The making and remaking of sustainability

The equation of animal and vegetable life is too complicated a problem for human intelligence to solve, and we can never know how wide a circle of disturbance we produce in the harmonies of nature when we throw the smallest pebble into the ocean of organic life.

— George Perkins Marsh

Man and Nature, (1864), 103.

Neo -Marxist critiques

- In sustainability the concept of ‘growth’ is replaced with ‘development’ signifying egalitarian intentions. However, the neo-liberal “management and manipulation” of the current ecological crisis to generate third-world debt, privatisation schemes will only deepen poverty and environmental destruction (Harvey, 2005). Economic investment and foreign aid programmes increase dependency (interest exceeds exports).
- The inherent necessity for economic growth (capitalist logic) remains unchallenged.
- According to Harvey, features of late – modern societies are simply ‘unsustainable’. Sustainability has become a contradictory discourse. The field of ecopolitics has made substantial advances, but has failed to address the underlying causes of environmental destruction (Bluhdorn, 2007).

Sustainability is a discourse

- “A discourse is a shared way of apprehending the world . Embedded in language, it enables those who subscribe to it to interpret bits of information and put them together into coherent stories or accounts. ..Discourses are bound up with political power … they embody power in the way they condition the perceptions and values of those subject to them , such that some interests are advanced and other suppressed… discourses are also intertwined with some material political realities” (Dryzek, 2005, p. 9)

Overview

1. 17th Century science – experimental science and the mechanistic worldview
2. The scientific establishment of an environmental crisis through the work of early ecologists examples of “crisis rhetoric” by Rachel Carson
3. Research design. Discourse analysis (of policy/literature) – Foucault and Fairclough
4. Sustainability and neo-liberalism
5. Implications for education for sustainability (EfS)
6. Dialectical science – a new direction?

Mechanistic scientific worldview

- Mind/body Human/animal dichotomy and dualisms of Descartes
- Body as machine /automaton . Bodily movements are controlled physiologically by animal spirits
- “a kind of machine equipped with and made of bones, nerves, muscles, veins, blood and skin” (Descartes – meditation 6) Humans and animals are machines that respond to the world through sensory stimulation. Purely physiological processes can cause the human body to respond without contribution from mind/soul (e.g . a hug)
- Domination of nature: Francis Bacon (1571- 1626) :

natures womb harboured secrets that through technology could be wrestled from her grasp

The great question, whether man is of nature or above her.

— George Perkins Marsh

Man and Nature, (1864), 549.

- Philosophical assumptions of the scientific revolution have caused the ‘death of nature’ – nature perceived as a set of dead and inert atoms (Merchant, 2005) .
- 17th century philosophical assumptions about ‘being’ (outside of nature) .
- Ontological orientation - nature as matter is composed of atoms
- Knowledge is independent from natural world and can be extracted from it (Francis Bacon)
- – compatible with advance of commercial capitalism -instrumental utilitarian view
- Experimental science world view sees nature as a machine (Dead /inert matter. Animals as automaton) Replaced pre-seventeenth century organic framework of nature as ‘mother earth’ – i.e living organism ; earth centre of cosmos, (Merchant , 2005,p.450)

- Links with liberalism – political theory that accepts the scientific analysis that nature is composed of atoms moved by external forces
- Humans as individual self-maximising agents motivated by self-interest
- Capitalism as the optimal structure for human progress (Merchant,2005)

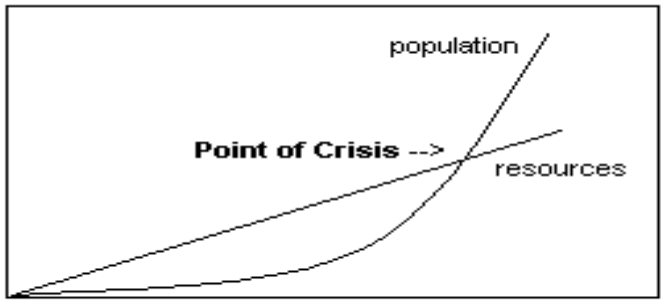
Progress

- Dominant progress paradigm legitimated by focus on machines / use of nature as separate inanimate
- Discourse can has the function of shaping our understandings of everyday reality in ways that become commonsense.

Canaries in the coal mine

- Rachel Carson – *Silent Spring (1962)*
- Paul Ehrlich - *The Population Bomb* (1968)
- Garett Hardin - *The Tragedy of the Commons* (1968)
- Ray Dasmann - *Planet in Peril?: Man and the Biosphere Today* (1972)

  Alerted public to toxic pollution of the biosphere - soil/waterways; population growth; resource depletion; human quality of life
- Presented a challenge to dominant growth models
- Carson challenged Cartesian logic



Carson (1962) – from pesticide as a ‘solution’ to pesticide as a ‘problem’

- DDT and synthetic chemicals are not ‘heroes’, but rather, ‘elixirs of death’
- *“Subsequent to Silent Spring, the quantity and quality of the policy discourse changed dramatically. One after another, a series of government reports reinforced a technological frame that highlighted ‘the pesticide problem’”* (Maguire, 2004, p. 126).
- 3 million dollar pesticides industry ‘highly irritated’ by a quiet woman author ... Previous works praised for beauty and precision of the writing

‘Silent Spring’ Is Now Noisy Summer

Pesticides Industry Up in Arms Over a New Book

By JOHN M. LEE

The $300,000,000 pesticides industry has been highly irritated by a quiet woman author whose previous works on science have been praised for the beauty and precision of the writing.

The author is Rachel Carson, whose “The Sea Around Us” and “The Edge of the Sea” were best sellers in 1951 and 1955. Miss Carson, trained as a marine biologist, wrote grace-

Rachel Carson Stirs Conflict—Producers Are Crying ‘Foul’

fending the use of their products. Meetings have been held in Washington and New York; Statements are being drafted and counter-attacks plotted.

A drowsy midsummer has suddenly been enlivened by the greatest uproar in the pesticides industry since the cranberry scare of 1959.

Subversive

- Differing from earlier pre-war insecticides that were made from mineral and plant products, the new synthetic chemical insecticides were originally intended as “agents of death for man” (Carson, 2002, p.18).
- chemicals “enter the most vital processes of the body and change them in sinister and often deadly ways” (Carson, 2002,p . 16)
- Carson (2002, p 15) illustrated the staggering degree to which DDT could be located in the tissues of a wide variety of life forms including, “fish, birds , reptiles, and wild and domesticated animals”.
- There was a strange stillness, the birds - for example, where had they gone? The few birds seen anywhere seemed moribund … A grim spectre has crept upon us almost unnoticed, and this imagined tragedy may easily become
- a stark reality we all shall know (Carson ,2002, p. 3)
- Her work led to the formation of the Environmental Protection Agency (EPA) and the banning of DDT (Waddell, 2000)

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Carson’s legacy

- Scientific work is embedded in a political context with real material consequences for people’s lives
- Discourse analysis reveals the links to power– social , economic and cultural
- “scientific enquiry takes place in a social setting, expresses social ideas, and conveys social meanings” (Harvey,1974, p. 215).
- Revival of basic tenets of an organic view of nature

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Western Environmentalism

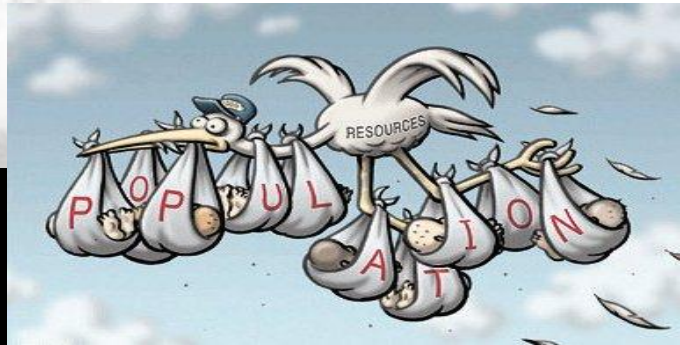
- First wave of interest occurred in the 1970s

- Accompanied by strong imagery

Ride through the cosmos on ‘Spaceship Earth’; ‘Life boat ethics’; (supported through reference to ecological concepts such as biosphere and ecosystem)

Discourses of ecological thinking

- **Diversity** : appreciation of diversity of life forms
- **Systems** : awareness ecological systems and their dynamics (science)
- **Finite resources/Limits to growth**: anti economic growth
- **Relationships**: between humanity and nature: anti domination /tread lightly
- **Inherent value:** richness of life has inherent value
- A platform of thinking that has supported deep ecology movement and environmentalism



Something was wrong with the world…

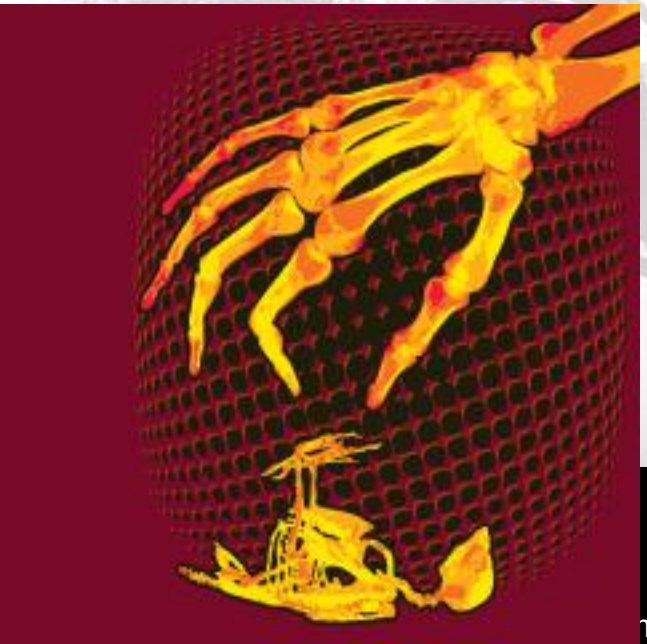
- “Ecology was the science which would interpret the fragments of evidence that something was wrong with the world – dead birds, oil in the sea, poisoned crops, the population explosion … what it meant was … everything links up … here was a new morality and a strategy for human survival rolled into one”
- – Anne Chisholm, 1972

The claims of ecological research have been continually politicised and drawn upon to challenge and reframe dominant ideologies of :

1) Growth and development and
2) Philosophies of the relationship between humans and nature (assuming this dichotomy exists)
3) Challenges instrumental science /mechanical view of nature (Descartes/Bacon)

Discourses

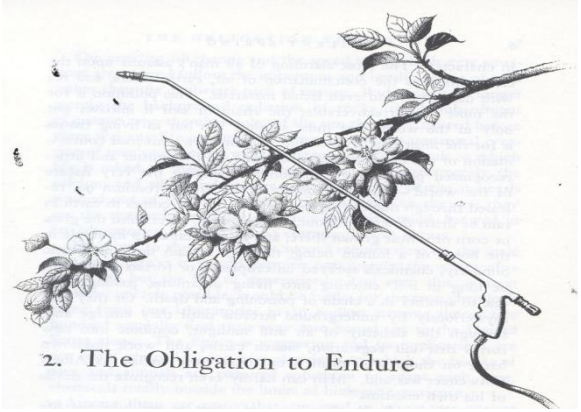
- Discourses embody power in the way that they condition the perceptions and values , make things seem ‘natural’ , ‘right’ or ‘common sense’ (Davies, 2005)
- Discourses have a materiality and profound political implications (Harvey,2005)



Discourse analysis

- Foucault - 'truth model' of science is useful to analyse how science legitimates and describes what counts as an environmental problem (legitimation function)
- Fairclough - 'ideation function' is useful to analyse the 'politics of fear' that have played out amidst growing public awareness of environmental issues.

Limitations and insights of science



- Science - inability to establish

ethical and moral considerations

- Scientific thought has also been critiqued on the grounds that it constructs the subject as fragmented from nature
- However ecology provides rich insights into the interdependence of living organisms and a robust rationale for political action

Ecological Critique – voices of dissent

- “It was this larger ecological critique that challenged the whole nature of the modern production system that represented her most enduring contribution. .. Carson …represented a defiant, radical voice. .. She urged us, and particularly those responsible for raising and educating children, to reject “the sterile preoccupation with things that are artificial, the alienation from the sources of our strength” (Foster and Clark, 2008).

Sustainability in the 1970s

- “comparatively marginalized, genuinely radical idea, carried out in practice by idealists in a handful of pockets of grassroots experimentation in remote corners of the rural Third world” (Carruthers, 2005, p.288).
- Based on concept of maximum sustainable yield (Dryzek ,2005)

Sustainability

- The understandings of scientifically grounded knowledge such as those espoused by the biologists canvassed in this presentation are central to the 1987 Brundtland discussion of sustainability.

- “Some consume the Earth's resources at a rate that would leave little for future generations” (World Commission on Environment and Development, 1987).
- “[n]ature is bountiful, but it is also fragile and finely balanced. There are thresholds that cannot be crossed” (World Commission on Environment and Development, 1987).

Sustainability is now a dominant globalising discourse

- “Far from requiring the cessation of economic growth, it recognizes that the problems of poverty and underdevelopment cannot be solved unless we have a new era of growth in which developing countries play a large role and reap large benefits” (World Commission on Environment and Development, 1987).

Solution is Cartesian even though it appears to be benevolent

Sustainability

- Borrows ecological rhetoric to garner ideological legitimacy, including :
- ‘carrying capacity’
- ‘finite resources’
- ‘interdependence of living organisms

- “Environmental stress has often been seen as the result of the growing demand on scarce resources and the pollution generated by the rising living standards of the relatively affluent. But poverty itself pollutes the environment, creating environmental stress in a different way. Those who are poor and hungry will often destroy their immediate environment in order to survive: They will cut down forests; their livestock will overgraze grasslands; they will overuse marginal land; and in growing numbers they will crowd into congested cities. The cumulative effect of these changes is so far-reaching as to make poverty itself a major global scourge” (World Commission on Environment and Development, 1987).

- Links between this passage above and Hardin’s ‘tragedy of the commons’ . No critique of the exploitative and destructive effects of a global capitalist system

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Neo-liberalism and sustainability

- The discourse of environmental crisis established in the 1960s and 1970s laid the groundwork for the implementation of neo-liberalism
- The fear of an ‘uncertain future’ and long-term physical and economic survival is significant because we become the subject of a vulnerable existence

Future - dialectical science

- Organic views of nature found in Romanticism, German natural philosophers, 1970s ecologists, new science of chaos and complexity (Merchant, 2005)
- Materialist dialectical understanding of humans as embedded in nature
- Philosophy of Marx and Engels
- *'Economic and Philosophical manuscripts of 1844':*
- *"Man lives on nature- nature is in his body, with which he must remain in continuous interchange if he is not to die"*
- *Man transforms external nature – mode of production – early societies had a different view of nature*
- *Marx – ecological side effects of capitalist production (Capital)*
- *Engels – Dialectics of nature – "in nature nothing takes place in isolation"*
- *There is no inherent "contradiction between mind and matter, man and nature, soul and body"*

(Pasons, 1977)

Implications for EfS

- Dominance of mechanistic scientific worldview in schools (Merchant,2005)
- Production of citizens in tune with entrepreneurial ethos (ecopreneur) (Merchant, 2005)
- Education FOR sustainability (oxymoron). Educative component simply reduced to transfer of sustainable "mindset" (Tulloch,2009)
- Democratic political citizenship replaced by acquisition of differentiated social identities – i.e. development of skills and competencies oriented for economic utility /sustainable development (Cohen, 1997)

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Ehrlich

- The Population Bomb (1968)
- Ehrlich was a Stanford entomologist whose neo-Malthusian warnings were conveyed to the public

- *“The battle to feed all of humanity is over. In the 1970s hundreds of millions of people will starve to death in spite of any crash programs embarked upon now. At this late date nothing can prevent a substantial increase in the world death rate..*

.” . Earth has a finite capacity to sustain human civilisation

Hardin

- Carrying capacity – explained

using the analogy ‘tragedy of the commons’.

- Claimed that biologists do not believe that allocation of resources according to human needs is achievable with a growing population
- American standard of living cannot hold for increasing global population
- Theory based on the idea that humans will act rationally and in their own self-interest (rational choice theory)

Hardin: Proper metaphor is ‘Lifeboat’ – not ‘Spaceship Earth’

- Without some system of worldwide food sharing, the proportion of people in the rich and poor nations might eventually stabilize. The overpopulated poor countries would decrease in numbers, while the rich countries that had room for more people would increase. But with a well-meaning system of sharing, such as a world food bank, the growth differential between the rich and the poor countries will not only persist, it will increase. Because of the higher rate of population growth in the poor countries of the world, 88 percent of today's children are born poor, and only 12 percent rich. Year by year the ratio becomes worse, as the fast-reproducing poor outnumber the slow-reproducing rich.
- **In Lifeboat Ethics: the Case Against Helping the Poor. Garrett Hardin, Psychology Today, September 1974**

Dasmann – development - not growth! Earth as a spaceship

- “Only through adequate attention to ecological knowledge and conservation values can the goals of economic development be achieved without serious and unwanted environmental disruption” (Dasmann, 1972, p. 124).

DESCARTES

- I am thinking and whatever is thinking must exist and therefore I exist
- Upon death body and mind separate