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Gregory Bateson's Ecological Aesthetics - an addendum to Urban Political Ecology

Jon Goodbun

In the last decade there has been a shift in our understanding and awareness of the scale and profundity of the global environmental crisis that industrial capitalism, combined with a certain cultural hubris regarding our 'relation to nature' (see below), has instantiated. Ecology, a term that emerged into popular consciousness in the 60's as a byword for radical 'holistic' and 'systemic' thinking, has returned to prominence in recent years across all kinds of fields - once again as a way of signalling an attempt to engage with broader environmental questions.

Within the natural sciences, ecology is above all characterised by a non-reductive holistic approach that focuses on the organisation and internal/external relational dynamics of 'wholes' or 'assemblages' (such as ecosystems). This is in contradistinction to the orthodox ideology of modern scientific practice, which is based upon a reductivist analysis of phenomenal wholes into 'fundamental' parts. Through the twentieth century ecology co-evolved with associated disciplines such as cybernetics and systems theory, and many important theorists - including for example Ludwig von Bertallanfy, Gregory Bateson and James Lovelock - migrated between these different areas, making contributions to all. Outside of the biological sciences, ecology has come to signify something closer to a paradigm rather than a specific discipline, as a culture and holistic science of systemic interconnection in general.

As a discourse, ecology brings together many contradictory roots. It exists as a hard scientific discipline, yet it also has allegiances with the environmental movement and ecocentric theory in a wider sense that gives it an irreducible complexity; combining many of the insights of modern science but mixed together with intellectual, religious and romantic legacies, ideas and practices that are from beyond the enlightenment (either predating it, and/or from remote cultures). For example, ecocentric thinkers might typically assert that the western scientific method and ideology promotes views of the natural world as something to be exploited and experimented upon. They then go on to cite scientific evidence collected as proof of this damage!

Today, ecology as a suffix is frequently used to signify a general systems theory (often combined with environmental awareness) based approach to any complex area. Think for example of the growing plethora of disciplines such as human ecology, social ecology, deep ecology, industrial ecology and political ecology, to name but a few. In architectural theory and in design teaching especially, there have been proposed an ever-expanding series of ecology-based concepts: cybernetic ecologies; machine ecologies; stealth ecologies; performance ecologies and so on. Clearly, the role of ecological analysis in articulating the stresses that contemporary industrial systems are placing upon the biosphere has been a particularly important area of development. Below I focus on two such strands within ecological theory.

Understanding socio-economic-ecological systems in relation to social justice has become a key task of urban political ecology - perhaps the most important extension to ecological theory to emerge in recent years. In this paper I will explore some of the precursors of contemporary urban political ecology (UPE) in the basic relations between ecology, economics and the architectural-urban. In particular, I will turn to consider the thinking of the British post-war anthropologist, cybernetician and ecologist Gregory Bateson. In Bateson's work we can find one the most innovative and important re-conceptions of the overall project of ecology - and I suggest that the work of this maverick thinker might have some important contributions to make to the development of urban political ecology today.

Ecology and Economy

First coined in print by Ernst Haeckel, who defined it as "the relations of living organisms to their surroundings,"[1] ecology questions our definitions of what is an *organism*, and what is an *environment*, questions that are not as straight forward as common sense definitions might suggest. Alan Watts noted that "the boundary of the organism is also the boundary of its environment,"[2] and James J. Gibson similarly observed that "it is often neglected that the words animal and environment make an inseparable

[1] Ernst Haeckle, cited in Reiner Grundmann, *Marxism and Ecology*, (Oxford: Clarendon, 1991), p.1. In fact, the complexity of any critical and ideological understanding of ecological thought is soon revealed through a consideration of the work of its nominal 'founder,' Ernst Haeckel. One of the most important scientists of the late nineteenth/early twentieth century period, he is still well known still today on account of his extraordinary drawings of plants and organisms. He was an early (holistic-organic) systems thinker in biology, and helped to develop the concept of an environment. Marx and Engels considered his early scientific work favourably.

Later in his career, Hackael, like some in England, began to adopt social Darwinian positions. However, whereas social Darwinism expressed an individualist libertarianism (Spencer's 'survival of the fittest') in England, Haeckel's took a decidedly nationalist-collectivist turn. Hackael actually denied the validity of the concept of humanity altogether, claiming that it was a internationalising socialist fiction and that actually so-called humanity was a mix of distinct species (some closer to the animal world than others), and that these were further determined by their environmental regions into national races. It was the combination of race plus region that defined the nation as an organism, competing for Lebensraum. Needless to say, Haeckel's version of organicism proved all too useful to fascist ideologues.

[2] Alan Watts, cited in Douglas G Flemons, *Completing Distinctions - Interweaving the Ideas of Gregory Bateson and Taoism into a unique approach to Therapy* (Boston: Shambala, 1991) p.31

pair. Each term implies the other."[3] Gregory Bateson, drawing upon Alfred North Whitehead, noted that the fundamental unit of evolution was not the organism, but rather the organism *plus* environment, whilst fellow cybernetic biologists Humberto Maturana and Fransisco Varela similarly noted that organisms are 'structurally coupled' to and 'co-evolving' with their environments. The 'relations' that Haeckel refers to then are in complex ways, networks of internal and external flows that operate at multiple organisational scales or orders. In the case of the human, they describe a set of organism-environment relations that must include social, cultural and economic agents. Nonetheless, the basic definition of ecology as the study of organism-environment relations, clearly gives it some shared concerns with architecture and urbanism, which might themselves be broadly defined as the production of the environment of the human organism, and the study of the relations between individual and collective human entities and their environments.

Different forms of ecological theory typically work through and define different conceptions of nature. In, for example, the various forms of deep ecology, there is paradoxically a very distinct and thoroughly cultural conception of nature as that which entirely other to and opposed to human culture, a nature that always "knows best." Adrian Forty has noted that "the distinction between the world created by man – 'culture' - and the world in which man exists – 'nature' - has been perhaps the single most important mental category ever conceived."[4] Certainly in ecological discourse, the tension between a conception of nature in opposition to culture (like deep ecology), and a conception of culture as a part of nature (like urban political ecology), defines some of the clearest distinctions between different ecological traditions. Increasingly, some theorists suggest that ecological thought needs to move beyond the concept of nature entirely.[5]

Nonetheless, both of the strands that I am considering here (UPE and Bateson) do continue to use the term nature, but in both cases see human culture (or second nature) dialectically, as a part of nature. David Harvey has developed Marx's conception of a human 'relation to nature' in his analysis of Capital, to describe the sum of both our metabolic interaction with the wider non-human world that we find ourselves in, and our mental conceptions of this relation. Harvey states that

3 James J. Gibson, *The Ecological Approach to Visual Perception* (Boston: Houghton Mifflin, 1979) p.8.

4 Adrian Forty, Words and Buildings: *A Vocabulary of Modern Architecture* (London: Thames and Hudson, 2000) p.220. Forty does in fact refer to both Smith and Harvey in this chapter ('Nature').

5 See Timothy Morton, *The Ecological Thought* (Cambridge, MA and London: Harvard University Press, 2010), and Timothy Morton, *Ecology without Nature: Rethinking Environmental Aesthetics* (Cambridge, MA.: Harvard University Press, 2007).

> 'Construing the relation to nature as inherently dialectical indicates a range of possible transformations in human relations as well as a possible process of natural evolution, including the human production of nature itself, that renders this relation dynamic and perpetually open. While on the one hand such a formulation would appear to deny the possibility of any out-and-out or prolonged, let alone 'final', environmental crisis, it also carries within it the prospect for cascading unintended consequences and widespread disruptive effects for the continuity of daily life as we know it.'[6]

Harvey's conception of our relation to nature must be understood within the context of an associated group of neo-Marxist theorists (others would include Neil Smith, John Bellamy Foster and Ted Benton), all of whom have consistently argued that there can be found in Marx the conceptual framework of a modern ecological theory, and that we need to understand Marx as a fundamentally ecological thinker. Foster in particular has attempted to reveal Marx's ecology, noting that

> 'A thoroughgoing ecological analysis requires a standpoint that is both materialist and dialectical ... [A] materialist sees evolution as an open-ended process of natural history, governed by contingency, but open to rational explanation. A materialist viewpoint that is also dialectical in nature (that is, a non mechanistic materialism) sees this as a process of transmutation of forms in a context of interrelatedness that excludes all absolute distinctions .... A dialectical approach forces us to recognise that organisms in general do not simply adapt to their environment; they also affect that environment in various ways by affecting change in it.'[7]

These texts have provided an important part of the critical canon of the discourse of urban political ecology. In a key paper, in which he draws heavily upon Foster, Erik Swyngedouw has argued that "'metabolism' is the central metaphor for Marx's definition of labour and for analysing the relationship between human and nature,"[8] and proposes that "historical materialism has been among the first social theories to embrace and mobilise 'metabolism' and 'circulation' as entry-points in undertaking [Jameson's] 'ontologies of the present that demand archaeologies of the future'."[9]

Although UPE represents a distinct, contemporary attempt to think ecology as an urban and economic concept, this is by no means an entirely novel move. The word ecology is derived from Greek oikos meaning household, and it might be translated as both the science of running a home and the science of running an economy. Ecology shares

6 David Harvey, *The Enigma of Capital - and the Crises of Capital* (London: Profile Books, 2010) p.74.

7 John Bellamy Foster, *Marx's Ecology* (New York: Monthly Review Press, 2000) pp.15-16.

8 Erik Swyngedouw 'Metabolic Urbanisation - The making of cyborg cities' in Nik Heynen, Maria Kaika and Erik Swyngedouw (eds.), *In the Nature of Cities - Urban Political Ecology and the politics of Urban Metabolism* (London: Routledge, 2006) p.26.

9 ibid., p.22.

with architecture this relation of dwelling and economics. In fact, it also internalises many of the same complex contradictions that characterise modern architectural knowledge and practice. The seam that ecology shares with the economic is much more that a shared etymology. In important ways much ecological theory can be thought of as quite simply as an economics of nature, as indeed is suggested in one of the early proto-ecological texts, Linnaeus' 1749 Oeconomy of Nature, and confirmed in Haeckel, who stated in his initial definition that "by ecology we mean the body of knowledge concerning the economy of nature."[10]

Not surprisingly then, there are a series of key concepts common to both ecology and economy, most notably growth, and circulation.[11] And as we have seen, Marx introduced some more process-organicist concepts into political economy. For Marx metabolism was an extraordinarily significant concept, in that it described the fundamental process that labour was involved in, the moment of interface between the human organism and the broader web of life. He stated that

> 'Labour, as the creator of use values, as useful labour, is a condition of human existence which is independent of all forms of society; it is an eternal natural necessity which mediates the metabolism between man and nature, and therefore human life itself.'[12]

However, if a radical socio-political form of ecology was set out by Marx in the nineteenth century, and has been developed further in recent years, the mainstream of ecological discourse has unsurprisingly been shaped more directly by the concerns of capital. Ecology did not only transmit metaphors back and forth between the analysis of economic networks, and the analysis of non-human living systems. It was in addition, and right from the start, a body of knowledge that developed in an applied sense, as the means of managing the integration and expansion of the human economy into non-human economies. Ecology as a profession was one of a series of disciplines that co-emerged at the metabolic interface of capitalist production and the planet in the eighteenth and nineteenth centuries. Donald Worster has suggested that ecology has both arcadian and imperialist roots, a double lineage that characterises many individual thinkers (such as Charles Darwin) as well as ecological thought as a whole. For example, amongst the first scientists to be employed in an ecological capacity were those of the Dutch and English East India companies from the late eighteenth century. These companies, which encompassed everything from colonial government, to managing both local landscapes and global material flows, meant that they consciously confronted a need for systems thinking at the leading edge of capitalist development at the time.

Ecology continued to theorise an economics of nature based primarily in the study of how energy and matter flow through organisms and networks

[10] Ernst Haeckel, General Morphology of Organisms; General Outlines of the Science of Organic Forms based on Mechanical Principles through the Theory of Descent as reformed by Charles Darwin (Berlin). Quoted in Frank Benjamin Golley, *A History of the Ecosystem Concept in Ecology* (New Haven, Conn.: Yale University Press, 1993) p.207.

[11] Circulation was coined as a concept by the physician William Harvey, in his research on blood flow in the body, in the early seventeenth century. It was, as Adrian Forty has observed, soon adopted into architectural thinking (as circulation through buildings), and later political economy, as the circulation of money and goods. For a discussion of the conceptual history of circulation and metabolism (and in relation to Marxian political ecology) see Eric Swyngedouw 'Metabolic Urbanisation: The making of Cyborg Cities' in Nik Heynen, Maria Kaika and Eric Swyngedouw (eds.), *In the Nature of Cities: Urban Political Ecology and the politics of Urban Metabolism* (London: Routledge, 2006), pp.25-33. Adam Smith of course saw the free market economy as akin to an organism - a spectral entity whose "invisible hand' would emerge as a higher level of rational organisation.

[12] Karl Marx, *Capital vol.1* (London: Penguin, 1990) p.133.

of organisms. In the post war period Eugene Odum adopted the term 'ecosystem',[13] and, in the 1953 Fundamentals of Ecology written with his brother Howard T. Odum, they started to describe and analyse flows of matter and energy through ecosystems as simple flow diagrams. As Pepper notes

> Energy and matter flow along pathways within a system before leaving it, and for an open system there is much exchange of matter between it and the environment, whereas a closed system is characterised by maximum recycling of material ... Mature ecosystems (e.g. Appalachian forests) display high organisation (i.e. minimal entropy) because they are more diverse than immature ecosystems. They have more species and more niches are filled, and they are able to capture more matter and slow down energy dissipation.[14]

H. T. Odum especially pioneered theories and practices around systems ecology and ecological energetics, which included studies of human-natural systems economics.[15] This later developed into the concept of 'emergy', which studies the role that embodied energy plays in systems. H.T. Odum himself noted that "the study of energy in nature does not necessarily imply an economic framework. But that is the way it is has been assimilated."[16]

Odum's post-war attempts to generate out of ecology a universal systems language paralleled broader developments. Increasingly, similar methods of analysis and representation were developed to try to grasp human ecologies, and statistical and conceptual tools migrated between economics, ecology, cybernetics and general systems theory. In several cases architectural thought played important roles in helping to conceive of and represent global systems, with significant contributions from thinkers such as Buckminster Fuller, Doxiades, and Charles and Ray Eames, for example.[17] Increasingly through the post-war period, ecological systems analysis fed into long term policy studies in multinational corporations as much as national governments. At the same research such as the influential 1972 Club of Rome "Limits to Growth"[18] report, modelled future scenarios for natural and human ecosystems under continuing growth of the industrial economy, and fed into the environmental justice movement.[19]

[13] The term 'Ecosystem' was first coined by Roy Clapham in 1930, although its modern sense derives from Arthur Tansley (1935). Tansley replaced American plant ecologist, Frederic Clements' concept of 'super-organism' with 'ecosystem', which he defined as "a community of organisms and their physical environment interacting as an ecological unit." The term biosphere was introduced by Austrian geologist Eduard Suess in 1875 to describe the layer of life surrounding the earth. The term 'biosphere' was however popularised and given its full current meaning - the ecosystem of ecosystems - by Russian geochemist Vladimir Vernadsky. In 1926 Vernadsky - synthesising Goethe, Humboldt, and Suess, and anticipating Margulis and Lovelock - described the biosphere, and the life of which it was composed, as a 'geological force.' He was among the first to realise the full extent that life had shaped the planet geologically and compositionally, and anticipated much that James Lovelock would later describe in Gaia theory. For Vernadsky, the biosphere was not only a description of the site of life on Earth, it also classified an historical epoch in the planet's development. The biosphere was the second stage in the evolution of the planet. The first stage he called the geosphere, and this described the planet before life (and of which there are of course substantial remaining legacies in non organic rocks, mantel, core etc.). The third stage, which he termed noosphere, was the stage of human mind. For Vernadsky, just as the biosphere transformed the geosphere, the noosphere is transforming the biosphere. Variations of Vernadsky's concept of noosphere include the sense of an emergent collective consciousness by Pierre Teilhard de Chardin.

[14] David Pepper, *The Roots of Modern Environmentalism* (London: Croom Helm, 1984), p.103-4.

[15] See for example Howard T. Odum, 'Energy, Ecology and Economics', *AMBIO A Journal of the Human Environment*. The Royal Swedish Academy of Science 2 (6), (1973): 220-227.

[16] Eugene Odum, cited in David Pepper, *Modern Environmentalism - An Introduction* (London: Routledge, 1996), p.283-4.

[17] For a discussion of these see for example Mark Wigley, 'Network Fever,' *Grey Room* 4 (2001): 82-122.

[18] Donella Meadows, Dennis Meadows, Jørgen Randers, and William W. Behrens III *The Limits To Growth: A Report For The Club of Rome On The Predicament of Mankind* (New York: Universe Books, 1972)

[19] One of the most significant examples of an ecological systems analysis of the interaction of human and natural ecosystems was the seminal environmental 1972 Club of Rome 'Limits to Growth' report, produced by Jay Forrester and the Systems Dynamics group at MIT. Forrester and his group were amongst the first to use computers to model systems dynamics, and their focus was the analysis of human ecologies, and their interaction with natural ecosystems. The Systems Dynamics group produced three global socio-economic resource flow models (WORLD1, 2 and 3). Famously and somewhat unexpectedly, all models predicted resource depletion/ pollution based socio-economic collapse early in the 21st century.

Gregory Bateson and the Ecology of Mind

Perhaps the single most innovative and important re-conception of the project of ecology emerged in the work of Gregory Bateson.[20] For Bateson the tendency of ecological and systems thinkers, such as the Odum brothers, and Forrester's MIT research group, to focus primarily on quantitative energy and material flows in ecological science was problematic, and for two reasons. Firstly, he considered that ecosystems had to be considered to be communicating and informational systems, and even as mental systems, as minds, not just as material and energetic systems. Ecologists were "overemphasising energy exchange and attending insufficiently to information exchange,"[21] he argued. Secondly, he emphasised that to properly understand ecosystems, we need to find ways to think ecologically, recognising ourselves as a part of the system being observed or interacted with.

Bateson is not simply referring to information systems that might sit 'on top' of more fundamental mater and energy flows, but is rather emphasising that 'information' is immanent with the relations of all of these flows. It is a description of how in networks of interdependent energetic circuits (such as an ecosystem) some circuits will act in informational ways, changing other flows (which might also be acting in informational ways with respect to other flows etc). Bateson notes for example that "in life and its affairs there are normally two energetic systems in interdependence: one is the system that uses its energy to open or close a faucet or gate or relay; the other is the system whose energy flows through the gate when open"[22]

In line with his broader critique of science, he argued that these errors were compounded within even more erroneous instrumentalising tendencies, repeatedly emphasising that ecology was taking on the task of managing planetary systems on behalf of capital, but that this task, according to ecological systems theory itself, was impossible (setting aside for the moment questions regarding the desirability of such tasks). Bateson frequently refers to Ross Ashby's Law of Requisite Variety to describe how ultimately in complex systems a part can never control (or know) the whole without damaging reduction. As Harries-Jones has noted

> 'Bateson realised far ahead of his contemporaries that the primary source of error in ecological science lay in false presumptions of an ability to 'control' and 'manage' ecosystems through quantitative measurement.'[23]

Like many other cyberneticians, Bateson's research focused around the question of how organised material, biological and social systems display mental characteristics. This research led him through a broad range of disciplines and practices: working with social form in Bali, cybernetics

at Macy, family and individual therapy in Palo Alto, dolphins in Hawaii, or the environmental question in general. Bateson argued that the nature/culture dualism was a special form of the mind/matter dualism, and he developed an ecological theory of mind, which in his words is "neither supernatural nor mechanical".[24] The key to Bateson's model is a conception of 'mental process' in matter that is based upon responses to information, which he defines as any "difference that makes a difference."[25]

For Bateson, the ecology of the living world is full of mind. They are minds that are constituted relationally, in networks, through their activity, their actual life-process. Bateson sees ecosystems as ecologies of mind. He also sees organisms as ecologies of mind. Today we might call much of what Bateson meant by mind as 'agency'.

Human consciousness for Bateson is extended, across and within these and social and cultural ecologies (such as language), as an ecological condition itself, and is not in any simple way solely located in the individual brain. Bateson's work anticipated by decades the recent turn in the cognitive sciences towards various conceptions of embodied and extended mind. For Bateson, we are constantly participating in cognitive systems that extend throughout our environment. He stated (dramatically prefiguring Lovelock's Gaia hypothesis) that

> 'The individual mind is immanent but not only in the body. It is immanent also in the pathways and messages outside of the body; and there is a larger Mind of which the individual mind is only a subsystem... immanent in the total interconnected social system and planetary ecology.'[26]

For Bateson, the fact that our minds are ecologically extended allows him to propose a powerful thesis regarding the effects of environmental damage upon the human psyche, and a radical reformulation of environmental damage as a form of mental illness. Using the example of Lake Erie, whose ecosystem was in a state of collapse as Bateson wrote, he suggested that

> 'You decide that that you want to get rid of the by-products of human life and that Lake Erie will be a good place to put them. You forget that the eco-mental system called Lake Erie is a part of your wider eco-mental system - and that if Lake Erie is driven insane, its insanity is incorporated in the larger system of your thought and experience.'[27]

Bateson argues then that there are major conceptual errors in our *conception* of our *relation to nature*. We totally mis-comprehend *the form*

[20] Bateson was arguably one of the most interesting figures to emerge from the seminal series of Macy cybernetics conferences that ran from 1947-53, and the various second order cybernetics discourses that followed. Bateson moved through an extraordinary range of disciplines in his colourful career. Starting in biology, he made important contributions to anthropology, psychiatry, ecology, aesthetics and media studies, and of course cybernetics and systems thinking in general. He was adopted as something of a guru by the counter culture in the sixties - having broadly argued that "the point is that the ways of nineteenth century thinking are becoming rapidly bankrupt, and new ways are growing out of cybernetics, systems theory, ecology, meditation, psychoanalysis, and psychedelic experience." Bateson can properly be described, as Andrew Pickering has usefully suggested, as the practitioner of a nomadic science, in the sense of Deleuze and Guattari. Indeed, Bateson's work had an important though widely under acknowledged influence upon Deleuze and Guattari, and indeed much French post-structuralist thought more broadly. Notably of course, Guattari directly takes up Bateson's conception of ecology in his later work such as 'The Three Ecologies' and 'Ecosophy'.

[21] Gregory Bateson and Mary Catherine Bateson, *Angels Fear - Towards an Epistemology of the Sacred* (Cresskill: Hampton Press, 2005) p.208

[22] Gregory Bateson, *Mind and Nature - A Necessary Unity* (Cresskill, NJ: Hampton Press, 2002) p.95.

[23] Peter Harries-Jones, *A Recursive Vision: Ecological Understanding and Gregory Bateson* (Toronto: University of Toronto Press, 1995), p.117

[24] Bateson uses ' Neither Supernatural nor Mechanical' as the title of a paper in Gregory Bateson and Mary Catherine Bateson, *Angels Fear - Towards an Epistemology of the Sacred* (Cresskill: Hampton Press, 2005) pp 50-64

of the relationality. Whilst his position is broadly in line with standard ecocentric and to a lesser extent romantic critiques of the 'Promethean' attitude of western science towards a nature that is treated as if there to exploit, control and dominate, Bateson's critique is distinct from deep ecology positions which might argue that to conceive of ourselves in opposition to nature is simply morally wrong. It is also distinct from a standard Marxian position which would describe the opposition to nature, or our alienation from nature, as a historical condition, related today solely to capitalist conditions of production. For Bateson, the situation is more complex, in that whilst his position encompasses a recognition of the specific socio-historical form of our relation to nature (i.e. the Marxian position), and the ethics of it (the ecocentric position), he argues that the primary problem is *epistemological,* a systemic false consciousness of our relation to nature, that is itself now a part of our ecological condition:

> 'You and I are so deeply acculturated to the idea of 'self' and organisation and species that it is hard to believe that man might view his relations with the environment in any other way.'[28]

To what extent should Bateson's critique of the post-war ecological focus upon managing matter and energy flows be asked again today? Urban political ecology has by definition been sensitive to the crucial question of 'in whose interests are these metabolic flows organised, managed and indeed owned?' Questions which Bateson never really approached. Nonetheless, his concern with describing the informational character of relational agency, and his reminder that we can never control and manage the totality of non-human agencies, but should only aim to couple and co-evolve in a radically open ended aesthetics, might well be capable of extending UPE.

Ecology and the Concept of the Metropolis

Mark Wigley has suggested that "ecology is, from the beginning, a certain kind of thinking about or from architecture,"[29] and indeed, as has already been noted, the root of ecology - oikos - suggests something like a *knowledge of dwelling*. What though, is it that ecology qua ecology might grasp with regard to dwelling? We need to approach this question, I propose, through the concept of the metropolis. David Cunningham has suggested that "the philosophical interest of the concept of metropolis lies in its presentation as a determinate negation of the city as a historically specific form of the urban."[30] That is to say, metropolis describes both an entirely new concrete urban condition that emerges within capitalism, and at the same time, describes the processes that give rise to it. The concept of metropolis describes a distinct condition, in that the metropolis is both the "the primary space 'in' which exchange happens", even whilst

25 Gregory Bateson, 'Form, Substance and Difference' *in Steps to an Ecology of Mind* (Chicago: University of Chicago Press, 2000) p.468.

26 Ibid., p.467.

27 Gregory Bateson, 'Pathologies of Epistemology ' in *Steps to an Ecology of Mind* (Chicago: University of Chicago Press, 2000) p.492.

28 Ibid.

29 Mark Wigley, 'Recycling Recycling' in Amerigo Marras (ed.), *Eco-Tec, Architecture of the In-Between* (New York: Princeton Architectural Press, 1999) p.42.

30 David Cunningham, *'The Concept of Metropolis: Philosophy and Urban Form' in Radical Philosophy,* 133 (2005) p.13.

31 Ibid., p.20.

32 Relational space-time in this context is part of a set of terms that David Harvey has developed, largely out of Henri Lefebvre. In Harvey's terms, in my example here, the primary space 'in' which exchange happens, would be absolute space and relative space-time.

it "designates the general processes by which space itself is formed or produced by exchange,"[31] in relational spacetime.[32]

We can always find in architectural and urban design, and in spatial environments more broadly, conceptual statements regarding human 'relations to nature.' This can often be read as an opposition between city and country. In the form of Carcassonne, for example, this city/country opposition can be clearly described within an absolute spatial framework: there is city on one side of the wall, and country on the other. The metropolis however, is not defined in any simple way in opposition to 'country', in the way that the town or city was. In absolute space, metropolitan nature and culture, are co-extensive: the metropolis understood in this way, is planetary, by definition. The city/country opposition is not resolved however - it clearly persists - rather, the metropolis is a concept operating at another (global) level of abstraction. There is a sense in which we might conclude that the metropolitan stands in the same relation to city, as the ecological does to the country. This does not however quite capture it though. Cunningham, in response to Lefebvre's 'theoretical need' to think about the urban, suggests that the kind of trans-disciplinary 'post-philosophy' that can think the metropolis, would necessarily share something of the pattern-form of the metropolis itself. In fact, I wonder whether the kind of knowledge that a theoretical account of the metropolis would produce - knowledge that would surely be shaped by our complex metabolic relations to nature to an extent not appreciated by Lefebvre - might take the name of *ecology?* I do not of course refer here to the semi-dismal bourgeois form of ecology, but rather the aesthetically re-conceived ecology proposed by Bateson.

Bateson argued that it was necessary to transform not just ecological knowledge, but the very basis of science in general, with an aesthetic dimension, a recognition that *ecological patterns are minds*, and that this was the only way to grasp the interconnectedness of environmental entities and relations. He stated that

> 'So by 'aesthetics' I mean responsiveness to the pattern which connects. The pattern which connects is a meta-pattern. It is a pattern of patterns. It is that meta-pattern which defines the vast generalisation that indeed it is patterns which connect.'[33]

This suggests I think an additional and necessary dimension to the conception of the metropolitan mediation: the metropolis is *the pattern that connects nature and culture.*[34] Writing forty years after Bateson's meeting with the New York planners, David Harvey has increasingly come to promote an associated re-reading of Lefebvre's Right to the City, stating that

33 Gregory Bateson, Box 6 Manuscripts 'Mind in Nature', Nov. 17th 1977 (unpublished), quoted in Peter Harries-Jones, 'Gregory Bateson's 'Uncovery' of Ecological Aesthetics' in Jesper Hoffmeyer (Ed.), *A Legacy for Living Systems - Gregory Bateson as a Precursor to Biosemiotics* (Copenhagen: Springer, 2008) p. 158. There is a published though slightly different version of this in Gregory Bateson, Mind and Nature p. 10

34 I suggest that an ecological conception of metropolis can properly describe "transformations within the relations between urban and rural, as well as, with increasing importance, within and between different urban forms and processes of urbanization and the heterogeneous forces which generate them. The potential generalization of social, cultural and technological productive logics at a planetary scale, and the 'concrete' networks of exchange and interaction that increasingly bind non-contiguous urban spaces together within the differential unity of a global economy, open up a historically new set of relations between universal and particular, concentration and dispersal, that clearly demand new conceptions of mediation." David Cunningham, 'The Concept of Metropolis', p. 13

35 David Harvey, 'The Right to the City' (David Harvey responding to the *Ecotopedia enquete* via e-mail from New York City, USA, on the 6th August 2008.), accessed at http://sustainablecities.dk/en/actions/interviews/david-harvey-the-right-to-the-city

> 'The city has to be viewed as a metabolic and ecological system in its own right and therefore as a vibrant and increasingly dominant part of the natural world we inhabit. While there is, in my view, nothing unnatural about New York City, the qualities of the urban environments we create are a major concern and those qualities are not confined to what humans need but also to preserving the whole life-system upon which we ultimately depend.'[35]

Mark Wigley reminds us that our very conceptions of dwelling necessarily contain suppressed relations of 'domestic' violence, and that this is just as true of houses conceived at a planetary scale. He suggests that "rather than simply reapplying ecological discourse to design, some of the perennial enigmas of the house that architects explore could be used to rethink ecology. The discourse can be rewired"[36]

In conclusion, I suggest that some moves have been made in this direction by David Harvey, who has in several recent lectures suggested that a key task for architectural researchers is to explore new forms of our relation to nature. More generally, Harvey has been exemplary in engaging with ecological discourse, being critical of those aspects of ecocentric thought that are reactionary and nostalgic. He also acknowledges that there is much in the traditions of organic and ecological philosophy which, through its emphasis on process and relational thinking, shares something with Marxian dialectical theory that he suggests might

> 'learn a great deal from trying to understand ecocentric lines of thought ... They help concentrate my mind on the qualitative as well as the quantitative conditions of our metabolic relation to the world and raise important issues about the manner of relating across species and ecological boundaries that have traditionally been left on one side in many Marxist accounts.'[37]

Harvey goes on to set out a clear project for a contemporary progressive politics, arguing that

[36] Mark Wigley, 'Recycling Recycling' in Amerigo Marras (Ed.), *Eco-Tec, Architecture of the In-Between* (NY: Princeton Architectural Press, 1999) p.48.

[37] David Harvey, 'Marxism, Metaphors, and Ecological Politics' in *Monthly Review*, 49 (11) (1998) at http://www.monthlyreview.org/498harve.htm.

[38] David Harvey, *Justice, Nature, and the Geography of Difference* (Malden, MA: Blackwell, 1996), p.198

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> 'for Marxists, there can be no going back, as many ecologists seem to propose, to an unmediated relation to nature (or a world built solely on face to face relations), to a pre-capitalist and communitarian world of non-scientific understandings with limited divisions of labour. The only path is to seek political, cultural and intellectual means that 'go beyond'... The emancipatory potential of modern society, founded on alienation, must continue to be explored. But this cannot be, as it so often is, an end in itself, for that is to treat alienation as the end point, the goal. The ecologists' and the early Marx's concern to recuperate 'in higher form' the alienation from nature (as well as from others) that modern day capitalism instantiates must be a fundamental goal of any ecosocialist project. The idea of 're-enchantment' with the sensuous world through a more sensitive science, more sensitive social relations and material practices, through meaningful labour processes, provides a better language than that of alienation with all of its essentialist overtones.'[38] [My emphasis]

Architecture has, as a body of knowledge, consistently reflected upon and expressed, or put into relation, the human and the natural, the material and the mental, the local and the global, albeit often in highly problematic ways. A critical engagement with ecological and cybernetic theory as architectural research has the potential to generate an entirely new ecology of knowledge. Spatial environments are one of the primary ways by which we have socially extended our organs and minds. Today, we need to re-conceive of what we understand by nature, and what we understand as our relationship to it. We need to propose new formations and new metabolisms of country and city, we need to re-theorise alienation, health and well-being, as part of a bigger attempt to, as Fuller suggested, make existing models obsolete.