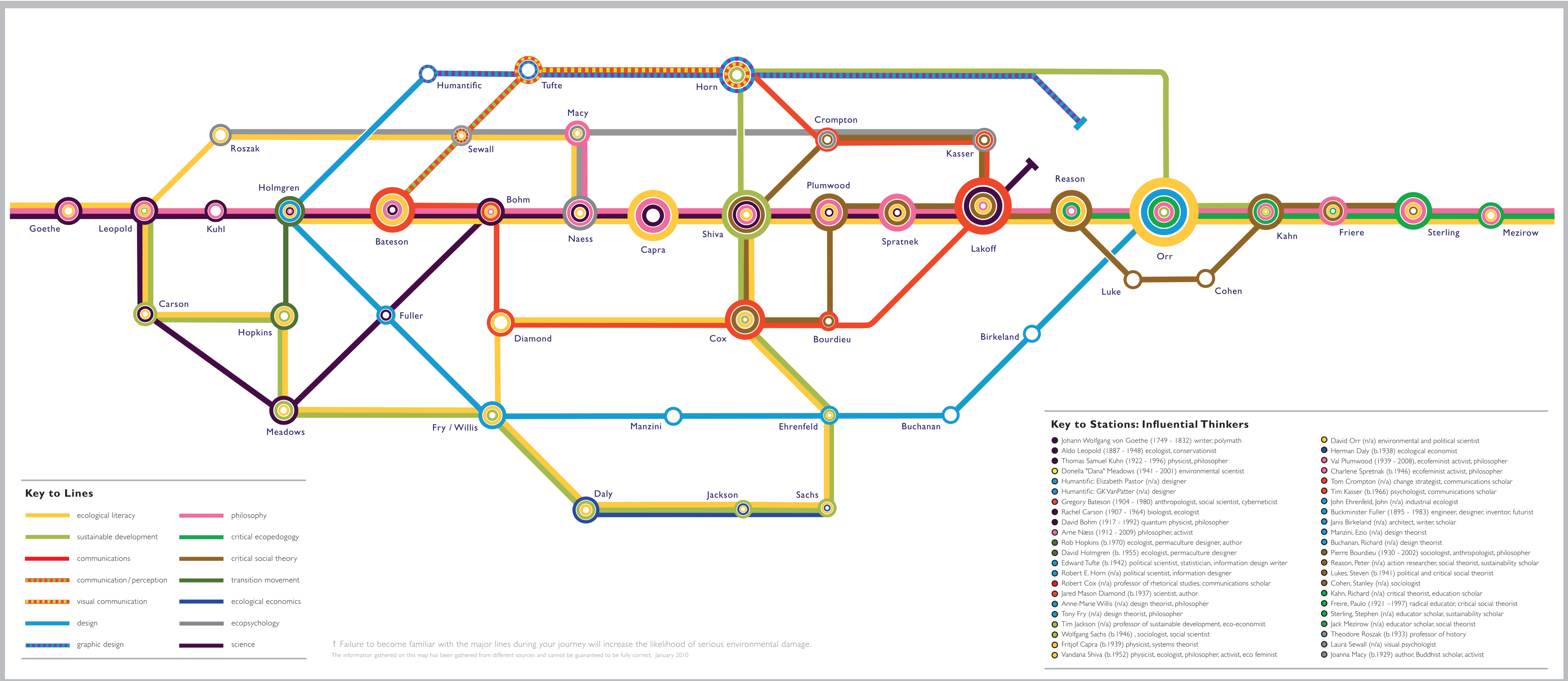# Eco-Literacy Map

A tube map based on the literature review of my AHRC funded PhD research, 'The Visual Communication of Ecological Literacy' at the University of Brighton.

Stations: Humantific, Tufte, Horn, Crompton, Macy, Roszak, Sewall, Kasser, Reason, Holmgren, Bohm, Plumwood, Goethe, Leopold, Kuhl, Bateson, Naess, Capra, Shiva, Spratnek, Lakoff, Orr, Kahn, Friere, Sterling, Mezirow, Carson, Luke, Cohen, Hopkins, Fuller, Diamond, Cox, Bourdieu, Birkeland, Meadows, Fry / Willis, Manzini, Ehrenfeld, Buchanan, Daly, Jackson, Sachs

Key to Lines

- ecological literacy
- sustainable development
- communications
- communication / perception
- visual communication
- design
- graphic design
- philosophy
- critical ecopedogogy
- critical social theory
- transition movement
- ecological economics
- ecopsychology
- science

Key to Stations: Influential Thinkers

- Johann Wolfgang von Goethe (1749 - 1832) writer, polymath
- Aldo Leopold (1887 - 1948) ecologist, conservationist
- Thomas Samuel Kuhn (1922 - 1996) physicist, philosopher
- Donella "Dana" Meadows (1941 - 2001) environmental scientist
- Humantific: Elizabeth Pastor (n/a) designer
- Humantific: GK VanPatter (n/a) designer
- Gregory Bateson (1904 - 1980) anthropologist, social scientist, cyberneticist
- Rachel Carson (1907 - 1964) biologist, ecologist
- David Bohm (1917 - 1992) quantum physicist, philosopher
- Arne Naess (1912 - 2009) philosopher, activist
- Rob Hopkins (b.1970) ecologist, permaculture designer, author
- David Holmgren (b. 1955) ecologist, permaculture designer
- Edward Tufte (b.1942) political scientist, statistician, information design writer
- Robert E. Horn (n/a) political scientist, information designer
- Robert Cox (n/a) professor of rhetorical studies, communications scholar
- Jared Mason Diamond (b.1937) scientist, author
- Anne-Marie Willis (n/a) design theorist, philosopher
- Tony Fry (n/a) design theorist, philosopher
- Tim Jackson (n/a) professor of sustainable development, eco-economist
- Wolfgang Sachs (b.1946) , sociologist, social scientist
- Fritjof Capra (b.1939) physicist, systems theorist
- Vandana Shiva (b.1952) physicist, ecologist, philosopher, activist, eco feminist
- David Orr (n/a) environmental and political scientist
- Herman Daly (b.1938) ecological economist
- Val Plumwood (1939 - 2008), ecofeminist activist, philosopher
- Charlene Spretnak (b.1946) ecofeminist activist, philosopher
- Tom Crompton (n/a) change strategist, communications scholar
- Tim Kasser (b.1966) psychologist, communications scholar
- John Ehrenfeld, John (n/a) industrial ecologist
- Buckminster Fuller (1895 - 1983) engineer, designer, inventor, futurist
- Janis Birkeland (n/a) architect, writer, scholar
- Manzini, Ezio (n/a) design theorist
- Buchanan, Richard (n/a) design theorist
- Pierre Bourdieu (1930 - 2002) sociologist, anthropologist, philosopher
- Reason, Peter (n/a) action researcher, social theorist, sustainability scholar
- Lukes, Steven (b.1941) political and critical social theorist
- Cohen, Stanley (n/a) sociologist
- Kahn, Richard (n/a) critical theorist, education scholar
- Freire, Paulo (1921 –1997) radical educator, critical social theorist
- Sterling, Stephen (n/a) educator scholar; sustainability scholar
- Jack Mezirow (n/a) educator scholar; social theorist
- Theodore Roszak (b.1933) professor of history
- Laura Sewall (n/a) visual psychologist
- Joanna Macy (b.1929) author, Buddhist scholar, activist

† Failure to become familiar with the major lines during your journey will increase the likelihood of serious environmental damage.
The information gathered on this map has been gathered from different sources and cannot be guaranteed to be fully correct. January 2010

Introduction

This poster presents an overview of the literature review in my AHRC funded doctoral research project on the visual communication of ecological literacy (eco-literacy). This practice-based project will create an original body of work that visually communicates eco-literacy while also designing learning processes in which these visuals will be used. The research will demonstrate how visual communication can contribute to the development of new understanding, cognitive skills and social capacities.

One of the major premises of this project is that fragmentary thinking is an obstacle to sustainability and that reductive attitudes towards knowledge cannot adequately address problems associated with ecological systems (or other complex systems). Responding to this dilemma, this project uses a whole systems approach based on the powerful concept of eco-literacy. This research posits that visual communications offer a means of helping audiences understand context, interrelationships, dynamics and other features of whole systems thinking necessary for eco-literacy.

David Orr coined the term 'ecological literacy' in the early 1990s and since this time it has developed into a core concept within sustainable education, creating a conceptual basis for integrated thinking about sustainability. Ecological literacy must now be embedded in theory and practice across individual disciplines. My research develops visual displays of information making ecological literacy both tangible and accessible. This work places itself in the middle of a fast moving discourse on transition and sustainability. The project demonstrates how design skills can facilitate a wide reaching social learning process for ecological literacy in design education.

Ecological Literacy and Design

At its best, design is an integrative applied transdisciplinary field that bridges theory and action in pursuit of practical outcomes. Pioneers have widened the scope of design problems over recent decades such that design processes and design thinking address social and environmental problems as well as design's more traditional economic function. These attempts often involve a shift from designing artifacts, graphics and buildings to designing processes, systems and sustainable ways of living. This movement has become more pronounced as it becomes increasingly obvious that the material expansion of the economic system is fundamentally unsustainable (Daly, Meadows, Simms, Jackson) and radically new models of development must be created for sustainability to become possible. Design is uniquely positioned in academic and professional culture to engage in a process of moving from theory to practice and between disciplines and sectors to facilitate a transition to sustainability.

As design expands the scope of its enquiry a new type of understanding is required to allow us to break out of destructive patterns of thinking. Ecological literacy is a foundation for sustainability necessary to allow us to break out of destructive patterns of thinking. Ecological literacy is a foundation for sustainability necessary to allow us to develop new ways of living within the ecological carrying capacity of the planet. Without a basic understanding provided by ecological literacy, design solutions are likely to reproduce and exacerbate problems.

Joanna Jody Boehnert - January 2011
j.j.boehnert@brighton.ac.uk | jody@eco-labs.org
This poster can be downloaded at: www.eco-labs.org

Key to Lines: Summary of Disciplinary Lines

Eco-literacy Eco-literacy (EL) is an understanding of the principles of organization of ecological systems (Capra 201). David Orr coined the term 'ecological literacy' in 1992 in a book where he explained that all education is environmental education (Orr 90). Ecological literacy implies that each discipline must recognize human embeddedness in the wider ecological system and transform its theory and practice to make sustainability a reality. The interconnections and interdependence between social, economic and ecological systems must become an educational staple. Critical eco-literacy builds on cultural literacy for a more robust analysis of the connections between social and ecological systems (Kahn 11, 66).

Sustainable Development Current models of development based on endless quantitative economic growth are unsustainable (Capra and Henderson 8). Instead, development must reflect growth in nature (Sachs 3) where physical growth occurs to maturity then levels off to maintain a steady state of dynamic equilibrium. Most fundamentally the economy must function within the carrying capacity of the ecological system (Daly 1).

Communications Communications mediate the human-nature relationship and thus have a vital role to pay in responding to current conditions. Robert Cox describes environmental communications is a 'crisis discipline'(5). Response to signals of environmental danger is the key to avoid social collapse (Diamond 10). Issues of power are at the crux of environmental communications resulting in what Bourdieu calls 'symbolic violence'. Crompton describes the need for values based environmental communications, with an explicit focus on strengthening intrinsic relative to extrinsic values. Research indicates that facts are of limited value in influencing behaviour in regards to the environment, instead George Lakoff advices communicators to, "Know your values, and frame the debate".

Philosophy Insights from cybernetics, cognitive science, deep ecology and eco-feminism create the philosophical grounds of ecological literacy. Key concepts include the 'epistemological error' of the current paradigm (Bateson 493), 'embeddedness' of human society within ecological systems (Spretnak 72) and a critique of dominant western models of rationality (Plumwood 4).

Critical Ecopedagogy Critical pedagogy is an educational movement that originated from Paulo Freire's educational practices in South America focused on conscientization. These methods have been integral to the profound change witnessed in social movements globally including women's liberation (Meizrow 19).

Design Design is uniquely positioned to engage in a process of moving from theory to practice and moving between sectors to facilitate trans-disciplinary actions. (Buchanan 20). Design offers approaches to address complex problems including the potential to create powerful social learning processes (Manzini 78).

Graphic Design Using visual language (Horn 5), graphic design aims to strategically change human understanding and/or behavior through the use of visual devices, which can powerfully communicate complex concepts and information. Graphic design can address the crisis in environmental communications by visualizing complex webs of interdependence.

Science Several pioneers of ecological thought (Capra, Shiva, Bohm) started their careers as physicist. Using Kuhn's theory of paradigm shifts in science, ecological thinkers advocate the notion of the emergence of a new ecological paradigm as a central theme to support a transition to sustainability. Developments such as post-normal and holistic science support ecological literacy.

Critical Social Theory Critical social theory offers powerful tools of analysis that expose how and why ecological literacy remains marginal. Social theory demonstrates how power functions in our culture. Steven Lukes and Pierre Bourdieu describes how dominant discourses reflect the interests of powerful political interests. Stanley Cohen's explains how a proclivity towards denying disturbing facts is the normal in an information-saturated society and describes strategies that can work to circumvent this denial.

Transition Transition is a social movement based on local responses to climate change and peak oil. Transition has is origins in permaculture which developed strategies for the design of systems for local resilience and energy descent. It is relevant to ecological literacy because unlike mainstream discourses, it is informed by the ecological reality of the depletion of fossil fuel reserves (ITPOES 4).

Ecological economics is economic theory based on the recognition of the geo-physical fact that the economic system is embedded within, and is a sub-system of the ecological system. The economic system must function within the carrying capacity of the earth. This imperative must be supported by ecologically literate economics theory and practice. Prosperity must be delivered through other means than quantitative growth (Jackson 5).

Ecopsychology Eco-psychology analysis, tools and therapies address our psychological relationship with Nature. Gregory Bateson explored the ecological roots of mental illness in the pivotal book Steps to an Ecology of Mind. Eco-psychology is informed by TEK (traditional ecological knowledge) of indigenous peoples who almost universally holds that psychological health is dependent on a balanced relationship with your habitat / ecological system.

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References not found on this list can be found on the website below.