

Representing Nature:

The Challenge for Botanic Gardens Educators

■ Summary

Botanic gardens are places where nature is continually being remade and re-presented. As their collections are increasingly capitalised as reserves of biodiversity and framed as educational experiences, it is important that their staff have a critical understanding of the processes at work, their relation to processes in the wider world, and alternatives that offer more sustainable futures. John's keynote examines the social construction of nature within and beyond botanic gardens and argues that Education for Sustainability (EfS) should be informed by advances in theory that allow us to rethink environmentalism, progressive social natures, and radical education. In suggesting EfS guidelines for botanic gardens he draws on such theory and on the experience of projects that have combined community gardening with ecological restoration and the creation of sustainable livelihoods.

Keynote Address

This paper explores ways in which plants can be used to raise development and environmental issues. In so doing it offers some guidelines for how botanic gardens can become centres of excellence in education for sustainability (EfS). The approach is in two parts. The first theoretical part suggests that Ayurvedic philosophy and medicine shares with critical theory and critical EfS (critical approaches to education for sustainability) certain assumptions about the health of the individual and society and links between health, education and sustainability. The second more practical part suggests how critical educators for sustainability might explore development and

environmental issues in a botanic garden. Three case studies, each using one of the healing plants of India as a focus, have been chosen to illustrate the issues raised by genetically modified plants, new gardening in Britain, and community gardening around the world. The case studies respectively serve to illustrate the importance of the content and pedagogy of the botanic garden curriculum and the locations where it is delivered.

The theme running through this paper is the social construction and presentation of nature. At a time of profound social change, that encompasses the process of globalisation, nature is being increasingly capitalised (given a price and made the subject of market transactions) and enframed (represented by 'texts' of all kinds as in advertisements, television documentaries, environmental campaigns, and brochures for botanic gardens) (Braun & Castree 1998). The rise of biological and information technologies, together with the increasing significance of the cultural economy (the production and exchange of 'texts'), means that nature and society are increasingly inseparable. Societies that formerly expanded outwards to push back the frontiers of non-commodified nature and create such phenomena as commercial agriculture, now turn inwards to remake these social natures afresh and commodify such new ones as the human body. This process is legitimised and challenged by the various discourses of environmentalism (Dryzek 1997) as new natures are constructed both in reality and in our imaginations. The discourse or language of sustainable development

can mask the ways in which nature is constructed in ways that disadvantage the poor, women, and people of colour, and we will see that environments, meanings and educations created in the name of sustainability are often challenged.

Such challenges should extend to botanic gardens. At a time when dominant forms of nature are being constructed and represented in unsustainable ways, can botanic gardens and their educators reconstruct and represent nature in more sustainable ways? For guidance as to how this might be done let us look first to Ayurvedic philosophy and medicine.

Ayurvedic Philosophy and Medicine

Ayurvedic philosophy maintains that people's highest goal is to understand the principle of Brahman, the unity of life, or how we are linked to the rest of human and non-human nature (Patnaik 1993). Such understanding promotes health, or a sound body, mind and soul, because people are not isolated from their own energies nor from the energies in the world that surrounds them. Mental health depends on their ability to live in harmony with their inner nature; spiritual health on their ability to live in harmony with external nature.

Ayurvedic philosophy further maintains that people are the highest form of life and that they should act as stewards, ensuring that the fragile balance of nature and living organisms is not disturbed. They should live sustainably, preventing pollution and the wanton destruction of nature, replacing what they take from nature,

and reconstructing damaged nature. Ayurvedic doctors are the guardians of the knowledge and values that enables society to live in this way. Professional ethics require them to devote themselves to the health and sustainability of society while their training ensures that they have appropriate theoretical knowledge, clarity of reasoning, wide practical experience, and personal skills.

Critical Social Theory and EfS

Like Ayurvedic medicine, critical EfS is based on theory that seeks to heal the separation or alienation of people from the rest of nature. This critical social theory is based on dialectical and systemic materialism and the associated philosophy of critical realism. (Collier 1994; Dickens 1996; Soper 1995). It rejects the modern scientific notion of an objective, knowable nature, outside society, and like the traditional wisdom of India, pictures a total reality that is the product of ecological and social processes. This suggests that nature is the permanent ground of all human activity and environmental change that sets elastic limits on how we live or might try to live.

The critical social theory of the environment that has developed over the last twenty years (Goldblatt 1996) leads to distinctive kinds of environmental politics and education. Environmental politics becomes a

struggle over social relations, their impact on ecological relations and on our physical, mental, spiritual and social health. Production and consumption within the capitalist world economy is ecologically unsustainable because it fails to conserve the ecological resources and services on which it depends. At the same time it is socially unsustainable, because it requires social relations based on inequity and domination at all scales from the local to the global. Radical environmental politics seeks to democratise social relations in order that mutually beneficial relations between humans, between humans and other species, and between organisms and their environment, can be sustained. It seeks to change the institutions, beliefs and practices that reproduce unsustainable social relations and to this end engages in action at many sites (the family, community, the economy, the state, botanic gardens).

Like Ayurvedic medicine, critical education for sustainability that draws on critical theories of the environment and education, seeks to enlighten people as to the unity of nature and society and the manner in which changed social relations might promote more sustainable and healthy ways of living (Huckle 1993; Huckle & Sterling 1996; Fien & Tilbury 1998; Plant 1999).

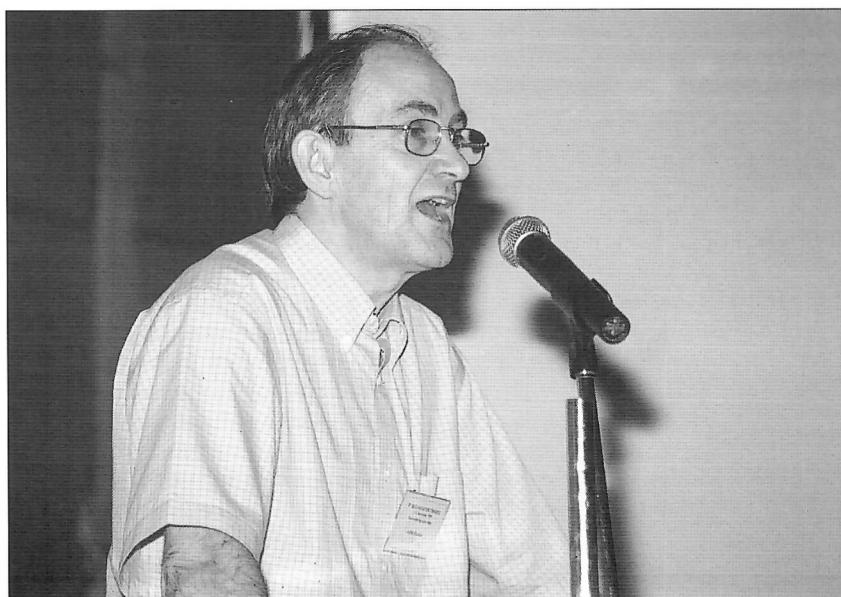
Critical environmental educators should be able to use critical theory of the

environment to enlighten and empower their students and critical pedagogy (Gadotti 1996) to clarify reasoning in ways that counter dominant ideology and charges of indoctrination. They should have experience of assisting the transition to sustainability in a wide range of sites and the personal skills to inspire their students with visions of more sustainable futures. Three healing plants are used to illustrate how professionals might currently inform the EfS carried out by botanic garden educators.

Black Pepper, Genetically Modified Plants and Critical Knowledge

Black pepper, long a key item of Indian trade, is used in the mixed spices that form the basis of curry powder and to alleviate colds and coughs. It is just one of the many plants that has been subject to bioprospecting: the process whereby a handful of transnational seed, agrochemical and pharmaceutical companies assert property rights over species with the help of governments and intellectual property regimes. The companies suggest that they will use their newly acquired rights in nature to develop more sustainable forms of agriculture that help to solve the world's food crisis. Their critics reject such property rights, seek a different approach to biotechnology, and argue that the world's food problems are best tackled by forms of sustainable development that improve traditional agriculture through land reform, permaculture, intercropping, composting, cheap credit, and other innovations.

How should botanic garden educators present the debate on biotechnology? How should they encourage people to recognise what Rifkin (1999) has described as the hard and soft paths to a future shaped by this technology (Figure 1)? Clearly the two paths are informed by different views of nature, different kinds of knowledge, and serve different political interests. Vandana Shiva reminds us that in educating for sustainability we have to reveal these interests and persuade people that no technology is inevitable or beyond our control. We also have to facilitate community empowerment in order that they can act.



Community resistance to hard applications of biotechnology can be found in the North and South. How should botanic garden educators encourage consumers in the North to network with farmers in the South? How should they tell the stories of farmers, such as those in India, who are caught up in a growing ecological and social crisis, partly caused by green revolutions that failed to deliver what they promised (Vidal 1999b)? How should they counter the public

relations and media rhetoric of the biotechnology companies and their supporters in government who regard trade liberalisation and biotechnology as the keys to food security? And having engaged visitors in the politics of biotechnology, bioprospecting and intellectual property rights in nature, should botanic garden educators suggest, that the conservation of biodiversity depends on the conservation of human diversity?

Clearly answers to such questions determine the kinds of knowledge needed to educate for sustainability. Giving biotechnology more visibility and consideration in your botanic garden means giving greater attention to new approaches to the natural and social sciences, people's local knowledge of plants, and political struggles for alternative futures. The content of your displays, presentations and lessons, may well be challenged for in some botanic gardens you are likely to upset existing interests.

Right:

Figure 1: Two views of biotechnology
(based on Rifkin 1999)

Hard path	Soft path
Nature as external to society and to be 'tamed', 'mastered' and 'controlled'.	Nature as a seamless web of symbiotic relationships and mutual dependencies that includes society or human nature.
The world is seen in reductionist terms and scientists regard themselves as grand engineers, continually editing, recombining and reprogramming the genetic components of life to create more compliant, efficient and useful organisms that can be put to the service of humankind.	The world is seen in dialectical and systemic terms with the earth and its living things constituting a single (differentiated) organism – the biosphere. Scientists and others should engage in subtle forms of manipulation that enhance rather than sever existing relationships.
Molecular biologists insert alien genes into the biological code of food crops to make them more resistant to herbicides, pests, bacteria and fungi. They envision these engineered hybrids living in a kind of genetic isolation, walled off from the larger biotic community, and ignore the environmentalists fears of genetic pollution.	Ecologists use the new genomic information to help them understand how environmental factors affect genetic mutations in plants. They use the new scientific knowledge to improve classical sustainable farming methods, such as breeding, pest management, crop rotation.
Uses the new genetic science to engineer changes in the very blueprint of species.	Uses the same genetic science to create more integrative and sustainable relationships between existing species and their environments.
Privately financed, centralised, corporate control. Establishes ecological monocultures and erodes biodiversity and human diversity.	State financed, decentralised, community control. Promotes biodiversity and human diversity.
Promotes academic knowledge over local knowledge.	Values local knowledge.

The Hundred Leaf Rose, The New Gardening and Postmodern Pedagogy

The hundred leaf rose is widely used in India for perfumes, to make a gentle laxative, and to flavour sweet dishes. It provides a bridge to gardening in Britain where roses remain one of the most popular plants. Gardening in Britain is currently big business, with consumers spending £3 billion each year (£80 million on garden gnomes!) and the industry growing at 20% a year (Vidal 1999a). Much of this growth is prompted by a new kind of gardening programme on television, that fosters the cult of the instant garden through which people are encouraged to express themselves and make an aesthetic or lifestyle statement through their gardens. The new gardening is made possible by new technologies in container growing that allow 'just in time' gardens, and seeks to sweep away the mystique of seeds, catalogues and cuttings that surrounded the old gardening programmes. It is presented as entertainment and fantasy by the media with gardens becoming fashion led living spaces. The new gardeners want plants instantly and will dispose of them once the fashion passes. Like the gardens of the past, the instant garden reflects social and cultural trends in contemporary Britain. In disorganised capitalism or what some label postmodernity, the foundations of social structure and agency shift from the sphere of production to that of consumption. Identity and politics are increasingly focused on the goods, services people consume and the images and meanings which surround these commodities.

How should botanic garden educators respond to such changes? Clearly there is a role for cultural theory in informing the content of displays, publications and lessons, but I wish to focus on the shifts in pedagogy or the

teaching and learning process. The new gardening suggests that postmodern individuals are rather different from modern individuals, in the ways that Thompson suggests (Figure 2).

The Enlightenment Subject	The Postmodern Subject
<ul style="list-style-type: none"> • is HOMOGENEOUS – all subjects share the same basic nature • is UNIFIED – individual subjects do not possess internal contradictions • is RATIONAL – characterised by the power of conscious reason • is AUTONOMOUS – able to exercise its reason in order to be self-governing • is STABLE IN IDENTITY – unchanging over time • is an INDIVIDUAL – possessing unique qualities and abilities (although not different basic natures) that mark it out as distinct from all others. <p>A sovereign individual, with a solid and stable core, possessing powers of rational autonomy.</p>	<ul style="list-style-type: none"> • is HETEROGENEOUS OR FRAGMENTED – patched together out of a variety of different bits of values, identities and beliefs • is DISPERSED OR DECENTRED – characterised by all sorts of internal divisions, such as that between consciousness and unconsciousness • is SOMATIC – inseparable from the body and its needs and desires • is CREATIVE – while lacking the modernist power of autonomy, it may be inventive in ways unknown to the modernist subject • is UNSTABLE – changing over time • Although not a self-contained individual, the patchwork of which it is composed may mean it is at least IDIOSYNCRATIC. <p>A complex combination of relatively random components.</p>

Disorganised capitalism encourages and requires more fragmented, decentred, somatic and reflexive individuals, who are able to assess and criticise their own values and behaviour and alter them if necessary. The unified knowable self has ceased to exist and teachers should therefore learn to work with people's diverse identities, desires, and pleasures, engaging them in dialogue and activity that draws on their grounded cognitive and aesthetic understandings of plants and nature. Such activity is likely to contain significant elements of media and consumer education and will

convey a questioning and reflexive attitude, enabling students to perceive the structures of power that shape their subjectivities (Castells et al 1999). It will accommodate diverse voices, from peoples and species variously located within ecological and social relations, and so develop the kind of communicative rationality that fosters ecological democracy and sustainability. Botanic garden educators can glimpse elements of such pedagogy in the work of Body Shop, AdBusters, Greenpeace, and such new attractions as the Earth Centre in Doncaster, U.K.

Indian Hemp, Community Gardening, Wide Experience and Practical Skills

Indian hemp or cannabis has religious, recreational and medicinal uses in India. It provides a bridge to Exodus, a community living in Luton, thirty miles north of London, and to other community gardeners around the world. The largely unemployed and homeless members of Exodus squatted derelict buildings and land in Luton, establishing a housing action zone (HAZ Manor) and a city farm by 'do it ourselves' methods. At HAZ manor they have a communal organic garden, a sustainable water system, and are saving for a renewable energy system. They have gradually found an accommodation with the police and Luton Council and have plans for The Ark, a community centre for others who are socially excluded on Luton's Marsh Farm estate. It will have a non-profit community shop, provided with organic fresh vegetables by the farm, a wind generator making energy for the whole estate, and cheap entertainment of all sorts for young people.

The sort of initiative that Exodus has taken in establishing a community garden is found all around the world. Stocker and Barnett (1998) remind us that community managed gardens of various kinds can act as change agents for sustainability by: producing fresh, safe organic food (physical and ecological sustainability); creating community places for social and cultural interaction, encounter, negotiation, and embodied engagement with the land, other community members, and the wider society (sociocultural sustainability); and providing sites of research, development, design, demonstration and dissemination for community science, horticultural techniques, and innovative technologies (economic sustainability). They can fulfil important functions in the Local Agenda 21 process by acting as living examples of the praxis of sustainability and thereby establishing participatory democracies that permeate people's bodies and communities and act as a political signpost to local government and the wider society.

Botanic garden educators should be involved in community gardening. They should encourage their colleagues to share their expertise with community gardeners and open botanic gardens to the community. I realise that there has been much innovation and progress in this direction, but the community garden is the key site at which botanic garden educators can bring sustainability alive to ordinary people. We should remind ourselves also that pathways to sustainability are only partly local. Community gardens and other initiatives for change from below can only grow if there is change from above.

Towards Sustainability

In his book *Nature's Keepers*, Stephen Budiansky (1995) recounts the experience of William Jordan at the University of Wisconsin Arboretum. He found that a conventional environmentalism, based on modern ecology, that asks people to love and revere nature but never touch her, brought excessive use of the arboretum by passive consumers of nature. When he began to promote a radical environmentalism, based on postmodern ecology that asks people to reconstruct nature so that it better meets their interests and those of other species, a huge number volunteered for restoration projects in the Chicago area.

My challenge to you therefore, as botanic garden educators, is to consider the role you may play in the social construction of unsustainable natures and to engage with colleagues and communities seeking to reconstruct nature in more sustainable forms.

This is an edited version of the keynote speech John Huckle gave at the BGCI education congress in Thiruvananthapuram, India, in November 1999.

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des expériences éducatives, il est important que leur personnel ait une vision critique des méthodes de travail, de leurs rapport avec les méthodes appliquées dans le monde et des alternatives offertes pour un futur plus durable. Les remarques de John examinent la construction sociale de l'idée de nature dans et hors des jardins botaniques et postule que l'Education au Développement Durable (EfS) doit prendre sa source dans la théorie qui nous permet de repenser l'environnementalisme, la nature devenue plus sociale et une éducation radicale. En proposant un guide d'EfS pour les jardins botaniques, il s'appuie sur une telle théorie et sur l'expérience de projets qui ont impliqué la communauté des jardiniers dans une gestion écologique et la création d'un gagne-pain 'soutenable'.

Resumen

Los jardines botánicos son lugares donde continuamente se hace y se hace la naturaleza. A la vez que a sus colecciones se les representa como reservas de biodiversidad y se enmarcan como experiencias educacionales, es importante que su personal tenga un conocimiento crítico de los procesos que se trabajan, su relación a los procesos del mundo en general, y de las alternativas que ofrecen un futuro más sostenible. La ponencia de John examina la construcción social de la naturaleza dentro y más allá de los jardines botánicos y argumenta que la Educación para la Sostenibilidad (EpS) debe ser formada por avances en una teoría que nos permita redefinir el ecologismo, el progreso de la naturaleza social, y la educación radical. Sugiere modelos de conducta de este tipo para los jardines botánicos refiriéndose a tales teorías y a la experiencia extraída de proyectos que han combinado la jardinería en la comunidad con la restauración y la creación de formas de vida sostenibles.

Resumé

Les jardins botaniques sont des lieux où la nature est continuellement remodelée et aménagée. A l'heure où leurs collections ont de plus en plus capitalisé pour être des réserves de biodiversité et sont conçues comme

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