version of the LAC to help pursue their education attainment and learning productivity goals. A viable LAC is most likely to form around, or to form a number of LAC alliances at, the various micro levels of the "possible."

In the U.S., for example, re-imagining how the Federal and state governments might fund education in the presence of the LAC could provide a leap forward. Governments, after all, are currently subsidizing education. Some are doing so more predictably or generously than others, but all are increasingly demanding more accountability for educational outcomes along the lines identified in the LAC learning productivity protocols. Government funding could provide leverage for, and derive leverage from, the Learning Assurance Commons in order to:

- Improve readiness for and commitment to educational attainment via the leverage of predictable government promissory grants made directly to learners who earn them (beyond some initial level of student maturity) via the LAC's pool of independent longitudinal assessments of readiness to learn at the next stage.
- Require those education providers that accept learners' grants to:
    - Account publicly for the LAC's education-provider metrics in a self-selecting peer context.
    - Help ensure that enrolled learners participate on schedule in periodic "readiness-to-learn-at-the-next-stage" independent assessments from the LAC pool of such assessments. This monitoring activity should result in a three-way linkage of education provider-to student-to independent assessment for aggregate research purposes.

The devil is in the details of the above compact, yet it is worthy of debate owing to its possible benefits.

Possible Benefits of Combining LAC Protocols with Earned Grants

1. **Encourage parents and their children to embrace effective educational philosophies and practices for life.** The LAC would be a vehicle for promoting to parents (eventually to their children) the bright socio-economic implications of starting to prepare from birth for success at the tertiary level and beyond – and the painful implications of failing to do so. Imagine the impact in the U.S., for

example, of a post-natal message from the President's Office that used family IRS data to estimate the future value of a child's promissory grant in educational and economic terms.

2. **Bring more focus to how central government funds are allocated to education.** U.S. Federal funding for tertiary education, for example, could be reorganized to:

   a. Make earned promissory grants – perhaps based Pell-like on need, perhaps not – as the financial keystone in Federal support for tertiary, and perhaps also for P-12, education. In neither case is a "bright-line" percentile pass-fail score implied by the LAC's periodic student-learning assessment protocols. An unbundled education market would reveal each education provider's organizational and student performance profiles under the LAC protocols and would permit each student to share selectively with others (or not) authenticated performance metrics on LAC assessments and education providers' various milestones for success.

   b. Bankroll the LAC's longitudinal assessment process designed to decouple testing from teaching (and, therefore, from the student's education provider of the moment) in order to assess the student's habits of mind, basic fluencies, and critical thinking skills – and also to assess on an optional basis some of the subject matter that is central to both the tertiary-preparatory curriculum and the tertiary introductory-level curriculum.

3. **Bring more stability and focus to how regional funds are allocated to education.** In return for in-state education providers' access to in-state and out-of-state students' Federal grants, states and communities in the U.S. could be required to allocate predictable per-learner supplementary grants to their in-state student populations, perhaps based on combinations of factors important in specific state or regional contexts – economic development, professional and workforce needs, demographic diversity profiles, need-versus-merit grants, and so on.

4. **"Unbundle" the education marketplace through compliance with LAC non-technical (and technical) interoperability protocols.** The software-as-a-service, online self-service expression of this open and mobile education marketplace will be called the "***learning cloud.***"

5. **Provide through the LAC-compliant learning cloud as many self-service (online asynchronous) learning opportunities and resources as possible, as conveniently and flexibly as possible, and as free of fee to the learner (family) as possible.** Though the learning cloud is part of the larger, roiling, commercial and non-commercial education marketplace, it can still amplify the measurable effectiveness of the core (common) educational preparedness investments of governments, education providers, companies, donors, and others through the LAC accountability protocols and dedication to non-technical interoperability. It can:

   a. Disseminate information to learners and families about the compelling individual and societal advantages of education and about the commitments of education providers and governments under the LAC compact to make education both an individual right and responsibility.

   b. Provide placeholders for activating the free (subsidized) privacy-secured participation of the learner in the LAC's longitudinal learning assessment protocols in order to earn and renew a government education grant.

c. Provide privacy-secured life-long access to an individually customizable learning portfolio that is under the control of the learner (initially, the learner's guardian), making it possible at learner discretion to share securely encrypted access to LAC common assessment results and other learning results, including those that have been authenticated by an LAC-participating education or assessment provider.

d. Provide (at all levels of learning maturity) core, common curriculum content in engaging, interactive formats, along with related practice assessments, LAC-compliant independent competency-based assessments, pedagogical tools, and advice for use by learners and instructors.

6. **Encourage participating education providers to compete in terms that are learner- and learning-centric.** The LAC compact would incent learners to take more responsibility for their own success and, through the LAC protocols for provider outcome reporting, better understand their options for choosing among education providers and assessment providers.

7. **Permit access by participating governments, research organizations, and education providers to the privacy-secured longitudinal results of the LAC student learning assessment process and the provider credentialing results for every participating learner.** Educational data would persist among the parties involved in any one learning transaction, but students would control external access to their individual data. In return for their grants, however, they would transfer the right to their participating education providers and to their participating governments to identify, for statistical cross tabulation purposes only, their individual achievements – not their individual identities – from their multiple education providers/credentialers and from all LAC assessment results.

A learning portfolio function should be among the functions in the learner's life-long learning environment envisioned immediately above in 5.c. Most of today's "e-portfolio applications," however, are licensed by education providers in a premise-based model for the use of their students, instructors, administrators, and other stakeholders. Such use of "e-portfolio" software tends to be, *a priori*, education provider-centric. In contrast, new cloud-based environments can provide portfolio functions controlled separately but simultaneously, for example, by students, instructors, and institutions – via integrated but distinct and distinctly controlled "containers" for data elements that should "belong" to the student as evidence of learning achievements but, when claimed by the student to be validated evidence of learning, should require authentication from the databases of an education or assessment provider. Such a model can support the mobility of teachers, learners, and their learning and research credentials. It can also support reasonable requests by governments for longitudinal data that tracks learners' progress in the aggregate through a lifetime of learning. The New York Times' Epsilen, for example, is educational "cloudware" that includes a learning portfolio function potentially as learner centric, instructor centric, and government-research centric, as it is education-provider centric. It, or a similar cloud-based application, could become as important to tomorrow's students as are Facebook, Google, Twitter, and YouTube to today's students.

Any education provider and any government can pursue and track learning productivity in some form. The LAC, in contrast, could become not only a mechanism for comparatively tracking learning

productivity across various boundaries, but also a natural attraction point for collaborative efforts to increase learning productivity at a macro level in excess of what is possible at a micro level.

A Past but Prescient Nobel Insight into a "Flatter" Future

Writing for publication in 1937, Nobel Laureate in Economics (1991) Ronald Coase pointed a finger at "hidden transaction costs" in rationalizing why organizations were growing internally larger rather than externally sourcing or partnering for some functions that would be logical candidates for improving overall success while limiting growth in the employee base. With Coase's insight into external sourcing and partnering in mind, fast forward to today's world in which many education organizations remain bloated with vertical functions that do not intersect their core learning competencies of advancing and disseminating knowledge and credentialing student learning.

By reducing infrastructure, communication, and transaction costs, digital technologies have dramatically reduced the friction in external sourcing and partnering that accounted in earlier times for significant hidden costs. Coase's work and its present relevance for education thus provide an historical economic context for the compelling "flat-world" account from the New York Times' Thomas Friedman of how technology-enabled business-model innovations and productivity improvements have driven globalization and, with it, the global brains race for intellectual capital.

Strategies for Improving Learning Productivity

Tracking educational attainment through learning productivity indicators is pointless in the absence of strategies for improvement. Including Friedman's "flattening" strategy, there are three primary technology-enabled strategies for improving learning productivity as indicated through the metrics and assessment protocols of the LAC. These are explained in detail in the afore-cited monograph and are outlined here more briefly for completeness. Combining these strategies can be powerful, and applying them at the macro level of education systems and governments can increase educational attainment in terms of its flexibility, scale, speed, and costs.

__The External Sourcing and Partnering Strategy for "Flattening" Service Models__: Focus internally on unique academic program strengths, while externally sourcing or partnering for selected other functions in order to improve quality, nimbleness, and capacity while simultaneously reducing unit costs (per-student costs, for example).

Friedman identifies eight "flattening forces" that derive from using technology to redesign organizational structures, service processes, and business models. His labels for these productivity-increasing, technology-enabled external sourcing and partnering models are listed below, along with examples to illustrate the tertiary-education possibilities:

- *Out-sourcing* – as in externally sourcing a 365 x 24 technical help desk or online "coaching" service for all students, or cloud-sourcing student email from Google.

- *In-sourcing* – as in externally sourcing a cabinet-level leader to be responsible for internal planning and decision-making processes in a key functional area requiring state-of-the-art knowledge and experience, such as enrollment management or central ICT where an

externally sourced expert CIO can serve as a cabinet member and lead and manage central ICT staffing and service delivery

- *Work-flowing* – as in using ICT to redesign, streamline, and track, for example, the work-flow processes involved in institutional performance reporting and analytics, enrollment management, institutional grant proposal and management, or financial aid.

- *Supply-chaining* – as in externally sourcing marketing and student recruitment.

- *Open-sourcing* – as in participating in an open-learning collaborative, or in joining a community-sourced application software collaborative while also externally sourcing the application's ongoing support.

- *Off-shoring* – as in contracting for the online delivery via "off-shore" adjuncts of teaching or tutoring services in baseline mathematics and other STEM introductory content areas.

- *In-forming* – as in encouraging the use of search engines for research and in externally sourcing online informational and learning resources (content, courses, programs, benchmarking data, etc.) from external partners for the benefit of the institution and its students.

- *Steroid-ing* – as in migrating as many institutional services and alerts as possible to the student-owned mobile devices that, *à la* McLuhan's "medium is the message," have become part of the latest generation's communication and behavioral modalities.

The Flex Strategy for Redesigning Programs and Services: *Optimize high-tech online asynchronous self-service learning in credentialing programs and learner-support services, while also providing as-needed, individualized high-touch expert student-service and learning assistance, whether face-to-face or through toll-free or Internet-mediated centers.*

Many would refer to this strategy in terms of "online" or "distance" programs and services. Others might find the terms "blended" or "hybrid" implied by the description of the strategy. All of these familiar labels, however, are somewhat misleading. Distance certainly can be a barrier to access, but programs and services requiring inflexibly scheduled real-time human interactions are often a formidable barrier to access, even when distance is not.

Flex programs and services can not only increase the **convenience of access** to education, but also improve the **affordability of access** for learners by eliminating or reducing the expense of taking time off from a job or a family or from relocating or commuting on a regular basis to a campus. When applied to credential programs and their necessary student support services, the flex strategy succeeds by honoring three core premises: flexibility and convenience matter for students; market needs and preferences matter; and enrollments matter for most education providers.

The Course Redesign Strategy for the Curricular Commons: *Redesign selected high-enrollment courses for both measurably improved learning and reduced per-student costs – by following the course redesign strategies and models pioneered by the National Center for Academic Transformation (NCAT) and its client partners.*

"Curricular commons" refers to clusters of high-enrollment courses that are critical to the productivity of almost all tertiary (or secondary) education providers. The courses in such clusters are 1) taught *in common* (by almost all institutions), and 2) attract high enrollments because they are either required by a credentialing program or are popular electives within such a program. In U.S. tertiary education, such courses can include high-enrollment general education courses, developmental courses, introductory courses in accounting and marketing in the business curriculum, and similarly required courses in other popular professional or workforce majors such as nursing, journalism, education, and so on. Clusters of such courses present significant issues in terms of capacity, enrollment management, and operating expenses. These factors can diminish or enhance overall learning productivity

To identify and redesign "curricular commons" course clusters, proceed as follows:

1. Start with the relevant course catalog – i.e., the overall catalog or a more specific, high-enrollment program catalog) and list all courses in descending order of their enrollments (aggregated across all course sections).

2. Pause when the list's accumulating enrollment count first totals in the range of 35-50 percent of all enrollments.

3. Notice that the resulting list features a handful of courses – likely in the range of 20-30 courses, in the case of the overall course catalog. Such tertiary courses, for example, are taught in common in almost all tertiary programs across the U.S. and elsewhere.

4. Analyze and prioritize these courses for their possible impacts on student success. For example, identify courses with negative impact on retention and credentialing rates. Adjust the list to ensure that a significant subtotal of pertinent total enrollments is accounted for in the cluster of courses selected for redesign.

5. Use the technology-enabled strategies pioneered by the NCAT to redesign (with administrative and teacher/professor involvement) a single version of each of the highest priority courses. The purpose of each such redesign is a measurable improvement in learning outcomes accompanied by a reduction in per-enrollment expenses. Consider using an independently developed common final exam in each course – such as the aforementioned AP exams or similar exams. Whether or not such a final exam is factored into a final grade, it will provide a basis for benchmarking student performance.

6. After piloting and adjusting a new, single version of each course, replace all of its previous versions/sections with the new course.

Health Care All Over Again?

But for the grace of the recent preoccupation in the U.S. with the health-care brouhaha, there might have gone education more rapidly and deeply into a state of entropy that is already only a few marks shy of the chaos of health care. Now that health-care reform is a yet-to-mature reality in the U.S., might education reform become the next red hot priority?

Consider that the multi-investor implications of the word "affordability" would have jumped to the minds of most American readers, had the title of this paper, "Affording and Quality-Assuring Educational Attainment," instead been "Affording and Quality-Assuring Health Care." Like health care in the U.S., education must become more affordable to Federal and state governments, as well as more affordably and flexibly accessible to those directly served (needy and middle-class students, for example). Like health care, education needs to improve both technical and non-technical interoperability in order to share digital records and expensive technologies and infrastructure in the interest of portability and affordability (to all parties). Like health care professionals and their employers, education professionals and their employers deserve financial stability and fair play in return for transforming their academic and business models to focus on holistic results (educational attainment confirmed by high-level indicators of improved learning productivity), rather than for focusing on the revenue carrots inherent in fee-for-service models (such as revenues generated from credit hours attempted).

The analogy becomes more pertinent in the U.S. as the average indebtedness privately borne by needy college students continues to increase and, thus, to compromise the imperative for educational attainment in a population increasingly weighted by underprepared, needy students. The latter population significantly intersects the swelling ranks of those who can neither afford health care directly nor gain access through employer contracts with the insurance industry that has become the gating factor to care in the U.S. In the shift toward direct Federal lending to students in the U.S., the government as education lender may not be a perfect parallel to the private health-care insurer in the health care-to-education analogy. In parallel with the increasing percentage of Americans without access to health care, however, an increasing percentage of needy students is not enrolling in college or is leaving college with an unmanageable debt load – and too often without a credential

Health care's economic governance model in the U.S. diverges from Ostrom-like best practices, in large part because the insurance industry has a disproportionately controlling voice in the health-care economy. Pooling the resources of the many to mitigate individual risk is the seminal idea in insurance. The devil in the detail of insurance, however, is how the pool is economically governed. The hope inherent in the proposed LAC is that education and its external investors will engage in Ostrom-like thinking and collaboration before education finds itself haplessly engaged in a debate that takes on the bipolar nature of the U.S. health-care debate.

Conclusion

"Radical" or "naïve" are words that might be used by many to label the proposed LAC. So be it, yet persistent shortcomings in educational attainment in scale, affordability, and other dimensions beg for, as EDUCAUSE puts it, "uncommon thinking for the common good." Will Rogers was an uncommon thinker, but folksy communicator who quipped that, "you can be on the right track and still be run over." U.S. education was on an admirably correct track for many years, a track the expanded educational access to millions and helped create a nation of great wealth with a vast middle class. Like General Motors, U.S. education failed to realize over the last few decades that it was being slowly "run over" by its own insularity and resistance to change in the face of the "flattening" processes of globalization. Education, moreover, is now critical to the wealth of nations and, indeed, to the

sustainability of humanity and the planet. The time is at hand to switch education onto a new track. The new track must further extend access to tertiary education while increasing the scale, flexibility, and measurable quality of tertiary educational attainment in a way that is affordable and verifiable to the satisfaction not only of education providers, but also of education's external investors – students, families, donors, employers, and governments.

Waves of educational reform have periodically swept over public schools and colleges and universities in the U.S. only to recede in the face of the national inability to adapt and adopt at scale the promising pilot projects and best practices of the day. Today's attempts to shore up old models of teaching and learning with the latest "best practices" from inside education are accordingly not likely to succeed. The traditional education business model and the traditional inside-out approach to educational reform have been slowly falling under Will Rogers' track. The continuous, incremental improvement of existing educational practices missed the disruptive switch of the economy onto the track of globalization.

This article advocates for a national and global debate about how to switch education to a new track, one that will lead to where Greg Mortenson wants it to go and to where the latest modern generation is coming of age and the world's business increasingly is conducted – in the cloud. President Obama's campaign connected people and ideas with such ease and effect in the cloud that it surely heralds a "learning cloud" to come. The LAC is one possibility for speeding education into the learning cloud where interoperable technologies can help create interoperable educational processes to connect learners, expert mentors, and sharable learning resources as a means to improve educational attainment and make it affordable on a global basis.

A collaborative solution to the complex educational attainment challenge will require not just the wiser use of technology, but also an Ostrom-like commons to harmonize rights and responsibilities among education providers and their myriad external education investors. Indeed, the proposed LAC would ultimately become a global (macro), trusted, neutral entity designed in collaboration with its micro affiliates to "free" education providers from the blinders of academic insularity and also to "relieve" governments from the need to impose a patchwork of accountability regulations aptly deemed unduly intrusive and oppressive by education providers. With government participation in the form of earned education grants available to students and, through them, to participating education providers, the LAC's minimally invasive accountability protocols could make it attractive for education providers to:

- Report a few institutional metrics based on the learning productivity agenda for educational attainment in micro peer and governmental common groupings.

- Contribute to the creation and maintenance of a macro, but distributed (student-record) data warehouse for longitudinally tracking students' readiness-to-learn-at-the-next-level of educational achievement – a commons-based form of independent quality assurance of core educational preparedness based on concordance among assessments that are independent of both governments and education providers.

Any U.S. reader who has persisted to this stage of the argument no doubt recognizes that the LAC could also foster significant changes in the nation's education enterprise beyond those already described. For instance, if the Council on Higher Education Accreditation in the U.S. were to participate in the LAC and

encourage CHEA clients to adhere to the minimally invasive LAC summative accountability protocols, then accreditation, increasingly under fire for its in-house governance model, might validly and more readily be preserved as a useful, formative peer review process for institutional improvement. Consider also that the already blurred distinctions between nonprofit public, nonprofit independent, and profit education providers might be rendered meaningless by government-funded grants for students who earn them under the LAC fair-playing-field imprimatur.

A more sensitive, yet still rational, debate about how to use the leverage of government funding to promote educational attainment in the U.S. could focus on the Federal tax code that grants the taxpayer a deduction for a dependent child. Does child bearing and rearing secure the future of the nation, or would the future of the nation, humanity, and the planet be better secured by parents who commit to education from day one as the means to bequeath a brighter future to their children and their children's children? Eliminating the Federal and state tax deductions for children as dependents could go a long way towards funding the earned educational grants promoted here – and, thereby, the shared future.

In any case, the core goal of educational attainment – scaling tertiary attainment to a larger and larger proportion of the population – is critical, not only in the geopolitical terms of "brains-race" economic competitiveness, but also in the common-good terms of humanity's future. Educational attainment is therefore too important and too complex to be interpreted, refined, and monitored solely from the inside-out perspective that still governs the gated patchwork of education providers. Consider, for example, that scaling educational attainment is, for demographic reasons, all but impossible without increasing the proportion of credential holders who initially enrolled in tertiary education as underprepared, needy students. Inherent in that challenge is the issue of affordability for the increasing proportion of needy prospective tertiary enrollees. In the U.S., for example, governments are reducing education subsidies in response to the recession, and many institutions are expecting students to pay more in net tuition to cover the resulting shortfall in prevailing institutional per-student expense structures. Affordability is thus a multi-dimensional issue that is painting governments, education providers, and needy students and families into a corner.

The way out of the corner is not to bicker over scarce resources or to hope for better times, but to begin to collaborate now to create new, more productive education service and business models empowered by cloud technologies and the service redesign strategies previously outlined. That has been the point of putting the LAC at the center of an economic governance model that could shift government subsidies from institution-as-recipient to eligible-student-as-recipient as a means to "harmonize" the rights and responsibilities of the various stakeholders involved – education providers and their external investors of students, families, employers, donors, and governments.

The need for new economic governance models for the common good becomes more apparent almost daily. Consider how a muddled economic governance model for the Gulf of Mexico that favored the rights of powerful oil interests led recently to an environmental and economic crisis of growing proportions.

Not to disrupt education's current economic governance model is to leave many frustrations festering and scalable educational attainment at risk. Many governments find education unaccountable and its "business model" (based on credit hours attempted) overly costly. Many education providers believe government funding to be inadequate and unreliable. Many students and families find formal education unaffordable, inflexible, bafflingly inaccessible, "slow," and not in synch with the digital cloud in which young people learn what they learn and communicate with whom they communicate. An LAC-like action plan is surely worthy of discussion.

About the Author

Dr. William H. Graves earned a mathematics Ph.D. from Indiana University and proceeded to serve the University of North Carolina at Chapel Hill (UNC) for over 30 years – as a professor, dean for general education, interim vice chancellor for academic affairs, senior information technology officer, and founder of the Institute for Academic Technology (a UNC/IBM alliance). Now an emeritus professor at UNC, Graves is full-time senior vice president for academic strategy on the executive leadership team at SunGard Higher Education. He is also a member of the board of governors of Antioch University and the board of visitors of the School of Information and Library Science at UNC.

While on leave from UNC in 1998-2000, Graves founded the nonprofit Collegis Research Institute. He then retired from UNC in 2000 to found (and chair the board of) Eduprise, an academic technology services firm. After Eduprise merged with Collegis, the resulting privately held company was acquired in 2004 by SunGard Data Systems and later became part of privately held SunGard Higher Education, the world's largest, most comprehensive IT-related business focused solely on tertiary education.

Graves has helped to pioneer technology-enabled strategies for measurably improving upon and accounting for institutional productivity in tertiary education – learning productivity. Along the way, he has consulted with hundreds of institutions; published 80+ articles and books; delivered hundreds of invited presentations; served on the boards of CAUSE, EDUCAUSE, and the Coalition for Networked Information, served on the Tenth Anniversary Commission of the Council for Higher Education Accreditation, and helped launch both Internet2 and the EDUCAUSE Learning Initiative (chairing the latter's planning committee from 1994-2004). He today serves as a co-founding board member of both the National Center for Academic Transformation and the IMS Global Learning Consortium.