

What is the purpose of our education system?

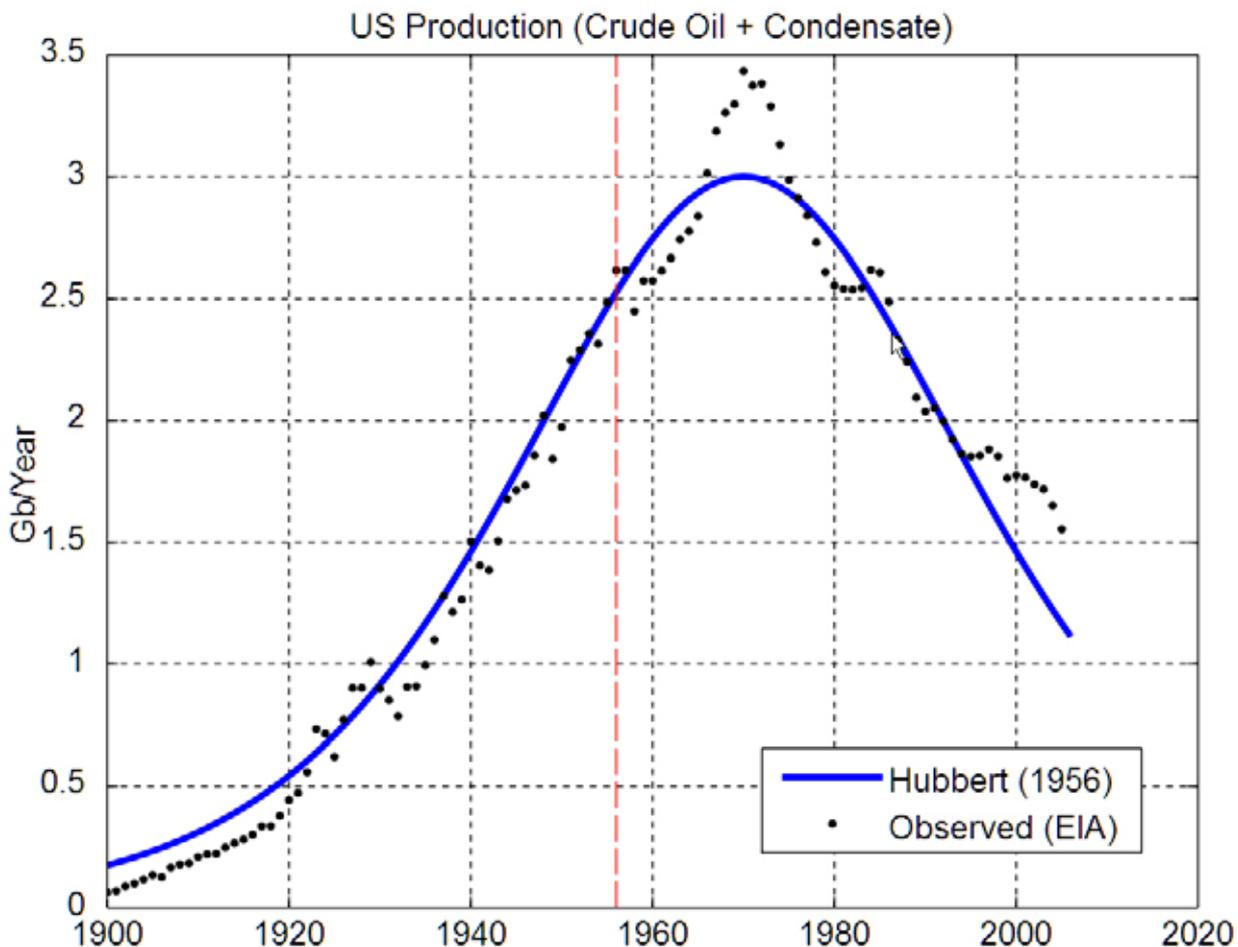
Steve Bull - ASPO Canada (www.aspocanada.ca) - 30 March 2011

The *Ontario Education Act* states that the purpose of our education system is “to provide students with the opportunity to realize their potential and develop into highly skilled, knowledgeable, caring citizens who contribute to their society.” [i] Responses to what our children should be **skilled at** and **knowledgeable in** are likely to illicit as many different answers as there are people being asked. For many, their view of what should be the priority for educational systems is formed by personal schema about what the future world will be like and what skills/knowledge will be needed to be ‘successful’ in this future world.

But do we really know what the future holds? Will trends in technology continue, or will the natural resources required for fabricating such technology become more and more scarce until broad availability is lost? Will we continue to have a large variety of foods from around the world available to us for consumption, or will transportation costs become prohibitive to such global trade and we will have to eat locally-grown foods, supplemented by our own gardens? Will the standard of living we have come to experience for the past few decades continue unabated, or will we experience a massive drop in such standards due to some future event, such as an international war over scarce resources or a global economic depression due to soaring commodity prices that forces us to lower our standards significantly?

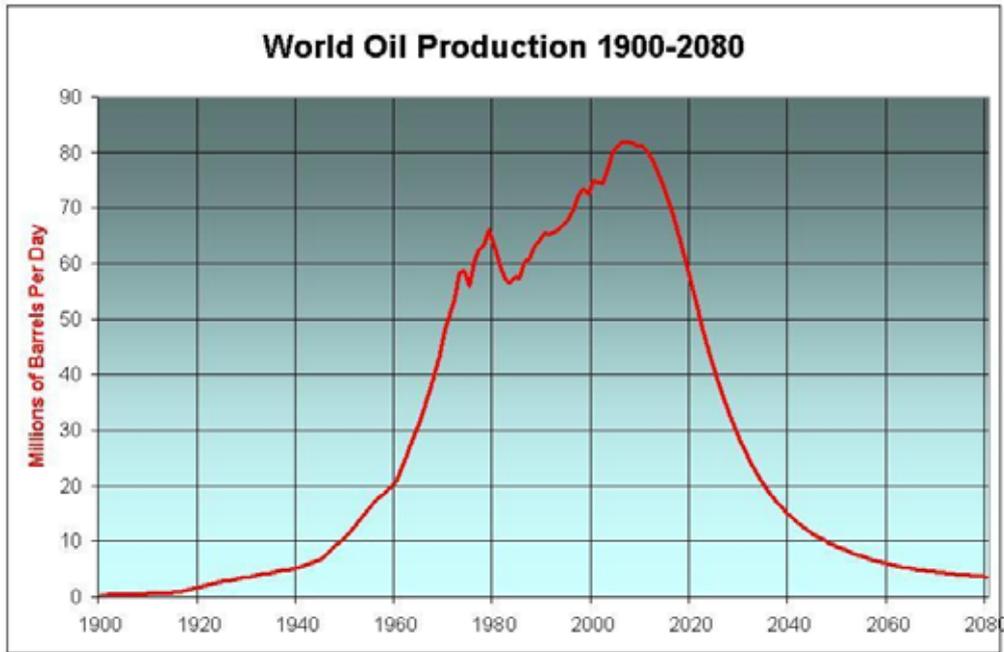
We don't really know what the future holds but we tend to assume that tomorrow will be like yesterday. My own view of what the future may hold, however, shifted dramatically earlier this school year after viewing a documentary entitled ‘Collapse.’ [ii] In brief, the documentary interviews a proponent of ‘Peak Oil Theory’ and his interpretation of how the world is likely to unfold in the next couple of decades. Having read some recent articles in *Scientific American* by some of the world's top scientists that raise similar concerns, and having a background in biology and archaeology, the evidence-based argument presented in *Collapse* struck a chord with me and I began doing some research into the issues raised.

Having never heard of Peak Oil Theory prior to viewing the documentary, my first bit of research was on this topic. Peak Oil Theory is based primarily upon the work of M.K. Hubbert who was a geophysicist working for Shell in the 1950s. Hubbert used oil production data to predict that for any given geographic region, oil production roughly follows a bell curve [iii]. Using this model he predicted, in 1956, that U.S. oil production would peak in the early 1970s and thereafter decline steadily, resulting in the need to increase imported oil in order to keep pace with growing demand. The following graph demonstrates how closely actual U.S. production has followed Hubbert's prediction. [iv]



This pattern has been observed for other oil-producing districts as well, suggesting that Hubbert's model is valid and reliable in predicting the rise and fall of an area's oil production. Applying this model to world oil

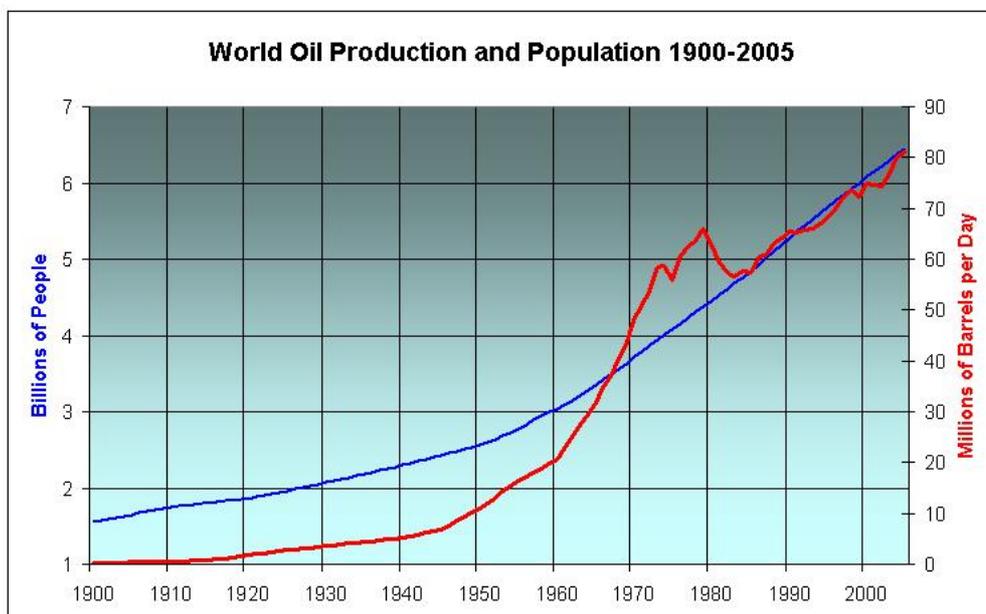
production, Hubbert also predicted that the world would hit its peak in oil production early in the 21st century.[v]



Many critics of this theory argue that the model is flawed as it ignores how new technology can help to retrieve previously unreachable reserves (e.g. tar sands, offshore deep sea drilling, etc.). Regardless of whether we can reach such untouched oil without using more energy through energy-intensive retrieval than is gained, we can all agree that fossil fuels are a finite resource and must run out sometime in the future—not to mention the negative impact on our planet’s environment and climate of continuing to burn carbon-based fuels.

Up until not too long ago, the big oil companies were baulking at the reliability of Hubbert’s model arguing that such a worry is a century or more away. The *International Energy Agency*, however, has recently suggested that the world reached its peak in oil production in 2005. Moreover, in a recent *Foreign Policy* article, the big oil companies are actually predicting a huge energy crunch is just around the corner, with one possible fallout being a decade-long economic depression like never before experienced.[vi]

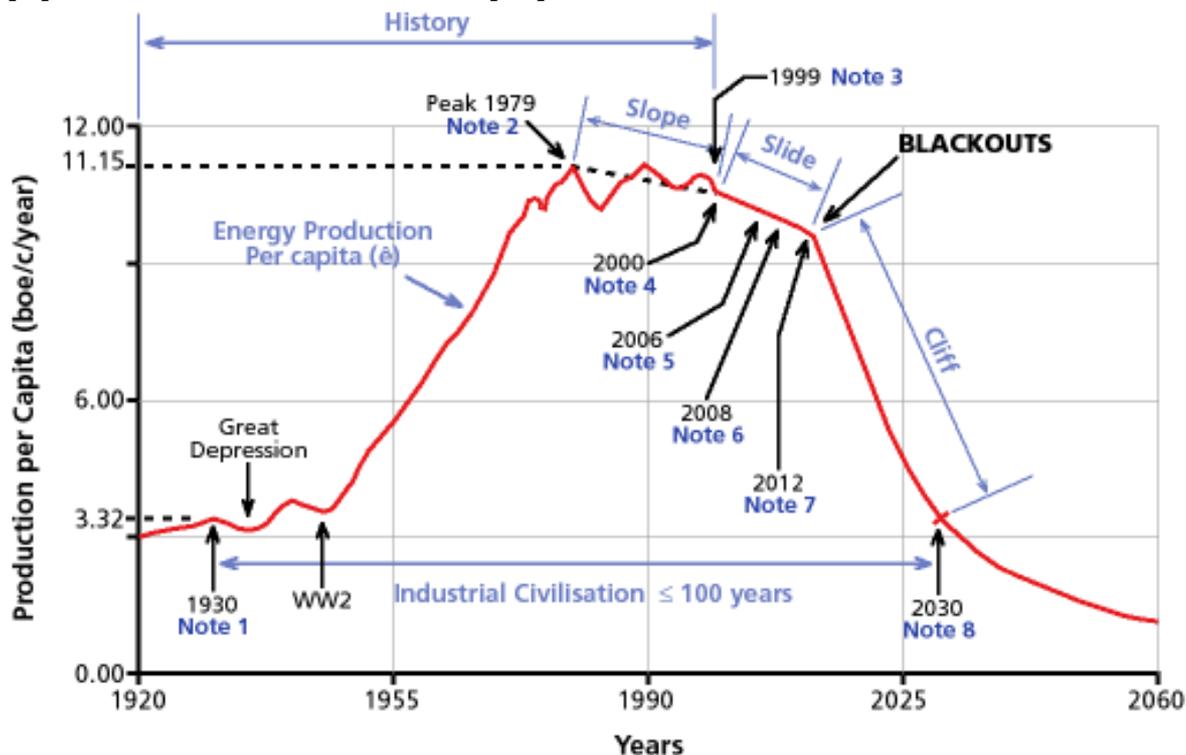
How will a loss of fossil fuels impact our planet and local communities? First, one has to realise that cheap fossil fuel production has facilitated a huge increase in world population through increased food production and distribution (i.e. transportation), improved public health, medical technology, and increased standards of living. Looking at the graph below of world oil production and world population, one can see the positive correlation between these two variables. Whether oil production has been driven by the demand of an increasing population, or a rising population has been possible because of the benefits we have derived from relatively cheap energy sources (i.e. fossil fuels), the two seem inexorably intertwined. So, if one concedes that population is tied to energy production then one only need look at how population may proceed over the next few decades given the graph of world oil production above. Such a decrease in world population will certainly impact our world in ways unforeseen.



It is also safe to say that food prices are closely tied to oil prices due to fuel costs (e.g. gas for farming machinery and transportation to markets), and to the oil-derived pesticides and fertilisers used to kick off and maintain the 'Green Revolution'. In fact, food prices have recently surpassed the ceiling set in 2008 when riots broke out in many developing countries over the inability of many families to afford basic staples[vii]. Further, there are many who believe the current populous revolts in northern Africa and the Middle East stem from rising food and commodity prices.



Richard Duncan, director of the *Institute on Energy and Man*, has proposed that the world is destined for a social collapse on a scale never seen before[viii]. His 'Olduvai Theory' attempts to bring together the various issues of peak oil, world population, and energy use into a predictive theory of social collapse. He argues that once the natural resources the world depends upon for energy begin their inevitable decline, the world will experience waves of brownouts, followed by temporary blackouts, and culminating in a total loss of the electrical grid that much of our society depends upon. As argued above, he also postulates that world population will fall to about 2 billion people (from the current 7 billion or 9 billion estimated for 2020).



The chart above is a graphic[ix] showing energy usage/population as a curve with various key points defined. These are:

- Note 1: (1930) the beginning of Industrial Civilisation
- Note 2: (1979) all time peak of world energy production per capita
- Note 3: (1999) the end of cheap oil
- Note 4: (2000) eruption of violence in the Middle East

Note 5: (2006) all-time peak in world oil production

Note 6: (2008) OPEC crossover when more than 50% of oil comes from the OPEC nations

Note 7: (2012) permanent blackouts spread worldwide

Note 8: (2030) world energy production falls to 1930 level

Is this drastic decrease in population possible? What nails the lid on the coffin for me, so to speak, is that the historical and archaeological records are littered with evidence of numerous past societal collapses and declines. The research around significant sociocultural decline tends to point to resource depletion and/or unsustainable population growth as the primary cause(s). The prototypical example of societal collapse can be found on Easter Island, where a complex society of between 10, 000 and 20,000 people flourished on what was once a beautiful tropical island. [x] When Dutch explorer Roggeveen came ashore in 1722, however, he found only about 2000 malnourished individuals who supplemented their meagre nutrition with cannibalism. Research indicates that the residents of the island had depleted all of the natural resources that had enabled them to build a society complex and organised enough to erect huge symbolic statues and feed a large population. In a nutshell, the island residents stripped their land of its resources and had no means to sustain their social system or population. With no resource base to depend upon, Easter Island's civilisation collapsed and only a small percentage of their population survived. (See Jarid Diamond's monograph *Collapse: How Societies Choose to Fail or Succeed* for other examples of societal collapse) [xi].

Now step back for a few minutes and think about the implications of the above for the education system. How can we educate our children to be successful in such a world? In fact, what is success in such a paradigm? Our society, and most of the world, has come to depend upon energy-intensive technology and imported food and general goods for our survival. Would our students and their families be able to survive, let alone be 'successful' in a radically different world? What is 21st century learning in such a global scenario? I don't know if the Olduvai Theory and its predictions will come to be but the evidence is certainly compelling, especially when one looks at current practices, past patterns, and how volatile the oil and food markets can be when small exporters experience trouble (Libya, for example, is responsible for less than 2% of global oil production).

The world our children inherit depend upon the decision makers of today making the right choices for a sustainable world. Right now, the evidence does not look promising. As Diamond states "Easter Island is Earth writ small...If mere thousands of Easter Islanders with only stone tools and their own muscle power sufficed to destroy their society, how can billions of people with metal tools and machine power do worse?...If we continue to follow our present course, we shall have exhausted the world's major fisheries, tropical rain forests, fossil fuels, and much of our soil by the time my sons reach my current age" [xii].

If the worst case scenario outlined above does come to fruition, which I believe it will in the next decade or two, we have some significant work to do in education. It's time to rethink our priorities and allocate our limited resources accordingly. We need to prepare our students for a world vastly different from the one we have come to enjoy and expect. What should be the core of our curriculum given the circumstances we will soon face? Some of my suggestions would include: conservation of resources through significant reductions in consumption of all goods (we need to 'buy' ourselves more time by prolonging the slide to complete resource depletion); population control (we are having difficulty maintaining our current population at a healthy standard of living); general health and first aid; sustainable living including self-sufficiency in many areas (e.g. vegetable and fruit gardening, cooking, sewing); food consumption habits (e.g. buy locally-grown foods, cut way back on meat); etc.. We need to give our students the skills and knowledge to survive in a resource-depleted world. It is far more likely that they will need basic living skills compared to more esoteric skills and knowledge such as knowing how to determine the surface area and volume of a cylinder (grade eight curriculum) or how different levels of government work together to organise the Olympics (grade 5 curriculum).

[i] Education Act. http://www.e-laws.gov.on.ca/html/statutes/english/elaws_statutes_90e02_e.htm

[ii] Collapse. <http://www.collapsemovie.com/>

[iii] Hubbert Peak Oil Production. <http://www.hubbertpeak.com/>

[iv] http://en.wikipedia.org/wiki/File:Hubbert_US_high.svg

[v] World Oil Production 1900-2080. <http://www.paulchefurka.ca/Population.html>

[vi] *The coming misery that Big Oil discusses behind closed doors*. Foreign Policy, February 11, 2011.

http://oilandglory.foreignpolicy.com/posts/2011/02/14/the_coming_misery_that_big_oil_discusses_behind_closed_doors

[vii] *The Future of Food Riots*. G. Dyer. January 16, 2011. New Vision: Uganda's Leading Website www.newvision.co.ug/D/8/20/743915

[viii] *Olduvai Theory: Energy, Population, and Industrial Civilization*. Richard C. Duncan. *The Social Contract*, Winter 2005-2006. www.thesocialcontract.com/artman2/publish/tsc1602/article_1362.shtml

[ix] *The Wolf at the Door: The Beginner's Guide to Peak Oil*. <http://www.wolfatthedoor.org.uk/>

[x] *Easter's End*. Jarid Diamond, *Discover Magazine*, August 1995. <http://discovermagazine.com/1995/aug/eastersend543/>

[xi] *Collapse: How Societies Choose to Fail or Succeed*. Jared Diamond, 2005. Viking Press. http://en.wikipedia.org/wiki/Collapse:_How_Societies_Choose_to_Fail_or_Succeed

[xii] *Easter's End*. Jarid Diamond, *Discover Magazine*, August 1995. <http://discovermagazine.com/1995/aug/eastersend543/>