
Education as a Knowledge Enterprise

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Sub Theme I

What do we expect as outcomes of our schools? What do we want all students in Pacific Circle schools to know, be able to do, and care about?

Introduction:

In this essay I examine five aspects of contemporary processes of social change and develop the basis for what I hope will be a continuing dialogue on the implications of these phenomena for how education is “done” in the coming decade. My position is that education in its root sense is a knowledge enterprise and that the logics that are impelling change among more readily recognizable parts of the industry forces are affecting it as well.

These five phenomena are familiar to many, and are indeed to some degree commonplace. In numerous ways we have readily adapted to many of the social changes triggered by these dynamics. The position I wish to establish here is that despite their commonplace character, in combination they are transformative in ways that perhaps we have not completely examined, especially in terms of their implications for how we conceive of and attempt to produce educational outcomes.

In the order of their discussion these phenomena are:

- The increasing “boundarylessness” of our globalized world;
- The continued emergence of networks in society and of a network society;
- Re- and de-statusing as they take place within organizations migrating from industrial to Information Technology (IT) network models and practices;
- The revaluing of information within the new economics of digitalization as represented by the Long Tail; and
- *Search* and its implications for how we do information and how it does us.

Having introduced these forces of change in our contemporary world, I will then address a cross section of the three questions/issues around which this conference theme is organized.

**Part One: Five Forces Changing our World--
On boundaries**

As Mary Douglas has said, boundaries define social life. They are the social frames on which the essential elements of endogeny and exogeny delineate social structure, roles and the symbolic structures that link us, create and preserve identity, and permit ordered and predictable social exchange. (Douglas, 1973) Thomas Friedman, an early apostle of the increasing global interdependence that is reshaping our world (Friedman, 1999), has seized on an arresting metaphor in his effort to capture the boundary-challenging aspects of contemporary globalization. By proclaiming that *the world is flat*, and with sufficient persuasiveness, his efforts have placed him atop the *New York Times* bestseller list for much of 2005 and 2006.

The popularity of Friedman’s book (2005) and the aptness of the metaphor owe much, I believe, to a relatively widespread agreement on two aspects of his growing awareness of global interdependence. One, captured in the title of his first chapter, “While I Slept”, points us to the accretion of the extraordinary number of ways wherein by becoming



“globalized” the conventional boundaries of our everyday lives have changed. The world appears to have changed in remarkable ways “while we slept”, seemingly overnight, hardly within our notice. For Friedman our world of boundaries has slipped away. The second is our everyday appreciation that, indeed, the world IS different. Much of how we experience and “know” the world has changed a great deal within the past two decades. But, because many of these changes are incremental, we fail to “add them all up” in ways that allow us to fully appreciate the implications of these changes across many dimensions of our lives. And, the older we are, the more this is likely to be the case. Our customary and comfortable languages are, in many respects, obsolete—they refer to a world that in many important respects no longer exists.

We have grown accustomed to various languages that historicize the world into the pre-industrial and the industrial periods. The latter witnessed the emergence in an industrial framework of most of the social institutions, communication and transportation devices and codes, and mechanisms of commerce and exchange that would mark the world in one way or another up to its next major transformation: the post-industrial.

This stage, variously marked from the 1970’s through the 1990’s, has borne many labels from the knowledge society, to the information age, to the more recently fashioned network society (of which more later.) Each of these eras can be viewed as having fundamentally reshaped social boundaries in almost every conceivable way: from those in which peoples are identified with nation states; with how labor is applied to social product; with how the secular and sacred are addressed one to the other; in how time and space are conceived and traversed; and in how knowledge and information are created, applied, transmitted and conserved.

In Friedman’s language this remaking of boundaries results in large part from “flatteners”—social processes that extend out from a given source, engage boundaries and through the various quanta of social energy engaged, force them to give way. In making his argument, he reassigns the industrialization convention to posit three periods of globalization. The first great era of globalization was that from 1492 until about 1800, a period dominated by European voyages of discovery and conquest (and history making in the sense that much of the world’s “received” history became remarkably Euro-centric). This period he calls Globalization 1.0. The second great era, Globalization 2.0 lasted roughly from 1800 to 2000, interrupted by and in large part reconstituted by the Great Depression and World Wars I and II. It is this period that witnessed the fundamental remaking of much of the global economy by multinational companies, now commonly referred to as transnational corporations (TNCs). We are currently embarked on Globalization 3.0, the world that has been launched while Friedman, and presumably many of us, were sleeping. These reformulated stages of globalization encourage us to set aside our customary notions of a passage from the pre-industrial/pre-modern transformation to the industrial and beyond, but to contemplate in the current era ten massively transformative “flatteners, “which made the world different”—in almost every conceivable way. (Friedman, 2005, pp. 6-10)



Friedman's Ten Forces that Flattened the World:

- 1) The fall of the Berlin Wall in November of 1989, liberating exchange between the European west and east;
- 2) Netscape goes public in August of 1995, signifying the launch of successful search and significantly eroding existing boundaries in “how to find things;”
- 3) Work flow software, initiated in many industries whose intellectual product is produced and exchanged digitally throughout the world—a workplace without countries;
- 4) Open-sourcing, the development of self-organizing collaborative communities, exemplified by Apache, Lexus, Mozilla;
- 5) Outsourcing, exemplified by the emergence of India as a major global software producer in response to the Y2K crisis;
- 6) Offshoring, the massive shift of manufacturing (and services) to the cheaper labor markets of the developing world to produce complex, high quality goods, through the application of advanced technology, exemplified in particular by the rise of China as the new manufacturing colossus of the world;
- 7) Supply-chaining, the organization of massive supply chains of goods and materials from throughout the world to create global product and service distribution, exemplified significantly by Wal-Mart's emergence as the largest retailer in the world;
- 8) Insourcing, creating third party capability to link production and consumption nodes in the world economy, rapidly, efficiently and within reasonable cost parameters, exemplified by UPS and Fedex;
- 9) In-forming, the radical transformation of search and retrieval as exemplified by Google, Yahoo!, and MSN Web Search;
- 10) The Steriods, Friedman's phrase for the huge range and rapidly transforming universe of portable devices to accessing the digital world.

Source: Friedman, 2005, Chapter 2, pp. 48-172.

In the contestations of Friedman's thesis much of the focus has been directed at the *tense* of his assertion—the contesters pointing to all the many ways in which the world is *not* flat. Illustrations of the ways in which boundaries in fact seem to be increasing in height and impermeability include the painful and often bloody contestations of religious “worlds” and the boundaries they establish between peoples. (See for example, Gray, 2005) This argument is similar to that in which the nation state is debated in relation to the forces of contemporary globalization. Some will argue that globalization is supplanting the nation state and point to the evidence of weakened national borders, global terrorism, failed states and a whole range of phenomena that seem to point to national states being weaker than in preceding recent periods of history. Yet others will point to the enormous power of national economies, military might, and the ability to mobilize peoples to argue that the nation state is far from “dead”. (Steger, 2002)

Both of these positions tend to miss the point. The forces of change that are summarized in the notion of increasing global interdependence are boundary transforming. As such they are changing the nature not only of the nation state, but of the nation state system of interaction and governance; the nature of global trading and its impacts on national



economies; on the movements of people—documented and undocumented; on the creation, production and distribution of symbols by which we identify and communicate with self and other...and the list goes on. It is not that the world is flat, and it is not that the world is round; it is not that the nation state is over or is the primary force of social, political and economic organization in the world. Rather, it is the case that these various notions are in the process of change—continuous, rapid, active, transforming change. What we knew a week ago, or six weeks ago, or six months ago is in many important and significant ways not sufficient or any longer “true” in important ways, to determine what we will need to know tomorrow, or six weeks or six months from now to effectively deal with the world that is becoming. The world **is** becoming flatter—in sensible ways. **And**, the world remains round, albeit in transformed and transforming ways that require attention to both detail and to concept and form. Our round world isn’t what it used to be.

In writing about boundaries Mary Douglas emphasizes how much of the “work” of boundary maintenance culture “does”. What it means to “learn” a culture (that is either to be brought up in it or to appropriate it) is to inscribe and internalize the congeries of boundaries that define our social spaces, directing us toward values and outcomes that constitute and influence identity—that literally “place” us in our world (s). We learn to recognize these boundaries across a range of “instruction” from that which is explicit and formal, such as in the socializations of family, religion and education to those which are informal, accidental or seemingly un-intended such as those of the media, of casual interaction with others (especially “strangers”—carriers of exogeny). Douglas’ point is that “traditionally” much of this “work” of acquiring and being directed in life by these acquired boundaries is done outside the meta-languages that might be used to interrogate the nature of boundaries. These acquisitions tend to happen within the unexamined languages of daily interaction, as part of the accepted routines of daily life. (Douglas, 1973)

It is precisely these boundaries—the formal, the informal, the intended and the unintended—that are being redefined, reframed, rediscovered and abandoned in this particular moment of global transformation. Who we are and where we are placed in relation to others is being transformed in one way or another by all of Friedman’s ten “flatteners”, and by more. And while one can make the argument that none of this is particularly “new”, that this is what is involved in social change, especially social change driven by technological change, my position is that there *is* something different, unique about this historical moment. David Harvey has called this uniqueness “telescoping of time and space”, by which he means that both the scope and the pace of social change has been radically altered within this moment of contemporary globalization. (Harvey, 1990)¹ This “speeding up” of change is fundamentally transformative in ways that we may just

¹ In other contexts, Harvey has followed Marx in his use of the phrase “speed-up and the annihilation of space through time.” An example may be found in his theory of uneven geographic development under contemporary globalization: “There are strong incentives, both individually and collectively, to minimize the turnover time of capital and, as a consequence, we see many innovations designed to speed up production, marketing and consumption. Since distance is measured in terms of time as cost of movement, there is also intense pressure to reduce the frictions of distance by innovations in transportation and communication.” (Harvey, 2006)



be beginning to identify and appreciate. A central feature of this change is the emergence from a world defined primarily in terms of structures into one defined primarily in terms of networks.

On Networks

The familiar structures of “traditional” societies and their industrial successors were hierarchies, usually representing in some ways a pyramidal shape. Power, status and authority were concentrated at the top among a relative few, often through generational ascriptive structures, and distributed downward through the hierarchies according to information and knowledge codes deemed appropriate to the task at hand. Within hierarchies information and knowledge, which can be viewed as forms of currencies, move vertically with primary values being extracted by those occupying the upper hierarchal layers.

Networks by contrast tend to be flatter distributing various currencies among their constitutive nodes in response to demand. Indeed, a useful definition of a network is an association, often loosely formed, of multiple nodes interacting in response to mutually beneficial purpose wherein the value added to each member through participation is larger than that which could be supplied by any node acting by itself. Whereas virtually any imaginable hierarchy displays elements of mutuality (if only by the compliance exhibited by one layer in response to another), networks tend to privilege mutuality among participating members.

Manuel Castells and other social theorists posit that we are increasingly becoming network societies by which is meant that social interactions in general—society’s associative life as it were—take place increasingly through varieties of networks rather than through hierarchies. Information or knowledge societies are network societies. (Castells, 1996) To mirror the point made in the previous section about Friedman’s flatteners, networks have come to emerge out of conventional hierarchies; they are increasingly present and prevalent in society. To assert the existence of a network society is not to claim that hierarchies have somehow (magically) disappeared, but rather to assert that association through networks has become increasingly common to the point that the relative role of hierarchy in society is being displaced. Both continue to exist. Indeed, characteristically some of the most familiar hierarchies of the industrial period, corporations, have increasingly transformed their internal structures to more nearly resemble networks, which is in part what enables them to function globally as transnational corporations and to interact with each other through network structures.

Networks formed through the utilization of electronic media have been the most obvious and transformative, a clear manifestation of Harvey’s dictum that contemporary globalization results in the annihilation of time and space. Whereas the social world was much transformed by the more formal industrial age networks of the broadcast networks of radio and television, it has been those formed through the Internet that have provided evidence of the most explosive growth and depth of transformation. It is difficult on this terrain to be usefully factual merely because it changes so rapidly. The World Wide Web,



developed from the work of Tim Berners-Lee takes its initial form in 1994. (See W3C, 2005) The idea of “surfing” the net occurs soon after. Within a little more than a decade, roughly one-sixth of the world’s population consists of Internet users (see Table 1-1) with the figure rising to nearly 70% of the population in North America. Usage growth over the past six years has been on the order of 200%. I will discuss Google and other *search* phenomena below, but again, it is stunning to recognize that the company emerged on the web as a competitive search engine only eight years ago and has so transformed how people interact in the world that the verb “to google” has acquired near universal status.

Table 1.1 WORLD INTERNET USAGE AND POPULATION STATISTICS

World Regions	Population (2006 est.)	Population % of the World	Internet Usage	% Population (Penetration)	Usage % Of World	Usage Growth 2000-2006
Africa	915,210,928	14.1%	32,765,700	3.6%	3.0%	625.8%
Asia	3,667,774,066	56.4%	378,593,457	10.3%	35.2%	231.2%
Europe	807,289,020	12.4%	311,406,751	38.6%	28.9%	196.3%
Middle East	190,984,161	2.9%	19,028,400	10.0%	1.8%	479.3%
North America	331,473,276	5.1%	231,001,921	69.7%	21.5%	113.7%
Latin America/Caribbean	553,908,632	8.5%	85,042,986	15.4%	7.9%	370.7%
Oceania/Australia	33,956,977	0.5%	18,364,772	54.1%	1.7%	141.0%
World Total	6,499,697,060	100.0	1,076,203,987	16.6%	100.0%	198.1%

Source: World Network Usage Statistics

Equally remarkable has been the speed with which new pathways of network association have formed within these communicative technologies. Evidence of these phenomena is clearly provided by MyPlace and YouTube, sites within which millions of global users have become actively linked within a span of a year or two. As we all know, we stand on the cusp of yet more broadband technology developments that promise to ramp up user interactivity and the networks that form within them, as information and interaction channels previously dedicated to phones, television, messaging and the Internet become available in a single device. The markets created by these interactive/network-facilitating devices are all the more remarkable for their global ubiquity.

Cell phones and text messages provide a disproportionate impact on who is able to connect with whom in developing societies, while in developed nations, their volume continues to expand rapidly. Usage patterns of cell phones are on the whole highly generational and distinguished by exceptionally high uses within identifiable population subgroups. (See for example: Nyiri 2006; Castells, et.al, 2006; and Telephia, 2006) Whereas in developed countries connectivity is often focused directly on the Internet (as in South Korea for example), in poorer, developing countries, which lack the infrastructure necessary to provide reliable Internet access, cell phones have radically transformed interactivity patterns. The Philippines provides a dramatic example of a culture and society transformed by cell phone use. Users on average send 150 messages a day, and report that they check their phone regularly if they have not received a message within an hour. (Meinardus, 2004)



If we hold that associative networks—however they are formed and whatever their currency—are importantly related to identity formation, it can be argued in turn that networks become both significant markers of “what one knows in the world”, and important enablers of gaining such information/knowledge. To argue such raises two parallel issues of some importance. One, as networks increase in both social and personal importance, they probably come to rival more traditional sources of knowledge and information acquisition. Knowing the kinds of networks one associates in/with could provide a significant indicator of *what* one knows, and familiarity with the *style* of communication characteristic of the network might tell us a good deal about what individuals choose to learn/know and the shapes such choices take. Two, the very newness of many of the kinds of networks at reference here means they are not very much researched. Their value as providers of identity in terms of whatever kinds of social currency that can be associated *to them* is largely unknown. Perhaps more importantly, we know relatively little about how interaction with newer networks displaces or affects interactions with more traditional forms of knowledge and information acquisition.

In closing this section I wish to turn briefly to some research that has been done on an important kind of network that formed through the Internet among a Pacific Island diaspora community. Alan Howard’s long study of Rotuman culture and society led in the 1990’s to the formation of a Rotuman net site developed by himself and his wife and research partner, Jan Rensel. This endeavor which has evolved steadily into a complex web site was intended in part to provide a means by which the “weak cultural identity” Rotumans of the diaspora community could maintain their ties with the much smaller island community. (The Rotuman population is estimated at 12,000, of which 2,500 live on the island. Howard, 1999) Use of the website has resulted in expansion in range, substance, and volume of traffic. Howard summarizes the role of such communication engagements in community (network) building between the island and diaspora communities.

In order to remain salient to individuals, cultural identity must be continually reinforced. In some contexts, reinforcement comes from “others,” who regularly remind people of their cultural distinctiveness by interacting with them in stereotyped ways...Cultural identity may also be reinforced within ethnic groups, especially where people are repeatedly reminded of the importance of maintaining key customs...Where neither of these circumstances prevail, where it is a matter of individual preference, sources of intermittent reinforcement are crucial to sustaining a viable cultural identity. We contend that the Internet can provide significant opportunities for such intermittent reinforcement...Of all the factors that facilitate a strong sense of cultural identity, none is more important than the presence of a community associated in people’s minds with a particular heritage. With the great diaspora movements of the late twentieth century, Pacific peoples have scattered around the globe, rendering the nature of communities somewhat problematic. The questions raised, for Rotuman and other Pacific Islanders are: Will such dispersion lead to the demise of their unique cultures? Will it result in complete fragmentation, with enclaves in different countries evolving into thoroughly transformed communities, tied to “home” islands only by vague



historical connections? Or will new global communities emerge, well grounded in the cultures, histories, and languages of the Pacific Islands? (Howard, 2004)

Howard's research suggests that contemporary communication activity, in this direct case the Internet, is not only a facilitative vehicle for community maintenance through re-networking, but in many cases—particularly those that are seen as weak identification communities-- is necessary to provide the reinforcement required to sustain them.

De- and Re-stating organizations

One feature of the increasing competitive environment being created by economic globalization has been the phenomenon commonly referred to as *managerialism*. At its core managerialism is a movement designed to transform corporations, initially focused on industrial corporations, from the dominant organizational structures that developed through the industrial period into forms more appropriate for the knowledge, information or network society. With the shift in manufacturing from mature industrial societies to the developing world, the emergent transnational firms discovered that they, indeed, required an organizational form less resembling the traditional hierarchal pyramid. Instead, they developed an organization form that linked the center to its peripheral units globally through modern communication technology creating flatter, more autonomous units. The annihilation of time and space permitted new forms of control, allowing the more direct command and response modalities of the industrial corporation to yield to notions of goal setting and audit. Industrial production itself shifted from the *fordist* model (so-named because of its realization in the early forms of the Ford Motor Company) and the fordist mode of production that typified it. (Jessop, 1995)

Flexible production (or, just-in-time production) developed during the early years of post-war Japan manufacturing recovery has progressively displaced traditional industrial manufacturing. In flexible production the final product results from the creation and coordination of a vast network of producers of sub-unit components, which arrive at the assembly point just prior to their use in assembly. Flexible production revolutionized many industries by vastly reducing the amount of capital required by the end-product firm, leading to higher profit margins through cost-cutting production practices. Most important was the reduction by several orders of magnitude of inventory stocks for successful production. In one way or another, flexible production has become the norm throughout global manufacturing. (For a definitive treatment of the “lean” Toyota model of flexible production see NUMMI, 2006)

In the widely imitated Japanese model, the transformation of managerial systems solicits the critical views of shop-floor workers to be integrated into the system, resulting in a significant enhancement of quality for the end product. As one result the whole discourse of quality and quality assurance was transformed between 1970 and the mid-1980's leading to its migration throughout the service industry and government. (Osborn and Gaebler, 1992) Rigorous control over production runs and unit costs had the even larger effect of contesting the “one-size-fits-all” modality of fordism by providing for the kind of production customization that has become common across many industries, including



the automobile and housing industries, in which often units are “made to order” for pre-paid consumers. Through the past four decades the flexible production paradigm has come to be expressed through notions of reduced inventories, rapid production turns, new shop floor production models, ideas of team production, shop floor feedback, and the emergence of management theories that urge on organizations a more decentralized, network-type structure. (See for example Peters, 1996)

These central ideas as applied in non-specific production settings have proved enormously complex and complicated to put in practice. Many successes coexist with extensive dislocations of employment. When applied to the public sector, the successes of managerialism have often gone unnoticed or have been discounted for partisan political reasons, as happened for example in the efforts of the Clinton Administration under the direction of VP Gore to downsize the non-military size of the federal government.² Within higher education, both public and private, managerialism has resulted in demands that universities be run “more like businesses” with consequent efforts to establish cost and profit centers and to have service units “run on their own bottom”, meaning to support themselves out of dedicated user-fees. American higher education as a whole crossed an employment line in the early years of the new century when less than 50% of new faculty hires were for tenure track positions. Universities were finding that the economics of shedding “bundled” personnel costs were as much a part of “their” business as any other organization. (Kezar, 2005)

The flexible production model has been an interim organization form to the *network model of production* took form initially in information companies, but has generalized and dispersed. An increasing number of organizations, as they have integrated contemporary information technology and submitted to its underlying logics and meta-logics, have come to see themselves largely as information entities as well. This certainly has been the transformation of the many separate functional industries, such as banking, insurance, stock brokerage, that over the past two decades have been relabeled “financial industries”, which operate in many ways indistinguishable from other knowledge or information enterprises. Even medicine, long viewed by society at large and by its own practitioners as a “thing on to itself” has increasingly developed a self-understanding as an information science and practice.

For the contemporary information and knowledge driven organization, it is the *idea* that matters. The lessons of organizational survival and success hold that a premium must be paid to the generation of those ideas, their early recognition, and the ability to capitalize on them in product development and market extension. In the rapidly changing world of information and knowledge, organizations re-stated their practices and structures on the basis of where and how ideas are generated. IT organizations tend to be structured around more open models of communication, Google having become an industry case in point. Any number of articles and blog posts point to the “crazy” ways in which Google conducts its business. (See for example *Fortune*, Oct. 2, 2006: “Managing on the Edge:

² At the time of submission of the Clinton budget for FY 2001, 377,000 federal jobs had been eliminated since the administration began in 1993. The FY 2001 budget called for an additional reduction of 90,000. (Martin, 2000)



the inside story of anarchy at the \$125 billion money machine. And why it's all part of the plan." Or, the title of Thomas Peters' 1994 book about the earlier generation of IT companies, *Crazy Times Call for Crazy Organizations*.)

Table 1-2 Elements of Industrial and Post-Industrial Organizations

Elements of the Industrial Paradigm-Fordism	Elements of the Post-Industrial Paradigm-Flexible Production
Standardization and universalization—one size fits all, and a “unit” for every person	“Boutique adaptation”—design products for those who need and want them—tailor to individual needs
Linear, predictive models of cause and effect	Non-linear, probabilistic models of association and consequence
Education based on the acquisition of relatively constant elements of agree-upon “knowledge	Education addressed to rapidly increasing knowledge quotients (knowledge explosion) and
Relatively rigid professional hierarchies	Flexible associations of capabilities brought together in networks
Ideology of formal education progress and development	World viewed as more complex—formal education one element among many; world a more contingent place
Concentrate productive capacity in vertically integrated hierarchies	Production distributed throughout world to maximize economies in factors of production
Primacy of manufacturing capital	Primacy of finance capital

Although statuses and roles continue to exist that are historically derived from more conventional organizational models, in the IT network model the substance of their interaction is radically different. The organization as a whole tends to function as an active learning community with all actors posited as learners. The presumption is that at some level of idea generation and development a fundamental kind of de-stated non-hierarchy exists. Developing an organization on this model also re-statuses some of the internal roles of the organization, most particularly those directed at talent identification and recruitment. John Battelle reports on the tension evident in the fledgling Google organization where two “institutional-bads” had to be combated simultaneously. One was founder’s syndrome in which the company’s creators find it difficult to allow the organization to develop routines and customs over which they do not exercise direct control. Founder syndrome, when not attended to, can result in stultifying span of control issues. This phenomenon was directly related to, the “hiring spiral” in which the founders would hire a person they might consider an “A”—“perfect for the job, intelligent, productive, and a good cultural fit.” (Battelle, 2005, p. 130) A then is allowed to hire more people, who then hire more people, etc. The problem, as Battelle relates, is that A’s rarely hire people who contest or challenge them, thereby producing a downward talent spiral, of B’s, C’s, D’s...etc. The company comes to be numerically dominated by C and D level people “loses its unique culture and falls victim to divisive internal politics and the malaise of hierarchically driven management games. (Battelle, 2005, p. 131) To



forestall this outcome, Brin and Page devoted an extraordinary amount of time in the extensive interviews that led to early hires.

Such a system is clearly not sustainable, and Google recognized that along the way as well. The result, as has been the case throughout the industry, however, has been a restructuring within organizations to enhance the relative role of the human relations function and processes through which people are hired. The dictum is that choice leads directly to quality. The extent to which this has become an industry-wide issue can be illustrated by an October 7, 2006 special 15-page study of *The Economist*, on the critical issue of identifying, hiring and retaining “talent”. Signaled by the headline “The Battle for Brainpower,” the study notes that “Talent has become the world’s most sought-after commodity...[and] the shortage is causing serious problems.” (Wooldridge, 2006, pp. 3-24) The survey emphasizes the global nature of the quest for talent, the fact that companies of “all stripes” have come to the realization that “talent” is the secret to profitability, and that governments, although late to the game, have also come to the realization that they must now do things differently to compete for talent. All of this is made even more difficult by the fact that the knowledge revolution continues to cut into the “half-life” of professional training and that the requirements of organizational change increasingly appear constant rather than episodic.

Such treatments of employment needs reinforce the sense that increasingly organizations of all kinds throughout various industries view themselves as knowledge organizations, and in some way or other submit to the underlying logic of what constitutes such organizations and what must be done to make them successful. From the perspective being developed here, we can see these as contributing to the further evolution of a kind of IT network model organization that possesses at least these attributes of re- and de-stating:

- When information is of primary value, the *source* of the information is de-stated in the sense that “the idea” trumps status derived simply from role and structure.
- In such organizations “the leader” is a member of the learning community; a critical element of equality, reciprocity and exchange typifies the organization. This does not (certainly) imply that every idea is a good idea, but rather that ideas are open to contestation for their value.
- In overall terms, organizational focus comes to be centered on outcomes rather than on the rights, privileges and rewards of status.
- Organizational incentives tend to be organized to reward outcomes, which because of the fluid nature of the “idea culture” can be discontinuous and episodic rather than a result of linear tenure served in stable roles. Evidence of this, famously, have been the “stock option” millionaires (in some cases billionaires) of the IT organizational culture, as well as the relatively high mobility of “top idea producers” in the industry. (Battelle, 2005, Chapters 3 and 5)
- Incentives within the organization are calibrated to foster social climates that produce creativity, idea “productivity” and an atmosphere of continued and positive change. These range from the now familiar stock options of start-up



companies that monetarily reward employees should the company go public; the “informal life” perks that are found in many such companies, including Google, where the chef and the dedicated café provide gastronomic relief from the rigors of “code-life” as do the foosball and pool tables; to the relocation of many Silicon Valley firms to the southern Idaho area to attract workers drawn to the beauties of the near-by natural environments.

IT network organizations—especially the celebrated ones such as Google—are sufficiently new that one cannot usefully predict how these flexible organizational models will survive further success, middle-age and the continued demands of public ownership performance. Their interest to us, however, lies in the demonstration of their early success in which conjoining flatter, flexible organizational styles with processes of idea creation and production are producing revolutionary changes in how we seek and “do” information.

The Long Tail

In reviewing Friedman’s *flatteners* and their growing ubiquity, we alluded to a new “law” of labor organization, namely that if something can be digitalized, it can be outsourced. In its initial stages, this period of labor reorganization focused primarily on conventional information technology such as clerical work. In a later stage, large financial organizations moved their “back room” activities to offshore operations. In yet another stage, shifts began to occur in the redefinition of so-called “in place services”, those that were presumed necessary to be provided in place, where the service provider and service recipient were in direct contact. Medicine generally was considered an in-place service, a distinction that began to shift with the development of tele-medicine. It quickly became clear that whatever could be scanned electronically could be digitized and not only transported to be reviewed at another time and place (store and forward technology), but by those outside the social and cultural frames of the host country as well.

In contemporary examples of digital displacement, hospitals often provide neurological surgeons with units that allow them to do a quick review of a trauma patient’s condition to determine whether the surgeon needs to respond physically to the hospital for call; radiologists in India review x-ray films for hospitals in New York; and universities are developing the means by which pathologic analyses can be done on a sample anywhere in the world with sufficient broad-band capacity. (Lei Zhang et.al, 2003; Outsource2India, 2005) Such observations may now seem commonplace to any regular reader of the technology press: technological change is producing ever more digital devices that encompass ever more applications and affect ever more aspects of everyday behavior.

The property that once “a thing” can be digitized and its storage and transmission as data is virtually costless, has given rise to new notions of how demand can be organized in markets. The desired distribution curve of products in a market traditionally has described a *head*, in which most of the product (s) is (are) distributed at an “effective” price (that is, one at which the producer is willing to create more products for the market) and a *tail*, in which price and volume fall as market demand decreases. Historically, this



has been a highly interactive relationship in which many producers bring product to market seeking a “hit” at which large numbers of the product may be sold at an effective price. Ironically, of course, as one producer creates a hit in the market, that very success draws competitors seeking similar hits with large sales and profits. In this way, the market “uses up” hits, which steadily decrease in marginal value for the production of further iterations and/or their distribution in the tail. Consequently, the availability of items in the tail become more expensive for the consumer as their small marginal value to producers leads to limiting or ending production, and for distribution to move to smaller and fewer outlets.³

Chris Anderson’s review of the Long Tail points out that while knowledge of the phenomenon represented by the Long Tail has long been noted, the application of this insight to the emergent digital world seems especially important and promising. (Anderson 2006) The rendering of digital data virtually costless radically changes the economics of distribution in the long tail. Combined with the equally facilitative economics of search engines, the result has been an increasing number of ventures from Amazon to eBay to Craigslist⁴ to any number of other “aggregators” that make practicable markets that operate to serve the highly particularistic interests of small numbers of people—matching as it were very small amounts of demand with very highly differentiated supply.

Anderson sees the Long Tail as having transformative impacts on society.

The theory of the Long Tail can be boiled down to this: Our culture and economy are increasingly shifting away from a focus on a relatively small number of hits (mainstream products and markets) at the head of the demand curve, and moving toward a huge number of niches in the tail. In an era without the constraints of physical shelf space and other bottlenecks of distribution, narrowly targeted goods and services can be as economically attractive as mainstream fare... Bottom line:

³ Dan Bricklin describes the long tail relationship: “There is a classic curve with just a few of the products selling in any significant numbers compared to the others. In a traditional store or company only a subset of the products that could be sold is actually made available for sale -- those to the left of the vertical dotted line. There are many reasons for this, such as cost of inventory, lack of shelf space, old fashioned telecommunications architecture, need to focus sales and support in a narrow area, etc.

The long tail comes into play when the cost of making a much wider selection available drops. This may be because of new technology such as the Internet, business models that involve user generated reviews and support, etc. In any case, in areas such as books and music there is a very long tail of additional products, each of value to its purchasers few that they may be. If you look at the total sales you find that the large volume of niche products more than makes up for the few copies sold of each, with those products making up a significant portion of revenue and often profit.” (Bricklin, 2005)

⁴ Like many of web phenomena Craigslist began in a relatively small niche and then exploded in terms of numbers of users. Founded by Craig Newmark to serve the San Francisco Bay area, the lists provide a range of services that include free classified ads and forums classified by various subjects. The lists extend the familiar function of newspapers at virtually no costs to users and with unlimited distribution reach. In 2006, the company employed only 22 persons, and had expanded to 450 cities throughout the world, operating solely on income from paid classified ads, of differing prices per market. It serves 10 *billion* page views per month, making it the 31st most visited website in the world. See: Wikipedia, Craigslist.



A Long Tail is just culture unfiltered by economic scarcity. (Anderson 2006, pp. 52-53)⁵

Anderson identifies three forces that he holds are the key to the social transformations being wrought by the Long Tail. Democratizing the *tools of production* through the steady advance in the sophistication and capability of relatively inexpensive digital devices, leading to the phenomena we now see as MyPlace, YouTube and other free aggregating sites. We live in a schizophrenic world in which at one end of the information continuum the largest media producers in the history of the world control broadcast content monopolies virtually throughout the world. These are TNC's of global media—the Big Six—The Walt Disney Company, Viacom, Vivendi, The News Corporation, AOL Time Warner, and Bertlesmann AG.⁶ The other end of the continuum is increasingly dominated by the relatively chaotic “democratic” forces of production. The Big Six control the Head, these forces make up the Long Tail. As Anderson puts it,

Millions of people now have the capacity to make a short film or album, or publish their thoughts to the world—and a surprisingly large number of them so. Talent is not universal, but it's widely spread: Give enough people the capacity to create, and inevitably gems will emerge... The result is that the available universe of content is now growing faster than ever... In music, for instance, the number of new albums released grew a phenomenal 36 percent in 2005, to 60,000 titles (up from 44,000 in 2004., large due to the ease with which artists can now record and release their own music. At the same time, bands uploaded more than 300,000 free tracks to MySpace, extending the tail even further. (Anderson 2006, p. 54)

The other two forces that make up this movement toward a culture of the long tail are the cutting of costs of distribution, largely through the mechanisms of digital aggregation, and the connecting of supply and demand. With regard to the distribution, as Anderson points out, the PC was capable of making everyone a producer, but it was the Internet that

⁵ Anderson summarizes his views into six themes that he holds typify the Long Tail age.

- a) There are more niche goods than hits.
- b) The costs of reaching niches is falling dramatically.
- c) Variety does not shift demand by itself. Consumers must be given tools, such as search engines.
- d) Once variety has been massively expanded the demand curves flattens. While there are still hits and niches, the hits are relatively less popular and the niches relatively more popular.
- e) The niches add up and while none sell large numbers collectively they can develop as a market rivaling the hits.
- f) When all this has occurred, the natural shape of demand emerges without distortion of the bottlenecks. (Anderson, 2006, p. 53)

⁶ McChesney and Shiller estimate that the global media TNC's control 70% of the world's news in a market that increasingly approaches oligopoly. McChesney and Shiller add, "...a few leading conglomerates thus dominate the larger process of reorganization, and aspire to grow still larger and more diversified to reduce risk, avoid being outflanked by rivals and enhance profit-making opportunities. The upside is high; this is a market that some anticipate will have trillions of dollars in annual revenues within a decade." (McChesney and Shiller, 2003.) The six global as a result of mergers have reduced the Big Eight of the turn of the century. Five of the six have primary U.S. ownership. (Newint, 2006)



made everyone a distributor. The third force of connectivity is obviously in its early stages. Part of it arises from the “wisdom of crowds” logic that underlies the Google algorithms of search, part of it arises from recent organizational forms of Internet communication such as the blogosphere and the search engines that make it viable by reducing the search costs to consumers. (Anderson 2006, pp. 57-59) (The blogosphere itself is termed by some a “media ecosystem.” See Hiller, 2006)

I will return to the Long Tail in the second part of this paper. For now it is sufficient to acknowledge that the Long Tail has alerted us to a new marketplace and new ways of doing business in that marketplace. In this model the democratized tools of production lead to a vast increase in the numbers of producers—a movement that directly confronts the increasingly growth and aggregation in size of the major global producers and “their” economy in which approximately two-thirds of global trade is accounted for by the top 500 TNCs. The great irony is that in an industry recently formed by the oligopolistic behavior of one of the most successful, and richest, firms in history—Microsoft—a new force is growing that democratizes the production, search and distribution of information. A key to this development has been what Anderson, interrogating the logic of Google, calls the “distributed intelligence of millions of consumers to match people with the stuff that suits them best,” allowing them to become the new tastemakers.

We have arrived—at last—at *search*.

Search

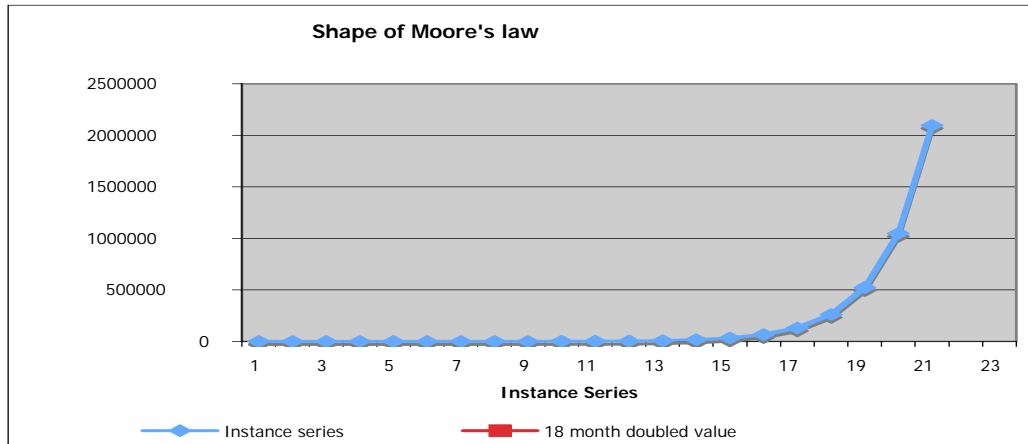
Moore’s law is familiar to observers of the information/knowledge culture. In 1965 Gordon Moore, co-founder of Intel, made a prediction that the number of transistors on a computer chip would double every two years. In practice, the capacity of chips has doubled roughly every 18 months with a corresponding fall in relative prices. This exponential growth in capability had brought us to a present in which chips such as the Dual-Core Intel Itanium 2 Processor has in excess of 1 billion transistors, following a development path that will provide capacity of 10 billion transistors in 2010. In real world terms, Intel chips grew in transistor size and complexity from 4004 transistors in 1970 to the billion plus of its Itanium in 36 years. In a recent statement Moore has opined that this “law” appears to be able to hold at least until 2015. The shape of this curve is demonstrated in Figure 1. (See a “Conversation with Gordon Moore” at Intel.com) It is this exponential growth in capacity, more than any other single factor that has fueled the parallel growth in capacity, innovation, application and affordability in digital devices of all forms.

Search has displayed a similar growth pattern. Google’s extraordinary success as a company is due in large part to the genius of its founders, Brin and Page, in finding the pattern of search technique (from keyword to complex algorithm) that allowed the phenomenon to progress from the stage where many other companies (including Excite, Yahoo and Alta Vista) had taken it to one that captured the moment of advance and surge, and developed an advertising business model (which it did not invent) that brought billions to its door. Part of Google’s success had been its ability to function as a search engine within specific content modalities (for other websites and pages) as well as new



aggregational or filter “places” such as MySpace, MyPlace or YouTube⁷. (Battelle, 2005) The speed of spread of such cyber spaces and their ubiquity will continue, one would conclude, from the lessons of Moore’s law as capacity continues to expand exponentially and price falls. New applications such as these three aggregation sites will follow in due course, made possible by the organizing power of search.

Figure 1: Illustration of Moore’s Law



It would also appear, however, that remarkable as it has been, this stage of search is but an early one—the ubiquity of search has not yet been matched by its reach.

Search has worked so famously because it is convenient, virtually costless to the user, and has become progressively more efficient. Google’s breakthrough of finding ways to target sites based on the impersonal findings of its ever more sophisticated mathematical algorithms has moved continually forward in bringing ever-greater amounts of information to accessible digital retrieval. In doing so it has created a search model and a business model that is being largely pursued by its most aggressive business competitors: Microsoft, Yahoo and AOL. The business model is built on the logic of the Long Tail, allowing advertising costs to be apportioned only when triggered by users who access advertiser sites, thereby reaching the “holy grail” of advertising—spending advertising dollars only for exposure that has some probability (however small) of generating an

⁷ YouTube was founded in 2005 for people to post their own videos. It became so instantly popular that Google purchased it in a stock deal in October 2006, worth \$1.65 Billion, largely to capture this “new market” for its advertising. It is interesting to note the corporate rationales of the two CEO’s in announcing the purchase. “Our community has played a vital role in changing the way that people consume media, creating a new clip culture. By joining forces with Google, we can benefit from its global reach and technology leadership to deliver a more comprehensive entertainment experience for our users and to create new opportunities for our partners,” said Chad Hurley, CEO and Co-Founder of YouTube. ‘I’m confident that with this partnership we’ll have the flexibility and resources needed to pursue our goal of building the next-generation platform for serving media worldwide.’ Cited on the Google Press Center, October 9, 2006.



actual sale. These remarkable accomplishments represent the first macro stage of search—its first generation.

The second stage or generation has revealed itself in the relatively recent and as yet highly imperfect world of customer/viewer/user profiling in which all the past behavior of a given computer source is aggregated to generate a “unique” and targeted profile—those “Hello Marsha” greetings we receive as regular customers at Amazon.com as we log-in recommending possible new purchases. Crude as these current efforts are, they are full of implication if we are to gauge our unfolding future by either the history of search itself, the logic of the Long Tail, or the continuing capacities promised by Moore’s Law. Battelle cites Udi Manber, the CEO of Amazon’s A9.com search engine to the effect that search “as a problem is about five percent solved.” Battelle continues:

Five percent—and yet the search business is already blossomed into a multi-billion—dollar industry. Search drives clickstreams, and clickstreams drive profits. To profit in the Internet space, corporations need access to clickstreams. And this, more than any other reason, is why click-streams are becoming eternal... As we root around in the global information space, search has become our spade, the point of our inquiry and discovery. The empty box and blinking cursor presage your next digital artifact, the virgin blue link over which your mouse hovers awaits transformation into yet another imprint onto this era’s eternal index. (Battelle, 2005, p. 12)

Accessing that same Amazon.com site will reveal a growth industry in recent books about the end of privacy as we all too recently knew it.⁸ Even before September 11, 2001 and recent revelations about the Presidential authorized phone logging of calls done by the National Security Agency, the post modern-era has been characterized as the most surveilled in history. (See for example the journal *Surveillance and Society*, and especially Wood, 2003.) Certainly, the directions in which search is taking us will do much to further erode our personal sense of privacy, just as do subscriber lists that are sold by one company to another, or just as the Internet has allowed terrorist networks to employ the same technologies to their destructive ends. All of these and much more even more dimly glimpsed, or not at all, are implications of a global communications world in which every clickstream is monitored, for good or ill, in some computer somewhere.⁹ The engagement being created by these technologies and the worlds they create invite the questions: what are we doing to information and what is it doing to us?

⁸ See for example Reg Witaker, *The End of Privacy: How Total Surveillance is Becoming a Reality*; Charles Sykes, *The End of Privacy: The Attack on Personal Rights at Home, at Work, On-Line, and in Court*; and David Holtzman, *Privacy Lost: How Technology is Endangering Your Privacy*. Interestingly, the first two were published in 2000, well before the surveillance endeavors of the Patriot Act were made law.

⁹ Clickstream is the term given to the record created on search engines by users as they search among many sites. As many people have been surprised to discover about their email, once deleted from a personal computer, it does not disappear from the servers through which it passes. The same is true of clickstreams which can be monitored and reconstructed for analysis.



Section Two: Education as a Knowledge Enterprise

What would be involved were we to treat education more directly as a knowledge enterprise? What kinds of outcomes might be expected from such education institutions? In what ways might they be restructured or operate differently if we sought to align them more directly with other elements of the knowledge industry? I will offer a few general comments on that prospect and then turn more directly to linking education with the five social change elements discussed in the first section.

Historically, we have tended to conflate education and knowledge, in the sense that education as a set of levels of instructional practice presumed at each level to claim certain bodies of knowledge as appropriate and to impart this to students. Functionally, it was common to see education as comprised of structures specialized in one way or another to knowledge transmission (the teaching function), knowledge creation (the research function), and knowledge conservation (the library function.) With the advent of the computer and entry into the “information age” a discursive shift emerged around the insistence of separating information and knowledge. The former is being viewed increasingly as a currency with its own set of tools, and the latter is being viewed as a set of practices embodying categories and bodies of content formed purposively by culture and human society with the primary purpose of delineating value from mere iterative regularity. (Dordick and Neubauer, 1985) Within education, I would argue, knowledge remained separated from information, other than in those emergent disciplines organized around information theory and computing. The power of the traditional canon (differing through it might be from society to society) was such that education as an endeavor proceeded with the canon at the center and the innovations resulting from other elements of the society at the periphery. Within the conceit of education, knowledge was what it did—the appropriation of that label by the information industry was largely unwarranted pretense.

This pretense has persisted, however, spurred in part by the demands of public policy for education to serve this powerful emergent industry. Universities in particular have been viewed as sites for technology transfer and/or as vehicles for private sector technology partnerships. Illustratively, the Knowledge Industry Partnership (KIP) is a creation of the greater Philadelphia area intended to promote the area as “one big campus”, knitting together its many higher education institutions into a coordinated effort to create and educate a skilled labor pool that will stimulate entrepreneurial activity and attract further talent to the region. (KIP, 2006) Some version of this endeavor can be found in virtually every major city/region in the developed world. Whatever schools, colleges and universities “think of themselves”, society at large and government in particular have come to view them as very much part of the knowledge industry with specific, contributory roles to play.

But I do not think that many of the institutions that make education a knowledge enterprise view themselves seriously as part of that industry. It seems to be the case that few education institutions self-consciously seek to become a meaningful part of that



industry, or participate in the promise and disciplines of its rapid change dynamics. I do think that many institutions, such as those in the KIP, or in Australian cities, or the University of Hawaii, or the national governments of India or Thailand to take just a few examples, accept that higher education in particular has a major obligation to prepare their graduates for the job markets that will receive them (although this awareness has come powerfully late to many in public education and in some cases with powerful resistance.) And I do think that educators throughout K-12 settings struggle to acknowledge and accommodate innovation occurring in the broader society at large. But, I view these largely as efforts to “keep up”, to “make education relevant”, etc. I do not see education endeavor writ large much engaged in the kinds of activities described in the first section of this paper. Indeed, when it comes to accommodating the interests of our students in many of these phenomena, education treats the devices as unwanted distractions. In significant ways schools ask students to check the life they are leading at the door in order to concentrate fully on the work of school.

Thus, when we turn to the basic organizing questions for this conference, focused as they are around issues of outcomes, change and global relevance, I see the possibility and perhaps the actuality of a fundamental disconnect between the knowledge/information environments being created throughout society and the world, and the way that we as educators continue to frame knowledge through our own enterprise.

I ask rhetorically in the previous section what are we doing to information and what is it doing to us? With regard to the first part of the question, we are generating more of it, gathering it together in novel arrays and making it available with relatively small costs across categories of usage that are continually expanding.

What information is doing to us is more complicated. It is, perhaps most importantly, re-identifying us. The complex ways that we exist in data bases of all kinds that are then made available through the multitude of search methods and devices give us identities for the world for its use and misuse, in ways of which we are sometimes aware, but often not. And, as we are re-identified to the world outside, we interact in complex ways with the identities that we fashion within ourselves.

As we catalogue the many, many ways that identity is formed and evolves, the familiar categorical influences of the culture of nation and locality, of language, of family and other primary identity groups (those for example framed around religion observance and practice, school, sport, etc.), it is increasingly difficult to construct a notion of identity that does not have consumption and its imputations of status at its center. Up and down the ladder of class, income and status from the very rich to the very poor what one does and what one does not consume as material goods and services is the primary framer of identity for both self and other. The ubiquitous world of search and its emergent world of preferential identifiers is not “innocent” in these terms. It exists as process, service and interactive reality for the primary purpose of linking consumer with buyer. But, it goes far beyond that, and there, indeed is the rub. Search seeks to identify for us “needs” and “desires” before we know that we have them, by assembling thousands—hundreds of thousands—of attributes, large and small, about ourselves and assembling them as



potential identity elements and potential acts of consumption, before we have made those calculations for ourselves. These traits—termed inference and intentionality by the industry—are already a significant part of Yahoo, AOL and Google and will move quickly into the world as they respond to the many efforts to develop them further.

As many have pointed out, these complex acts of social and cultural interaction that constitute and surround consumption constitute a grammar through which we learn to regard self and other, to appraise and to value, to aspire and desire.¹⁰ It is a grammar that is much practiced through the world of advertising. It is a grammar that for most purposes we ignore within the formal system of education, except when it is taught as part of a business curriculum.

As we think about the outcomes that we should expect from our schools, including those from preschool through graduate school; or when we think about what might be the common elements of educational outcomes; or what a comprehensive, articulated education in a Pacific/global context would look like, it seems wholly consistent with the first section of this essay to argue that we need to instill in our students and graduates grammars of interaction that allow them to “speak, understand and act” in the world being so rapidly shaped by these technologies.

Let me conclude by suggesting a few ways in which they might be done in each of the five areas of social change identified above. I then link these to some of the public policy implications of this argument.

Boundaries

As indicated above, I am sympathetic with Friedman’s metaphor of the things that happen while we are asleep. The changes associated with increasing global interdependence happen so rapidly that even when one is paying attention—close attention—it is difficult to keep up. This, after all, has become the core business of the most powerful economic actors on the planet.

Some years ago in working on globalization curricula for high school level and entering college students, I fell into the language of arguing that in many important respects we were preparing students for a world that no longer exists. This realization has become palpable in many parts of the world as political leaders sense that in one way or another the education we offer students does not align well with the world they are entering. This is an argument that the Prime Minister of India, for example, has repeatedly directed at higher education in India. At the level of production, universities are performing well, graduating millions each year. At the level of the relevance of that education for the needs of the economy and society, it is, according to Prime Minister Manmohan Singh, doing far less well. (Neelakantan, 2005)

¹⁰ See, for example, two early statements of this thesis in Jules Henry (1965) and Stewart Ewen (1977). The idea of the creation of desire has been much analyzed by students of culture and political economy. See for example Michael Shapiro’s treatment of Adam Smith that develops these ideas from both perspectives. (Shapiro 2002)



When political figures make this argument, their concern is usually directed specifically at the alignment between graduates and the demands of the job market. This consideration is sensible, but also somewhat misplaced. What students need is a comprehensive and critical understanding of how the world works, and increasingly such an understanding needs to be framed in the dynamics of global political economy and a critical familiarization with Friedman's flatteners...and more. (Carnoy, 2002) It is difficult to name a professional field within higher education that is not being directly affected by the boundary phenomena discussed by Friedman, from Engineering, to Medicine, to Nursing, to Architecture. As a result of the current GATS agreements, for example, signatory countries are obliged to treat education as a commodity under current rules of trade and access. (Knight, 2002) These are all elements of how the world works; they are components of the world into which our graduates will move. Boundary phenomena are more than merely a curious feature of globalization. They are an essential subject matter that requires curricular space to promote an informed and critical understanding of the world.

Networks

Education as a profession and activity has traditionally been constituted out of networks, perhaps none of them as enduring than those formed around when and where one received one's own education. When we think of kind and quality of outcomes we want for our schools, we might think in terms of the kinds of newer networks that can be formed through the emergent overall network culture. Some of this already exists within the digital learning community. The non-profit Digital Learning Commons, for example, provides a wide range of digital learning tools for students, educators and parents at modest costs for those within Washington State. (<http://www.learningcommons.org/>) It would appear a useful model for other states and for regional associations that seek to share educational resources while limiting overall costs. The Digital Learning Network offers similar services to home schoolers, albeit at much higher costs. (<http://www.digitallearningnetwork.com/>) The Alfred P. Sloan Foundation has poured enormous resources over the past two decades into research and proof of concept for asynchronist on-line learning with most of its emphasis on higher education.

Indeed, all of on-line education is based on network principles and is actively constituting new networks. Much of this activity has been initiated in the private sector, often for niche constituencies, usually in higher education. The rewards are great—the University of Phoenix has in just over two decades become the largest private university in the U.S. by combining on-line and targeted work-place education. These endeavors that seek to provide education at a distance in one form or another are primarily content forward in the sense that the user is drawn to the network by the presumed instrumental gain of the educational currency being exchanged. In this regard they are more like eBay than YouTube, or MyPlace.

Statusing



Contemporary education at all levels has been impacted by educational criticism that seeks to displace the teacher as the unimpeachable authority figure and the student as receptive vessel, a critique often embodied in the phrase replacing the sage on the stage with the guide on the side. These are powerful efforts to transform the culture of teaching in the direction of the learner and her/his needs. Combined with research on multiple intelligence and differential learning styles many schools are working to re-status learning as a whole, and the learner as a specific. Gardner's work has been so influential, it is unlikely not to be taught in most university level psychology courses or within educational curricula. (Gardner and Hatch, 1989; Kolb, 1984) But it is probably also fair to say that most of the applications that result from this work either occur in private education, or are circumscribed by magnet schools, schools-within-a-school, and charter schools, which given the full reach of public education still reach a relatively small number of students.

Students and their instructors alike are still largely stasused by demonstrations of their consumption of educational quanta, with usually the more the better. Following the model of IT organizations, schools could do much more to celebrate "the idea" and searches for it. Some foundations such as Gates¹¹ and Kellogg¹² seek to redefine elements of school and learning in terms of student originated and executed activity, while building new networks throughout public and private sectors, including across the wide variety of charter schools. The increased prevalence of team work and learning by doing that are central to many of these programs are imitative of the kinds of re-stating that takes place within the IT model of education. As educators we may be impelled to subject the traditional governance and administrative structures of schools and universities to such dynamics as well.

The key to re-stating in this sense of the concept is differentiation of outcomes...different students and teachers with differing and diverse learning needs, styles and capabilities will be organized in various ways, creating multiple pathways toward outcomes than can still be framed within generally agreed-to notions of competence and capability.

¹¹ These intentions are very much a part of the Bill and Melinda Gates Foundation work on schools, especially the early high school program. "We have learned that careful management and quality control can allow charter schools to grow beyond their initial locations into networks of schools across geographies, providing many more students with the opportunity to attend great schools that support their success. Charter management organizations like Aspire and Envision are demonstrating that success is possible at scale." (Gates Foundation 2006)

¹² The Education and Youth program of the W.K. Kellogg Foundation has been in existence for ten years, pursuing many of these goals. One interesting program, New Options for Youth, seeks to create a new credentialing program for youth, re-stating them, as it were, for employment markets. "The New Options Initiative will work outside of the current employment and education system to seek out, strengthen, and partner with innovative community-based organizations, businesses, education institutions, and municipal governments that want to create a new credentialing system to prepare young people for work or further education. These innovative community-based organizations and their cross-sector partners --- together with the young people they seek to serve --- will be charged with co-creating prototypes and action plans that result in the development of a new credential that is valued by employers, educators, and young people themselves." (Kellogg, 2006)



Long Tail and Search

As I argue above, the downside of search is its ability to re-identify us, often without our consent or conscious complicity. The upside of search is that it allows our needs, preferences and requests to information sources to be bundled into profiles that can then be easily matched to materials. In a perfect world, the match would be perfect and our needs satisfied. In an imperfect but still desirable world, as search develops it can allow us to create profiles of “users” from whom we can tailor information and/or instruction. In such a world we might also be able to devise means to “customize” educational components to match these profiles. Diverse needs and differential abilities and interests can be arrayed against highly differentiated capabilities. The same economics of niche satisfaction that operate within the Long Tail can be deployed within education.

To embrace the Long Tail and its increasingly available array of digital sources is not to displace all of education. Rather, the idea is to embrace the notion of “the curriculum” and “the canon”—however they are constituted, as the head and to bring the Long Tail into the school as an extraordinary array of resources for the educational enterprise. The curriculum and the canon are unlikely in any event to go away, and shouldn’t. But, it is perhaps the case that by embracing the Long Tail and situating it with search in the context of a highly customized educational product both the basic content of the curriculum can be significantly adumbrated as well as new change dynamics introduced with respect to its constant (and necessary) revision.

Conclusion:

Throughout the world, and certainly throughout Asia and the Pacific, we are witnessing the strong emergence of the private sector in education, both basic and tertiary. One, if certainly not the only, reason for the emergence of new institutions and the shift in student populations to them is their ability to pick a niche within educational diversity and serve it. Often (but not always), such a move involves the institutionalization of greater flexibility than that which is allowed by the curricula sanctioned by public authority for public institutions. Within Asia educational ministries have proved bastions of bureaucratic conservatism persisting in regimes of rule and outcome that thwart efforts to effect educational reform. (Hawkins, 2006)

The persistent justification for this resistance to change is the duty of public authority to assure equality within public education. This value of equality is articulated in goal and practice by evoking principles of equity, often conjoined to access. Indeed, equity is THE fundamental value of public education, and in most circumstances where private education is permitted as an accompaniment to its public counterpart (and that is virtually everywhere), equity is conjoined to market choice—if you can afford it, you can get it. Arguably, these accommodations within public policy across all sorts of regimes are one of its great accomplishments.

Ironically, however, the public sector press for equity has produced the unintended consequence of diminished equity. By forcing public education into a mode of production



that envisions a consistent “product”, developed through “equal” structures, public education has generated an educational milieu in which by seeking to treat all students as equal, it has induced those who seek or need education more closely directed toward their needs and abilities out of the system and into the broader choice world of private education.

On the face of it, this is a classic public policy dilemma in which equality means producing the same outcome for everyone. This clearly does not work since needs are not the same. The demonstrable results of such public policy—manifest inequality of treatment in the face of policy—have predictable outcomes in health care and social assistance policy as well as education: people with the capacity to opt out of the system do so; those who do not are relegated to an inadequate system that continues to produce poor outcomes. And, we do not “know” how to change it (that is, we lack the conceptual wherewithal in public policy discourse) without abandoning our very authentic and genuine commitments to equity.

Confronting the increasingly complex world of choice briefly touched upon in this essay suggests to me that we need to discursively shift our notions of equity to recognize that in practice equity involves a three step process, and that each constitutes different requirements.

The first is access. Those who do not have access to health care, or education, or clean water or rudimentary public health are in reality outside the framework of the public good from which out contemporary notions of education flow. Within the developed countries the numbers excluded from these public goods are relatively small. Within developing countries, they are still enormous.¹³ The political and social task of access needs to be accomplished in the name of achieving the first step toward equity.

The second is relatively equal shares. Equity needs to proceed along the basis that participants in a process have a relatively even playing field toward achieving a common goal. The setting of that common goal is also part of the political will of a commitment, and it is here that the notion of outcomes is most importantly addressed. It is entirely appropriate for the community to hold that all children should possess certain common skills and values. But if this second step toward equity stops here, it produces the

¹³ Population growth, migration and other structural factors such as civil unrest and disease impose enormous burdens on governments seeking to provide universal education. Education for All (EFA), the United Nations effort to mount a world-wide campaign to assure educational opportunity has monitored world progress in educational access since 1990 when representatives from 155 countries met in Jomtien, Thailand ‘to universalize primary education and massively reduce illiteracy before the end of the decade.’ (UNESCO 2005) The meeting of the World Education Forum in Dakar in 2000 created six goals around which national and international education was to be directed. At the time of the Dakar conference 104 million children were without schooling of which 57% were girls, and two-thirds of the 860 million adults without literacy were women. By 2005 EFA expected that gender disparities in primary and secondary education would be eliminated and that by 2015 overall gender disparities would be eliminated throughout education. (UNESCO 2005)



unwanted consequence of inequity because it conflates equity in relation to a goal with commonality of condition and ability.

The third step to equity involves the several things that this paper has addressed that fall severally under the labels of difference, diversity, choice, ability, talent, etc. Equity exists when participants to a process are provided the means that are appropriate to their abilities to achieve the goals intended by the process. This is an old principle of policy implementation: policy is likely to succeed only when the goals and outcomes intended by the policy are in practice achievable by those who are meant to implement the policy. (Starling and Saint Germain, 2005)

Veterans of the policy battles over education, especially the funding of education, are likely to nod ruefully at this point, noting that this is precisely the dilemma of at least public education: the policy process always wants more from education and is reluctant to pay for it. It is here that the discursive tie to a differentiated concept of equity comes into play, because without it, public sector actors can argue (with some justification) that they may be doing what is required to provide access, equality etc. and therefore any shortcomings in outcome must fall on the shortcoming of the practitioners, who then are likely to point to the shortcoming of entering students, etc. in a never ending chain.

Arguing for a more complex notion of equity and accepting that if education is to be a knowledge enterprise it must not shy away from the powerful change dynamics that are affecting information and knowledge in our societies may point a way out of this dilemma.



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