Engaging with Sustainability through Collaborative and Transdisciplinary approaches to Education

Edmond Byrne
School of Engineering | Dept. of Sociology,
Process & Chemical Engineering, University College Cork, University College Cork, Ireland

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Meaningfully addressing the ‘grand challenges’ emanating from the contemporary unsustainable societal construct, requires not just a global perspective,.. but a holistic non-reductive type of knowledge that can only emerge through a transdisciplinary approach.

(Max Neef, 2005; Hirsch Hadorn et al., 2006; Nicolescu, 2012; Lang et al., 2012)
However the *silosation* of the academy — whereby universities, as drivers of knowledge and understanding, promote increasingly specialized and ghettoised silos of knowledge, only serves to further embed a paradigm of *reduction* and *separation* (Morin, 2008).

The result?

An educated global population (and elite) who are neither able to fully comprehend nor adequately deal with emerging crises.

Engineers get on with the business of (literally) constructing society, as ordained by business or political masters, while Social Scientists content themselves with exploring the nature of reality, as (co-)constructed and mediated by humans, the interactions between human agents themselves, and at times between humans and the rest of their environment.

Yet this high level learning (*complex thought* (Morin, 2008)) is not typically applied to the real techno-economic society that engineers help co-construct. Disciplinary silos remain firmly *in situ* while each only sees value from within their own.

The result is engineers who are incapable of seeing the broader ethical context of their work (nor of seeing the *rationale* for developing such an awareness), including the absence of envisioning a normative or political dimension to their work.

With this *limited* self-perception and toolbox, every problem can potentially be reduced to a *closed problem* with a technological *solution*.

Thus, in the wake of emerging crises, the potential for meaningful *progress* through *transdisciplinary integration* and insight is *lost* among practitioners who not only cannot speak the same *language*, but who in many cases are incapable of even recognising the *existence* of any other.

‘We need a kind of thinking that relinks that which is *disjointed* and *compartmentalized*, that respects *diversity* as it recognises *unity*, and that tries to discern *interdependencies*.’

(Morin, 1999)
Authors’ Conclusions: **Transdisciplinary** approaches are the only rational and intellectually honest way to address emerging societal crises associated with unsustainability. Meaningful progress can only be made through **practical intervention** – at the level of professional & formative education.

It is unreasonable to expect disciplinary practitioners, educated exclusively in hermitically sealed silos within a ‘multiversity’ setting, to spontaneously develop the required understandings, skills and competences to work productively together in tackling larger wicked problems at some unspecified later stage.

**The result?** Collaborative assignment involving students from two modules:
- PE3011 Sustainability in Process Engineering
- SC3029 Sociology of the Environment

Formal group meetings for five consecutive weeks -lecturers present to provide feedback. A documentary was shown initially on conceptions of progress which reflected on the unsustainability of our contemporary world highlighting interlinked economic, social and ecological contexts - helped stimulate ideas and generate commonality.

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<th>Group</th>
<th>Chosen ‘Sustainability’ related topic</th>
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<td>A</td>
<td>Globalisation vs Localisation</td>
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<td>B</td>
<td>Consumerism - Products, Resources, Environmental &amp; Social</td>
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<td>C</td>
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<td>Sustainability in food consumption</td>
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<td>Sustainability and Ethics</td>
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The Group Presentations

**Fear:** Car crash situation among students from disparate disciplines, ‘object worlds’ and ‘languages’.

**Outcome:** Overall, a great success: groups provided well researched, thought provoking presentations displaying a strong level of engagement. Lively discussions followed.

While there wasn’t always a coherent narrative, students clearly engaged very well and in good faith, particularly given their different backgrounds.
Individual Reflective Reports:

(1) Provided evidence of some strong student engagement and learning during the assignment, producing some valuable insights and enhanced self-awareness.

(2) Students found the opportunity to engage with students of other disciplines to be an overwhelmingly positive and intellectually stimulating/rewarding experience. No negative comments.

Key: To what extent did this assignment help you:
1. Develop new & deeper understandings you’d previously overlooked or help broaden your perspectives?
2. Think more critically?
3. Enhance your level of understanding around sustainability/sustainable development?
4. Better prepare you for the nature of your future career?
5. Overall, how do you think the exercise worked?

Reflection

- Assignment exceeded our expectations – no significant disciplinary ‘language’ problems, instead a willingness to learn and explore in a collaborative manner and in good faith displayed by all.

- Possibly aided by a similar spirit of transdisciplinary openness on behalf of lecturers which fostered sense of legitimacy among students over cynicism, quelling the potential for Snow’s ‘hostility and dislike, but most of all lack of understanding’ across a ‘gulf of mutual incomprehension’

- Continued with and expanded the exercise in 2014-15 (when assignment was formalised for SC3029) and thereafter
CONCLUSIONS

Despite CP Snow’s misgivings, there is significant cause for hope. Despite rigorous siloisation of our educational system, when disciplinarians come together in good faith it’s possible to have productive transdisciplinary ‘conversations’ around significant ‘grand challenges’ around the contemporary metaproblem of (un)sustainability.

Disciplinary learning and ‘object worlds’ are required as pillars from which productive transdisciplinary knowledge can both emerge and be supported. The result: a dynamic fusion of thought and action, which rather than a nice extra, is a prerequisite if we hope to successfully address contemporary crises whose roots reside in unsustainability, and hence open up the possibility of genuine human flourishing.