The learning of ecology - or the ecology of learning?

Responses to sustainability in the context of HE

Graduate School of Education, U of Bristol 7th March 2007

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Centre for Sustainable Futures
University of Plymouth
‘What Good is a Rigorous Research Agenda if You Don't Have a Decent Planet to Put it On?’

Chapter heading

*Ecological Literacy: Education and the Transition to a Postmodern World*

‘Reinventing the university’

‘...it is pre-eminently in the universities that we should be thinking hardest about the implications of this whole world-system for our common life and its future, and bringing the best of our available intelligence to bear on the necessary changes. If not there, where? If that’s not the business of universities in the early twenty-first century, what on earth are they for?’

- John Foster, 2007
'My perception that universities have pretty well isolated themselves from society, through their academic detachment, and that’s the way they’ve made themselves rather irrelevant to current issues of sustainability, which are absolutely critical. ....

And...so what I’ve felt is that university education has to go radically localised, in the sense of integrating student learning with the local community. Universities have to become dedicated in service to their community.....

Now I know it’s difficult – you’ve got to get the right places and you’ve got to get the right people, but that’s something that I see emerging quite strongly now as an element, and this is going to radicalise University education, and make it relevant.'

- Academic, University of Plymouth, 2005
Big questions!

• Why do universities largely advance the kind of thinking, teaching and research that contribute to unsustainability?

• What kind of learning and change needs to occur within institutional policy and practice so that critical innovation sustainability competencies, understandings and values are more likely to be fostered amongst staff and students?

• What might such competencies look like?

• How do we balance practicability with urgency?
The ‘new’ conditions

- Global warming
- Peak oil
- Insecurities
- Unsustainability
- Dense interdependence
- Stress
- Globalisation
- Population pressures
- Uncertainty
- Complexity
- Inequity
- Overconsumption
- Ecosystem degradation
‘To live in the third millennium we shall need more than incremental improvements on our current rationality; we shall need new thinking joined with new ways of perceiving and visioning ourselves, others, nature and the world around us.’

- Ervin Laszlo 1997
‘Daunting agenda...exciting possibilities’

- Power civilisation by sunlight
- Grow food and fibre sustainably
- Dis-invent the concept of waste
- Preserve biodiversity
- Restore ruined ecologies
- Reduce materials, water and land use per head
- Rethink the political basis of modern societies
- Develop economies that can be sustained within nature’s limits
- Distribute wealth fairly within and between generations

- David Orr
Re-learning

‘This century may well be one of relearning on a grand scale…

This learning…needs to be a core part of learning across society, necessitating a metamorphosis of many of our current education and learning constructs.’

- See Change: Learning and education for sustainability,

NZ Parliamentary Commission for the Environment, 2004
Responsiveness: personal, organisational, social

RESPONSIBILITY
(ethics)

Sustain-ability

RESPONSEABILITY
(agency)
We should:
‘create learning that enhances critical thinking, the understanding of the self, the systems and environments in which we live, and the situations we experience…’

We need to:
‘..understand and manage complexity, cope with ambiguity and uncertainty, and grasp the connectedness and interdependence of the systems of which we are a part.’

Goal of UN DESD

‘to integrate the values inherent in sustainable development into all aspects of learning in order to encourage changes in behaviour that allow for a more sustainable and just society for all.’ This involves learning ‘the values, behaviour and lifestyles required for a sustainable future and for positive societal transformation’.
Levels of knowing

- Actions
- Ideas/theories
- Norms/assumptions
- Beliefs/values
- Paradigm/worldview
- Metaphysics/cosmology
Hidden dimensions – the education ‘iceberg’
### Rough educational paradigm map

<table>
<thead>
<tr>
<th>Educational paradigm</th>
<th>Positivist</th>
<th>Interpretivist; Constructivist</th>
<th>Critical; radical</th>
<th>Poststructural</th>
<th>Participative</th>
</tr>
</thead>
<tbody>
<tr>
<td>Role of educator</td>
<td>Instruction</td>
<td>Facilitation</td>
<td>Critical pedagogy / ‘transformative intellectual’</td>
<td>Deconstruction</td>
<td>Mediation, mentoring / ‘invitational’ leadership</td>
</tr>
<tr>
<td>Curriculum</td>
<td>Prescribed</td>
<td>Constructivist; Learner centered</td>
<td>Issues based</td>
<td>Pluralist</td>
<td>Indicative, emergent</td>
</tr>
<tr>
<td>Pedagogy</td>
<td>Delivery</td>
<td>Transactional</td>
<td>Critical pedagogy</td>
<td>Deconstruction</td>
<td>Co-inquiry</td>
</tr>
</tbody>
</table>
Choose your cultural metaparadigm…

<table>
<thead>
<tr>
<th>Metaphor:</th>
<th>Mechanism</th>
<th>Ecology/ living systems</th>
</tr>
</thead>
<tbody>
<tr>
<td>Epistemology:</td>
<td><strong>Objectivist</strong></td>
<td><strong>Participative</strong></td>
</tr>
<tr>
<td>Ontology:</td>
<td>Reductionist, dualistic</td>
<td>Holistic, integrative</td>
</tr>
<tr>
<td>Methodology:</td>
<td><strong>Reductive</strong></td>
<td><strong>Systemic</strong></td>
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</table>
Two ways of thinking...

- Problem-solving
- Analysis
- Reductionism
- Closed cause-effect
- Atomism/segregative
- Narrow boundaries
- Objectivism
- Dualism
- Rationalism
- Determinism

- Reframing / alleviation
- Synthesis
- Holism
- Multiple influences through time and space
- Integrative
- Extension of boundaries
- Critical subjectivity
- Pluralism / duality
- Rational / non-rational ways of knowing
- Uncertainty, tolerance of ambiguity
Effects on educational outlook

**Mechanistic view of education**
- Reductionist view of knowledge
- Deficit view of learner
- Transmissive model of pedagogy

**Ecological (relational) view of education**
- Holistic view of knowledge
- Appreciative view of learner
- Transactional or transformative view of pedagogy
A different way of looking at education?

Possible characteristics...

- integrative/relational/holistic
- human-scale and participative
- learner-centred
- critical and systemic
- real-world and future oriented
- experiential
- values-based
- transformative
World as machine...

‘The world partly becomes - comes to be - how it is imagined.’

- Gregory Bateson, 1980
The primacy of relationship

‘All thinking worthy of the name now must be ecological.’

- Lewis Mumford, 1964
Dimensions of paradigm

SEEING
Perceptual - ethos, values, emotions, assumptions

DOING
Practical - design, action, skills

KNOWING
Conceptual - understanding, frameworks, models
Being relational requires

Extension: ‘re-perception’

Integration: ‘response-ability’

Connection: ‘re-cognition’
Towards ‘systemic wisdom’: a deeper take on values, knowledge, skills

- **Seeing** (perception): An expanded ethical sensibility or consciousness
- **Knowing** (conception): A critical understanding of pattern, consequence and connectivity
- **Doing** (action): The ability to design and act relationally, integratively and wisely
The consistent whole?

**DOING:** Behaviour and impact

**KNOWING:** Knowledge and competencies

**SEEING:** Radicalism, ambition, attitude

- High impact lifestyle
- An e.g.

From: IEMA Best Practice Series
Purposes of education

- **Vocational**: preparing for economic life
- **Socialisation**: reproduction of culture, promotion of citizenship
- **Liberal**: developing individual’s potential
- **Transformative**: education for change, for a better world
Two arenas of learning

**Structured learning:**
- intentioned learning amongst students in formal education which arises from educational policies and practices

**Attendant learning:**
- the social learning response to sustainability in organisations, institutions and their actors
Learning levels

<table>
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<tr>
<th>First order change</th>
<th>Effectiveness/efficiency</th>
<th>‘Doing things better’</th>
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<tbody>
<tr>
<td>Second order change</td>
<td>Examining assumptions</td>
<td>‘Doing better things’</td>
</tr>
<tr>
<td>Third order change</td>
<td>Paradigm change</td>
<td>‘Seeing things differently’</td>
</tr>
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# Learning levels

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<th>Cognition</th>
<th>Conformative learning</th>
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<td><strong>First order</strong></td>
<td>Cognition</td>
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</tr>
<tr>
<td><strong>Second order</strong></td>
<td>Meta-cognition</td>
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</tr>
<tr>
<td><strong>Third order</strong></td>
<td>Epistemic learning</td>
<td>Transformative learning</td>
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Towards sustainable institutions

**FROM:**
- Incoherence and fragmentation
- Large scale
- Loss of connectivity
- Closed community
- Teaching organisation

**TOWARDS:**
- Human scale
- High connectivity
- Open community
- Learning organisation
- Systemic coherence and synergy

*Microcosm of unsustainable society*

*Microcosm of sustainable society?*
Vision

The transformation of the UoP - from an institution characterised by significant areas of excellence in ESD - to an institution modelling university-wide excellence and hence able to make a major contribution to ESD regionally, nationally and internationally.
Organisational change

**Systematic**
- policies, strategies, rules, procedures, assessment, evaluation, structures etc

**Systemic**
- emergence, collegiality, social learning, informal networks, collective intelligence, ethos, self-organisation etc
Whole systems approach

Curriculum

Campus

Community

Culture
Levels of engagement

Education *about* sustainability: content emphasis. Fairly easily accommodated into existing system. Learning *about* change.

Education *for* sustainability: values and skills emphasis. Greening of institutions. Deeper questioning and reform of purpose, policy and practice. Learning *for* change.

Sustainable education: Capacity building and action emphasis. Experiential exploration of sustainable institutions/communities. Reflexive learning *as* change.
Shifts in curriculum, content and process

**FROM:**
- Curriculum as top-down ‘product’
- Fixed knowledge
- Abstract knowledge
- Teaching/instruction
- Few learning styles
- Passive learning

**TOWARDS:**
- Curriculum as experience/ situated learning
- Provisional knowledge
- Real world knowledge
- Participative learning
- Multiple learning styles
- Reflective/ active learning
Pedagogy

Sustainability not only encompasses ecological mindfulness and competence but also equity, social justice, and peaceful relationships, and action for change/ transformation. These principles translate into a pedagogy that:

• *Manifests a learner-centred (horizontal) dynamic as a against a teacher-centred (transmissive or vertical) dynamic*
• *Has a real issues orientation and engagement, and develops skills and understandings within real life situations*
• *Puts praxis-oriented learning (linking theory and practice) at its heart*
• *Embraces affective and skills-related objectives as well as cognitive objectives*
• *Enables students to listen to the voice of the marginalized (those harmed by unsustainable modes of living and relating).*
Education ‘as’ sustainability

Holistic educational values
- autonomy
- capacity-building
- participation
- collaboration
- realising potential
- resilient learner
- competence

Ecological sustainable development values
- self-organisation
- development and conservation of diversity and potential
- resilience in social-economic systems
- system health
- community
- adaptive management
‘Anticipatory learning’ and the ‘resilient learner’

Resilient learners:
- tolerate uncertainty; persist; learn from mistakes; anticipate consequences; are socially engaged and socially competent etc

Need to shift from ‘maintenance learning to ‘anticipatory and innovative learning’ – Banathy 1991
‘Sustainability literacy’: the ability...

<table>
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<tr>
<th>- to appreciate importance of environmental, social, and political contexts</th>
<th>- to solve real-life problems in a <strong>non-reductionist</strong> manner</th>
<th>- to <strong>think creatively</strong> and holistically and make critical judgements</th>
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<td>- to develop high-level of <strong>self reflection</strong>, personal and professional</td>
<td>- to identify, understand, evaluate and <strong>adopt values</strong> conducive to sustainability</td>
<td>- to bridge the gap between <strong>theory and practice</strong></td>
</tr>
<tr>
<td>- to participate creatively in <strong>inter-disciplinary teams</strong></td>
<td>- to initiate and <strong>manage change</strong></td>
<td>AND, have a broad and balance foundation knowledge of SD</td>
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*SD in HE: Current practice and future developments, Higher Education Academy 2005*
Skills for sustainable communities
Egan Review, 2004

- Inclusive visioning
- Creativity
- Leadership
- Openness to change
- Challenging assumptions
- Teamwork
- Flexibility
- Communication
- Conflict resolution
And another competency list...

- looking at problems in a global context
- working co-operatively and responsibly
- accepting cultural differences
- thinking in a critical and systemic way
- solving conflicts in a non-violent way
- changing life-styles to protect the environment
- defending human rights
- participating in politics

(Cogan and Derricott, 2000)
Melding paradigms?

‘Delivery’
Prescriptive
Performance valued
Instructive

Meaning
Participative
Emergence valued
Constructive

Dialogue
Invitational
Mentored engagement
Facilitative
Our machines, our value systems, our educational systems will all have to be informed by (the) switch, from the machine age when we tried to design schools to be like factories, to an ecological age, when we want to design schools, and families and social institutions in terms of maintaining the quality of life not just for our species, but for the whole planet.

- Mary Catherine Bateson, 1997, 84