

## CONTENTS

### McGraduates or Globo Sapiens?

Patricia Kelly

pp. 1-4

### Cross Disciplinary Approaches in Collaborative Research for a Sustainable Society

Norzaini Azman, Mazlin Mokhtar  
and Ibrahim Komoo

pp. 5-7

### Catering for Adult Learners through the Transformation of Higher Education

Faizah Abd. Majid and Hazadiah  
Mohamad Dahan

pp. 8-10

### Research Short Notes

pp. 11-12

### News and Events

p. 13

### Publications

p. 14

## McGraduates or Globo Sapiens?

Patricia Kelly

Higher Education Consultant, Australian Catholic University, Brisbane, Australia

### Introduction

Faced with global environmental and financial crises, even the World Economic Forum (WEF) (2008: 5) has called for a “fundamental reboot” to create new, sustainable systems, including education. Education that serves business-as-usual futures can only re-produce **McGraduates**. I use this term to describe global ‘fast-education’ graduates who have been trained to serve convenience and profit, above personal, community and planetary health. In engineering, at worst this means Globally Portable engineers who will ‘do any job,’ as well as the popular, somewhat reformed model, Globally Competent engineers, who still do any job but do it ‘smarter’. Assuming sustainable futures are still possible; they will be created and maintained by *Globo sapiens*, wise global citizens whose education will be

based in a more ecologically responsible, less economically driven, peaceful and spiritually-oriented way of living. How do educators encourage such values in a tertiary education system which continues to apply and reward a ‘respond to the market’ discourse? I use a critical futures methodology, Causal Layered Analysis, in an Australian engineering education context, to show how guiding documents and the media can work against the deep changes we need in order to survive the 21<sup>st</sup> century. I hope these insights may be transferable, since a number of countries now recognise each other’s accredited engineering programmes<sup>ii</sup>.

### Causal Layered Analysis (CLA)

I use Causal Layered Analysis (Inayatullah, 1998) as a tool to explore some barriers and bridges to transformative education in engineering (Kelly, 2006; 2008). CLA uses four levels, *Litany*, *Systemic Causes*, *Discourse/Worldview* and *Myth/Metaphor*, to explore issues<sup>iii</sup>. The *Litany* level is the popular media headlines, which oversimplify and exaggerate issues. The *Systemic Causes* level looks behind the headlines and identifies the causes of problems and their effects, using data to find practical responses, often at regulatory level. While the data are questioned, the questions are framed within the dominant paradigm and so do not question the assumptions. *Discourse* level analysis questions by asking who are the stakeholders and how do they view the issue? The fourth level, *Myth/Metaphor*, reveals the deep stories and archetypes behind how we think and what is driving us. Work at these deeper levels engages with and challenges paradigms. Using

**“Sustainable futures will be created by Globo sapiens, wise global citizens whose education will have helped them to develop the skills and critical dispositions the “great transition” needs (Raskin et al. 2002).”**

**TABLE 1: Three CLA scenarios of engineering education**

<b>1) <i>Homo Economicus</i> or Globally Portable (still dominant)</b>	
<b>Litany:</b>	'Bob the builder' does any job.
<b>Systemic Causes:</b>	Market demand, 'tight culture' of engineering
<b>Discourse:</b>	Serve the market – it will serve you; Teachers 'produce' 'products'; We 'deal with' the 'problem' of diversity;
<b>Myth:</b>	"Earth yields to the dominion of man" (sic); We do any job!
<b>2) <i>Homo Globalis</i> or Globally Competent (emerging, reforming)</b>	
<b>Litany:</b>	Global crises are business opportunities, cool solutions to hot problems;
<b>Systemic Causes:</b>	Detailed research describes problems, Creative industries solve them
<b>Discourse:</b>	Critical reflection: Why we are learning? Progressive, adapt to change; inclusive - make spaces to "include" the Other – avoid trouble, work smarter
<b>Myth:</b>	We manage 'Earth.com' - Techno-fix rules! We do the job better!
<b>3) <i>Globo sapiens</i> or wise global citizens (preferred, transformative)</b>	
<b>Litany:</b>	Earth is in danger, Engineers can be sustainageers
<b>Systemic Causes:</b>	Peak oil, climate change, scientific reports, cultural creatives, individuals and institutions want to make changes necessary for sustainability
<b>Discourse:</b>	Engineers want to make a difference. Changing society based on social wisdom <-> learning society. Culturally responsive; engineers do better jobs and do them differently, prevent more damage, repair
<b>Myth:</b>	Heal ourselves - heal the planet. We are different.

Source: Revised from Kelly, 2008: 156-8

CLA, I identified three scenarios of Australian engineering education (Table 1).

Against this background, I also use CLA to update progress in engineering education and ethos through the Australian Council of Engineering Deans' (ACED) report (Johnson et al. 2008) and a Special Advertising Report (SAR) (Cencigh-Abularo, 2008)<sup>iv</sup>. These texts address the challenges facing engineering education through economy-driven variations on the globally portable or globally competent scenarios. Here are some examples to show how the leadership provided by guiding documents and the media can work against the deep changes we say we need. The ACED report's stated aim is

"To ensure that the engineering education sector across Australia's universities produces in a sustainable manner, a diverse supply of graduates with the appropriate attributes for professional practice and international relevance in the rapidly changing, competitive context of engineering in the 21<sup>st</sup> Century" (Johnston et al. 2007: 5).

The dominant respond-to-the-market discourse is clear in the key words, "produces", "supply", "appropriate attributes for... rapidly changing, competitive context".

These terms frame the issues and their solutions. Even the title takes a backward step from the proactive *Changing the Culture* report (IEAust, 1996) to the reactive, "Addressing the Supply and Quality of Engineering Graduates for the New Century". The 2008 report's guiding metaphor is the planet as a no-limit marketplace, in which engineers are innovators, money makers and problem solvers. An alternative, such as the planet as a sustainable garden, would set limits. Work opportunities would abound, but in maintaining, repairing and healing the planet.

The style and content of SAR (Cencigh-Abularo, 2008), designed to attract students to engineering, do not help ACED's aim of "Increasing positive media coverage" (Johnson et al.: 102). The SAR's headline reduces engineers to invisible cogs in a profit-based, boom machine. "Getting the Job Done: ...from retrieving riches from beneath the earth to building mega-structures above it, engineers are the cogs ensuring Australia's boom continues" (Cencigh-Abularo, 2008). The metaphors are greed and consumption based, "immense appetite for engineers", "the world's appetite for commodities shows no sign of slowing" (ibid: 4). The main ride-the-boom discourse touts the rewards of life in the fast lane (money, travel, excitement) through headlines such as "Race to the sky... ASAP" (ibid: 5) which lauds building

skyscrapers in new markets. One feature exemplifies the popular globally competent discourse in which a university's graduates are "the complete package" of business skills and technical skills, who can go straight out and "market" ideas in "buoyant construction and engineering industries" (ibid: 3). Whatever the job, these engineers will no doubt do it smarter. But without a sound ethical basis, being able to manipulate the language and actions of inclusion and consultation can enable more efficient exploitation, as Sterling warned (2001: 94). Meanwhile the business-as-usual future they have been prepared to serve is unravelling.

**"Education that serves business-as-usual futures can only re-produce McGraduates."**

There is an alternative, healthy, 'wanting to make a difference' discourse struggling to grow. Many young engineers want to contribute to sustainable societies. This discourse has great potential to attract students and to inform curriculum changes. The ACED report acknowledges the "strong support for engineers taking a high profile in issues of sustainability and the impact of climate change" (Johnson et al. 2007: 12) but does not develop this as the core of a better vision.

#### How is My Research Useful?

Surviving the 21<sup>st</sup> century involves the emotional and intellectual challenge of transformation. I found that about 65 per cent of students engage with challenges to their attitudes, willingly or grudgingly. Around 25 per cent are "converts", who hate the process at the beginning but appreciate the benefits at the end. Problems lie mainly with the 10 per cent who 'resist' all the way. Of course, resisters are entitled to their resistings. The problem is that they are so "loud" and so certain in their resistance and criticism, that they claim disproportionate power and influence in classrooms and organisations. They and those they work with need to know that they do not speak for all students (or staff). They have to respect others' rights to change. Identifying and understanding the causes behind resistings helped me to respond constructively (Kelly, 2006; 2008). My imperfect but appropriate pedagogy encouraged stages of personal growth. Many students 'got connected' (to others and themselves), 'got respect', 'got insight', 'got inspired', 'got courage', 'got healed' and 'got transformation'. The findings helped me to identify six qualities of *Globo sapiens*. A wise global citizen:

- *has empathy with and sensitivity to other ways of being and knowing*; some students had to acknowledge that they had feelings before they could feel for others, other species and the environment;
- *has global consciousness*; thinking beyond ourselves and seeing ourselves as part of a global ecosystem;

- *is able to contemplate changes to their current way of life*; despite tsunamis of images and messages urging us to consume more, as part of an unquestioned, no-limit future;
- *is capable of trans-generational thinking, past and future*; understanding that we can learn from the past and the future in order to create a better present;
- *has courage*; to question those in power, to speak up, to live an ethical life;
- *is working towards healthier futures, from the personal to the spiritual*. This requires substantive knowledge and an emotional vocabulary, as well as the confidence to apply it.

#### A Transformative Pedagogy

Change is not just about "engineering engineers" (Jacobs, 2006; Dowd, 2009) but educating people - to face increasingly stressful ecological, social, political, economic and cultural contexts. I offer some foundational elements of a transformative pedagogy below. These do not replace essential technical skills and content, they underpin them.

1. *Integrate valuing and respecting diversity*
2. *Create environments which support cross-cultural, cross-gender communication.*
3. *Create an ethos that encourages trans-generational thinking*
4. *Scaffold learning*
5. *Show a human face* (Kelly, 2008: 37-39). Globally competent practitioners need a daunting array of skills and qualities, but how can we help others to grow if we aren't growing ourselves? (Badley, 2000).

#### Conclusion

Any future is likely to be radically different. Whichever future we are creating, graduates need a raft of diverse skills and human attributes including "...a sense of responsibility and transpersonal ethics" (Sterling, 2001: 22). Sustainable futures will be created by *Globo sapiens*, wise global citizens whose education will have helped them to develop the skills and critical dispositions the "great transition" needs (Raskin et al. 2002).

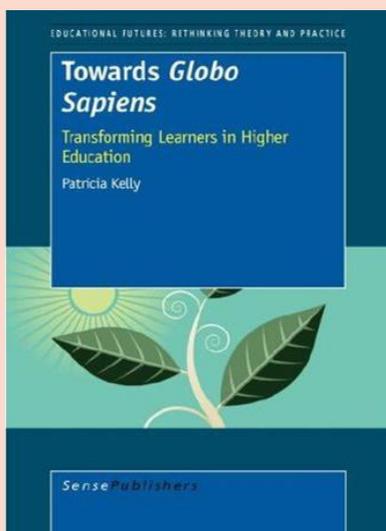
*Note:*

*This paper is revised and abridged from: Kelly, P. (forthcoming). Engineering, a civilizing influence? Futures, (Elsevier) 'Global Mindset Change' special edition.*

#### References

- Badley, G. (2000). Developing globally-competent university teachers. *Innovations in Education and Training International (IETI)*, 37(3), 244-253.
- Cencigh-Abularo, L. (2008). *Getting the job done* (Advertising Report). Sydney: The Weekend Australian.

- Dowd, P. (2009, 18 August). Engineering a better experience. *Campus Review*, 15.
- Inayatullah, S. (1998). Causal layered analysis. Poststructuralism as method. *Futures*, Vol. 30 (No. 8), 815-829.
- Jacobs, B. (2006). *Engineering engineers: Big questions, little questions*. Retrieved June 22, 2008, from <http://services.eng.uts.edu.au/~betty/publicns.htm>
- Johnston, A., King, R., Bradley, A., and O'Kane, M. (2008). *Addressing the supply and quality of engineering graduates for the new century*: University of Technology, Sydney. Support for the original work was provided by the Carrick Institute for Learning and Teaching in Higher Education Ltd., an initiative of the Australian Government Department of Education, Employment and Workplace Relations.
- Kelly, P. (2006). *Towards Globo sapiens: Using reflective journals to prepare engineering students able to engage with sustainable futures*, (PhD thesis). Retrieved November 23, 2009 from <http://adt.library.qut.edu.au/adt-qut/public/adt-QUT20070403.150024/>
- Kelly, P. (2008). *Towards Globo sapiens: Transforming learners in higher education*. Rotterdam: Sense Publishers.
- IEAust. (1996). *Changing the culture: Engineering education into the future*. Canberra, Australia: The Institution of Engineers, Australia.
- Raskin, P., Banuri, T., Gallopin, G., Gutman, P., Hammond, A., Kates, R. and Swart, R. (2002). *Great transition: the promise and lure of the times ahead*. Boston: Stockholm Environment Institute, from [www.gsg.org](http://www.gsg.org)
- Sterling, S. (2001). *Sustainable education: Revisioning learning and change*. Totnes, UK: Green Books.
- World Economic Forum. (2009). *The global agenda 2009*. Geneva, Switzerland: World Economic Forum, from [www.weforum.org/pdf/summitreports/globalagenda.pdf](http://www.weforum.org/pdf/summitreports/globalagenda.pdf)



**Endnote:**

<sup>i</sup> According to Wikipedia [http://en.wikipedia.org/wiki/Homo\\_economicus](http://en.wikipedia.org/wiki/Homo_economicus), Persky (1995) traces the term Homo economicus to Pareto (1906). It has since been used in multiple ways in various disciplines.

Homo globalis is another neo-latin term, with no clear authorship. Globo sapiens is an adaptation of the longer term Globo persona sapiens, from Finnish futurist Pentti Malaska (1997). His term refers to transhumans who are the end product of a process by which new humans and non-humans would combine into a superior and wiser, hybrid internet progenitor. My use and the qualities I identify, are human-based only.

Malaska, P. (1997). *Inventing futures*. Paper presented at the World Futures Studies Federation XV World Conference 'Global conversations -What you and i can do for future generations', Brisbane, Australia 28 September - 3 October 1997.

Pareto, V. (1906). Manual of political economy. Cited in Persky, J., Retrospectives: the ethology of homo economicus. *The Journal of Economic Perspectives*, Vol. 9, No. 2 (Spring, 1995), pp. 221-231. Retrieved December 21, 2009 from [http://en.wikipedia.org/wiki/Homo\\_economicus](http://en.wikipedia.org/wiki/Homo_economicus)

<sup>ii</sup> "Graduates of accredited programmes in any of the signatory countries are recognised by the other signatory countries as having met the academic requirements for entry to the practice of engineering." Retrieved from [http://www.engc.org.uk/international/international\\_agreements/washington\\_accord.aspx](http://www.engc.org.uk/international/international_agreements/washington_accord.aspx)

<sup>iii</sup> For detailed explanations and examples of CLA in action see Inayatullah, S. and Gidley, J. (Eds.) (2004), *Causal layered analysis reader*. Tamsui, Taiwan: Tamkang University.

<sup>iv</sup> The detailed CLA of these texts is available in the full paper.