INTERTWINING OF DIVERSE MINDS IN(TO) POLITICAL ECOLOGY

Zbornik

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Proceedings from the Summer School of Political Ecology 2018

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Introduction

The International Summer School of Political Ecology is a response to a recognized lack of holistic and in-depth understanding of environmental issues in the Slovenian intellectual space. This applies particularly to the social sciences and humanities, which currently offer a limited range of elective courses at both undergraduate and graduate levels. The exsisting divide between the environmental questions we pose and the need to both rethink and find answers to them is evident, while the solutions presented today are in need of thorough reflection.

This book presents the proceedings from the Summer School of Political Ecology 2018. The collected texts, written by some of our distinguished guests and speakers and originally published in different editions, will help readers create a mental framework for a deeper understanding of the multilayered nature of glocal environmental and ecological issues. In this manner, many questions of political ecology can be answered in the light of a more critical and relational understanding of the proposed solutions.

Political ecology is distinguished from political environmental sciences in such a manner that not only posits "the environment" as the subject of investigation, but also places and contextualizes environmental issues in the asymmetrical relations of social and political power.

Due to their differing notions and assumptions regarding technology, economy, democracy, nature, the environment, etc., environmental discourses are a source of many (mis)understandings among societal actors. This often leads to mutually conflicting proposals for solutions and consequently political struggle over and among them.

The overarching aim of the school is to establish a common understanding of different perspectives concerning environmental and ecological issues (i.e., environmental discourses) and thus to enable a more comprehensive and nuanced mental framework to emerge.

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VINCENT LIEGEY is co-author of A Degrowth Project (Sanje, 2014), spokesperson of the French Degrowth movement, engineer and interdisciplinary researcher and coordinator of the Degrowth inspired Cargonomia social cooperative, center for sustainable logistical solutions and local food distribution by cargobikes in Budapest. He is also the coordinator of the international Degrowth conference (the next ones will take place in Mexico City, Malmö and in the European Parliament in 2018).

Dan Chodorkoff

Social Ecology: An Ecological Humanism

Social ecology begins with an exploration of the past in order to gain an epistemological understanding into how humanity defines, and thus constitutes, nature. This is a question of vital importance, not merely an exercise in philosophical abstraction. The way we conceptualize nature and humanity's place in nature has become a highly contentious issue in ecological thought and environmental philosophy. The conclusions that we draw will inform our ethics and the political decisions that shape our world.

How can we derive such an epistemology? We must start out by understanding that nature is not a static entity but evolutionary, indeed, that the very process of biological evolution *constitutes* nature. The evolutionary record, natural history, is the reality of nature. From the molecular to the biospheric level, nature is in a process of constant flux and change: birth, death, mutation, even extinction are all part of a process which creates the complex web of life, of which humanity is a part. In biological terms, then, nature is both being and becoming. Evolution *is* nature.

First Nature and Humanity

Humanity must be placed within the evolutionary matrix and recognized as playing a unique role in that matrix by virtue of our capacity for both creative and destructive interaction with the rest of nature. As a species we have the ability to profoundly affect other species, ecosystems, and the biosphere itself in ways unparalleled by any other life form. This makes us both an integral part of nature—a product of the same evolutionary forces that created all other species on the planet, past and present—and at the same time distinct in our ability to affect nature. Social ecology recognizes this fact, compelling us to make a distinction between what we term »first nature,« nature evolving according to processes not affected by humanity, and »second nature,« which is nature determined by human consciousness and action. In first nature a primary mode of evolution is natural selection: species change or mutate over time in order to adapt to the environment in which they find themselves, thus conferring an evolutionary advantage that ensures survivaland regeneration. At some point cultural evolution emerges out of—though it does not replace—biological evolution. Second nature is best characterized by the emergence of self-consciousness and culture. Humanity remakes itself constantly through processes of tool making (technology), institution building, explanation (religion, philosophy, and science), and art. As humanity advances our understanding of the evolutionary process, of physics, genetics, and other arenas of science our species is becoming, at least potentially, to use lohann Gottlieb Fichte's phrase, »nature rendered selfconscious,« nature aware of itself and consciously forming its own development. To an unprecedented degree, and with a rapidity seen nowhere else in nature, humanity adapts

the environment to meet its needs: cultural evolution is a remarkably dynamic process capable of transforming the conditions of a society in less than a generation. If we acknowledge the reality of a second nature, produced by human creativity and artifice, as distinct from first nature, we must also acknowledge

that it grows directly out of first nature, or biological evolution. Thus, logically, first nature contained within itself, from its very inception, the potential for second nature. Natural history, the evolutionary record, must be read as a process in which nothing essential is lost. Second nature still contains within it first nature; complex forms of mammalian life begin as single cells and organize into more complex cellular forms (organs) contained within still more complex assemblages of cells (organisms). The pH of the ancient oceans in which life first began is replicated in the amniotic fluid that supports life in the womb of complex mammals, like human beings. In a certain sense the conception, gestation, and birth of an individual person roughly replicates the process of biological evolution. Our species comprises both first nature and second nature. When we view the evolutionary record over the whole of biological development we see a movement toward an evergreater degree of diversity and complexity of life forms, and the potentiality for consciousness and self-consciousness. This is not to say that there is a linear, unbroken ascent toward human consciousness; evolution is full of fits and starts, florescence and decline, even extinction. But it is undeniable that life on earth evolved from unconscious, single-celled organisms, to biologically complex forms of life with the capacity to think abstractly and to reason. Does this fact confer upon humanity the »crown of creation,« the right to dominate the rest of nature and view first nature as mere resource? Or does it require us to understand ourselves as a part of nature with the capacity to play either a destructive role or a creative and sustaining role? Does this understanding not bring with it the responsibility to critically examine the existing relationship between first and second nature, particularly in light of the insights offered by the science of ecology? And should we not create an ethics and politics that can ensure a reharmonization of first and second nature to stem the tide of destruction resulting from our current ethics and politics, which threaten the integrity of both first nature and second nature? Social ecology suggests that we need to look at first nature to gain insight into the principles that inform na-

tural history and ensure ecosystem health. Such an examination must draw on the best scientific understanding and interpretation we can assemble, but we must also recognize that such a project is not purely empirical. The history of interpretation of »the laws of nature« is fraught with highly subjective, politically charged moments. In the nineteenth century, Social Darwinists like Herbert Spencer twisted Darwin's ideas to provide a rationale for British colonialism and imperialism. More recently, Hitler justified his views by drawing on the »immutable laws of nature.« In light of this history, rather than claim immutability or absolute authority, social ecology attempts to use the best existing science to identify tendencies or principles at work in evolutionary processes and ecosystem dynamics, and acknowledges that these tendencies may be mutable and do not exhaust the whole range of processes at work in first nature. They do seem, however, to represent important tendencies that relate directly to the project of reharmonizing first and second nature, a project that takes on some urgency given the current threats facing the planet. We must also recognize, as with any theory based on science, that social ecology too will require modification as new scientific insights emerge.

Ecological Ethics and Society

An ethics that has a goal to reharmonize first and second nature must be oriented toward encouraging ever-greater complexity, diversity, and higher degrees of consciousness. This orientation must inform its relation to both first and second nature, striving to protect and create ecosystems that offer a multiplicity of trophic levels to support biologically diverse species in a set of complex interactions, and do so in a highly self-conscious fashion. The same principles must be applied in the realm of second nature. If our goal is an ecological society our ethics must ensure complex, diverse societies and cultures that encourage ever-greater degrees of human self-consciousness, characterized by respect, participation, equity, and scientific understanding. The pursuit

of ever-greater degrees of complexity, diversity and freedom (as consciousness and choice) is a necessary condition for both healthy ecosystems and healthy societies, and a precondition for the reharmonization of first and second nature. A related principle present in first nature that must necessarily be applied to human societies in order to achieve a healthy relationship between the two is the principle of unity in diversity. The health, strength, and stability of an ecosystem stand in direct relation to the diversity of species that interact within the system. Ecosystems with the highest degree of biodiversity, like rainforests or estuaries, are able to sustain themselves for thousands of years. Large numbers of species fill every trophic level, giving the system as a whole the ability to compensate for even vast fluctuations in the population of any particular species, therefore allowing it to maintain its overall stability and integrity. An application of this principle is an ethical imperative in second nature, where lack of unity and intolerance of diversity pose a threat not only to individual cultures and societies but to the biosphere as a whole. The results of second nature's unwillingness to embrace this principle has led to social and ecological disaster alike; warfare, genocide, and racism in second nature, and a frightening diminution of biodiversity, a wholesale destruction of ecosystems, and global climate change, in first nature. The two are inextricably linked, and social ecology demands a recognition and implementation of the principle of unity in diversity as a corrective to the destruction that has already been wrought.

Hierarchy and Evolution

When the science of ecology began its study of ecosystems the tendency was to view systemic relations in hierarchical terms; a central concept in understanding ecosystem dynamics was that of the food chain, a rigid hierarchy of dependencies in which the largest carnivores were placed at the top. As our scientific understanding has increased, this crude model has been replaced by more sophisticated descriptions that define the complex interre-

lationships at work in an ecosystem as a food web. The food web describes an essentially non-hierarchical network of relationships based on interdependencies, linking together all species into a mutually supportive whole. This has led to a recognition that first nature is organized non-hierarchically. The hierarchies that we establish between species in first nature—the lion as »king of beasts,« or the »lowly ant«— are really a projection of human hierarchies. In a technical sense, hierarchy is defined as an institutionalized system of command and control that ultimately has recourse to physical coercion in order to compel obedience. No such systems exist in first nature. The lion does not command and control any other species, nor do lions institutionalize their relationships. Even the seemingly dominant role that an individual female lion may play within her pride is better understood as a form of situational dominance than an institutionalized hierarchy. Hierarchy vitiates the mutualistic web of relationships crucial to ecosystem stability and even survival. The recurrent cycles of birth, death, and decay link all of first nature and second nature. Despite the undeniable role played by interand intra-species competition for evolutionary advantage, ecosystem dynamics are best characterized as rooted in the principle of mutualism; each species plays a critical role in the health and development of the other. This is true even in predator-prey relationships where various species are mutually dependent: put somewhat simplistically, predator species depend on prey for survival, and the prey is dependent on the predator for maintaining healthy population levels. The mutualistic relationships at work in an ecosystem become more complex in direct proportion to the biodiversity of the system. Evolution is, above all, the realm of potentiality. Every life form contains within it a set of possibilities, both biological and behavioral. These potentialities and the striving to actualize them are what drive life forward. The degree to which this process is conscious is a major factor in natural history and one way that we can begin to differentiate second nature from first nature. This is not to suggest a radical disjuncture between first and second nature: although first nature is always present in

second nature we can see a gradual emergence of consciousness, self-consciousness, and human efforts to fulfill inherent potentialities that characterizes the emergence of culture. If mutualism is to serve as a natural tendency that informs human ethics, it must be rooted in this understanding of potentiality; it must be a part of the continuum of behaviors that make us human. This potentiality has found wide expression throughout the whole of human history, which itself offers convincing evidence that we must incorporate this principle into an ethical framework that will allow us to fully reharmonize first and second nature. The popular conception of an immutable human nature based on greed, competition, warfare, and domination is challenged by the anthropological record. Indeed, anthropology forces us to reject such a narrow view of »human nature,« and to replace it with the much broader concept of a continuum of potential human behaviors. This concept, while undeniably including the potentiality for greed, competition, warfare, and domination, also includes the potentiality for caring, sharing, mutualism, and nonhierarchical relationships. This framework provides a real basis for believing that our species, humanity, has the potentiality to create an ecological society. Anthropologists have identified these ecological behaviors as central in many forms of human society, primarily those rooted in pre-capitalist systems of production. These traits represent a potentiality for the future. I do not mean to suggest that our species could, or would want to, return to hunting and gathering: there can be no return. Rather, I would say that these forms of behavior represent principles. With human creativity and invention we can apply these principles in ways appropriate to modern life. Cultures and societies have always reinforced and rewarded particular forms of behavior and devalued others. Through the processes of socialization and formal education our society has chosen to reinforce and reward ecologically destructive relationships and patterns of behavior, and furthermore to reify them into »human nature.« An awareness of the other potentialities embodied in our humanity gives hope that a transformation of those patterns may occur. Although by

no means guarantied or preordained, social ecology argues that such a transformation *must* occur if we are to truly achieve our potential to become »nature rendered self-conscious,« thus reharmonizing first and second nature and resolving the ecological crises that threaten our existence.

From Ecology to Politics

A transformation of this magnitude requires a radically new vision and program: a new ecological epistemology, an ethics rooted in principles derived from first nature, and a bold social-political praxis. We must be willing to undertake a searching examination of the *roots* of the ecological crisis, using the ethical principles that we derive from our understanding of nature. Such an examination leads us from the realm of traditional environmentalism, still rooted in a dualistic epistemology that views »nature« as a collection of natural resources, to a social ecology that promises a fundamental reharmonization of first and second nature.

Indeed, this recognition calls for political solutions that go far beyond the »band aid« approach advocated by most environmentalists. It requires that we resolve the social crises that are the underlying causes of our various environmental crises. It suggests that healthy ecosystems and a healthy relationship between first and second nature only can result from an ecological society, and that such an ecological society must be an ethical community, rooted in the ethical principles that we derive from our understanding of first nature itself.

The ecological crisis demands more than a change in consciousness. Though such a change is necessary, it is not, in and of itself, sufficient. We must also begin to undertake action informed by a consciousness rooted in a social ecology. To be sure, the process of ecological reconstruction will not be an easy one: it will require major shifts in thinking and in social organization, as well as the use of new, ecologically sound technologies and techniques. We must begin the process of ecological reconstruction by preserving existing ecosystems to ensure their integrity

and to draw upon them as reservoirs of biodiversity. We must stem the current tide of extinctions. It is also crucial to engage in ecological restoration to the extent that we are able, restoring damaged ecosystems to their previous state.

This in turn suggests that we need to explore and implement new, ecological models for development, a communitybased process that both meets human needs and respects and restores ecosystems. This critical reconstructive dimension must be fully articulated and applied within the ethical framework presented by evolution. This reconstructive project is a crucial element in the development of a social ecology: it is not enough to philosophize, we must act. Our actions, however, must be informed by ethics and scientific understanding. Mindless or insufficiently considered action may indeed make our situation worse, instead of improving it. The ends that we seek—societies moving toward ever-greater complexity, diversity, and freedom, creating unity through diversity and mutualistic organization, and highly self--conscious about their relationship to first nature—can only be brought about by social movements that reflect and embody those same principles. Ends and means must be congruent.Action rooted in social ecology demands broad participation and democracy. All around the world, local communities are already challenging the irrational culture of destruction. The struggles of indigenous farmers in Mexico fighting to save their rainforests, peasants in Nepal fighting to prevent the damming of rivers, and poor black communities in Louisiana fighting to close down toxic chemical plants are all part of the same global movement. So too are urban homesteaders in devastated Detroit neighborhoods reclaiming abandoned buildings, and youth groups growing organic vegetables on vacant lots in New York City. They stand together with the millions around the world who protest a rapacious world economy dominated by giant corporations. These combinations of protest and reconstructive action are only fledgling steps in what must become a larger and broader movement, but they are promising nonetheless. They point the way toward new organizational models that embody the ecological ethics ne-

cessary to achieve a reharmonization of first and second nature. They are diverse, decentralized, nonhierarchical, and participatory, and represent a new model for social action that can begin to counter the destructive path of the dominant culture.

Toward a New Enlightenment

A perspective informed by social ecology must also address the future, and it must do so in a manner that draws on the ethical principles derived from first nature. It is insufficient to extrapolate the present into the future, as futurists and systems theorists do. Any discussion **of** the future, if it is to be ecological, must be rooted in the concept of potentiality, an understanding of what could be. Evolution itself is a process of unfolding potentiality on a biological level: of organisms either fulfilling their potential for growth, development, and reproduction, or failing to do so. Potentiality should not be equated with inevitability; many factors influence whether it is actualized or not. Social ecology examines the future by trying to tease out potentialities for ecological restoration and a reharmonization of first and second nature, while working to actualize those potentialities. By doing so, social ecology draws on one of the great traditions of humanity, Utopian thinking, which is based on an understanding of the potentialities inherent, though unrealized, in the present. During the Renaissance and the Enlightenment, Utopian thinking emerged as one of the most important forms of both social criticism and speculation about possible new forms of social organization. It was used to explore the far shores of human possibilities; to inspire people to transcend the limitations of their severely limited societies. But Utopian thinking offers more than inspiration: it also offers a sense of orientation. Without a vision of the type of society we desire, it will be impossible to ever achieve it. In a modern ecological context, the details of those Utopian principles, rooted in a scientific understanding of ecosystems, will be applied through democratically developed plans at the local level. Social ecology examines the future from this perspective and recognizes

the real, existing potentiality for an ecological society. Utilizing modern scientific insights and technics we have the potential to solve the world's ecological problems; we can create and utilize non-polluting, renewable sources of energy; we can reverse the process of global climate change; we can restore damaged ecosystems and ensure continued biodiversity; we can end pollution and clean up toxic wastes; and we can provide a healthy diet for the world's population.

Today, all of this is possible by utilizing existing technologies. For the first time in the history of the planet we now have the capacity to eliminate scarcity. Our society has the technology and science required to meet the needs of all humanity for food, shelter, and energy. What we lack is the social vision and the political will to do so. Hierarchical concentrations of wealth and power have led to a catastrophic imbalance in the distribution of resources around the planet. The gap between rich and poor has been steadily increasing in recent decades. Just as the Enlightenment led to a restructuring of society that shook the foundations of the old social order, a new Enlightenment rooted in a social ecology must aim for the same. I am painfully aware of the limitations and many problematic aspects of the original Enlightenment, and I am not arguing that we should replicate the content, but rather that it represents a process from which we must learn. The Enlightenment project began with a set of ideas that offered a radical critique of what was, and a transcendent vision of what could be and what should be, rooted in a new ethical framework. A similar process is urgently needed today if the potentiality for an ecological society is to ever be realized. To fail to do so is to abandon our humanity and enter headlong into an era of unprecedented ecological devastation.

Ariel Salleh

Ecofeminist Reason and the Politics of Life-on-Earth

Reproductive labour is the foundation of every society. In the hands-on experience of such labour, mothers learn how to sustain biological cycles in the bodies they care for. Likewise, peasants and gatherers attune to and regenerate cycles in the land. These non-monetised workers are largely invisible in the global economy, and not adequately acknowledged in socialist theory. *But together the three labour groupings form 'a class' whose time has come, by reason of their material skills in enabling Life-on-Earth.*[1] This ecological feminist claim enjoins the call of development critic Wolfgang Sachs, for societies which live graciously within their means, and for social changes which take their inspiration from indigenous ideas of the good and proper life ... the task of global ecology can be understood in two ways: it is either a technocratic effort to keep development afloat against the drift of plunder and pollution; or it is a cultural effort to shake off the hegemony of ageing Western values and gradually retire from the development race.[2]

1 Ariel Salleh, *Ecofeminism as Politics: nature, Marx, and the postmodern.* London: Zed Books, 2017/1997.

2 Wolfgang Sachs (ed.), *Global Ecology*. London: Zed Books, 1994, pp. 4-11.

Movements for Life

The word ecological feminism is used widely to describe *a politics that treats ecology and feminism as one struggle. It emerges when the conditions of life in urban neighbourhoods and rural communities are put at risk.* Women or men can be involved in life-affirming labours, but since around the world at large, it is mainly women who are socially-positioned as care givers and food growers, it is usually the women of a community that take environmental action first. Interventions of this sort are universal, regardless of region, class, or ethnicity; that is, they are uniquely intersectional. On every continent, from the 1970s on, women responding to the collateral damage of post-World War II capitalist consumerism and development models started a kind of politics that they called 'ecofeminism'. Whether opposing toxic pollutants, deforestation, nuclear power, or agroindustry, these grassroots women always connected 'local and global'. Some ecofeminists in Germany, built their work quite explicitly on socialist foundations laid by Rosa Luxemburg.[3]

The 1970s also saw an implosion of the 'new social movements' - anti-nukes, Black Power, Women's Lib, Indigenous land rights. Eventually radical ecology would be coopted by Green parties and technocrat professionals. The mainstream of feminism was deflected by liberal individualism, and turned into a single-issue struggle for equal rights. By contrast, ecofeminists turned their attention to the 1992 Earth Summit as it intensified the global North's neocolonial policies in the guise of 'protecting nature'. This worldwide master plan of regional agreements would open the way for corporate mining of Indigenous soils and corporate patenting of Indigenous biodiversty. Ecofeminists like Vandana Shiva and others were present at the Rio Earth Summit, and did what they could to oppose the measures.[4] Soon the UN

3 Maria Mies, *Patriarchy and Accumulation on a World Scale*. London: Zed Books, 1986; Rosa Luxemburg, *The Accumulation of Capital*. London: Routledge, 2003/1913.

4 Vandana Shiva, *Staying Alive: Women, Ecology, and Development*. London: Zed Books, 1987; Maria Inacia d'Avila and Naomi de Vasconcelos (eds.), *Ecologia Feminismo*. Rio de Janeiro: EICOS-UFRJ, 1993.

Framework Convention on Climate Change would force further concessions from socially vulnerable people.[5] The 20th century closed with the Battle for Seattle, where an international grassroots insurgence faced down the World Trade Organization. This broad movement of movements for a people's alternative to globalisation held its first World Social Forum in 2001.

If the expansion of neoliberalism demoralised manufacturing workers in metropolitan states by sending their jobs offshore to low-wage export processing zones in the global South, many folk in the geopolitical periphery had a different agenda. In Brasil, a vibrant Landless People's Movement was talking up eco-villages and food sovereignty. In Ecuador, the women of Accion Ecologia invented a concept of 'ecological debt' to describe the 500 year colonial theft of natural resources; the modern theft of World Bank interest on development loans; and the ongoing degradation of livelihoods resulting from economic extractivism. Justice with sustainability was also featured at the 2010 Cochabamba People's Climate Summit, which presented Andean ways of provisioning as an alternative to the wasting of life under industrial affluence.

Following the 2008 financial meltdown, globally aware youth called Occupy set up camp near Wall Street stock exchange, to rail against the capitalist class; in Germany they blockaded the Frankfurt banks. Another politics guided by life-affirming values surfaced in Mediterranean states resisting European Union austerity programs. Spain's Indignados prompted a variety of self-sufficient neighbourhood economies. Then at Rio+20 in 2012, business, politicians, and the United Nations Environment Program stepped up their Green New Deal proposition - a public relations exercise for the nanotech bio-economy; and again, ecofeminists challenged.[6] Later, academics would gather in Leipzig and Budapest to discuss degrowth, although the earlier post-development work of ecofeminist 'subsistence thinkers' like

5 Ana Isla, 'Who Pays for Kyoto Protocol?' in Ariel Salleh (ed.), *Eco-Sufficiency & Global Justice: Women write political ecology*. London: Zed Books, 2009.

6 Ariel Salleh, 'Green Economy or Green Utopia? Rio+20 and the Reproductive Labor Class,' *Journal of World Systems Research*, 2012, Vol. 18, No. 2, 141-145.

Veronika Bennhold-Thomsen was not yet recognised.[7] Today, the Brussels Rosa Luxemburg Stiftung working on Social-Ecological Transformation is examining the convergence of ecofeminist politics with self-sufficient community models like 'buen vivir' from South America; 'ubuntu' from South Africa; and 'swaraj' from India.

Ecofeminists observe that *under capitalist patriarchal cultures, the enclosure, resourcing, and commodification of nature echoes the enclosure, resourcing, and commodification of women's labouring bodies.* Classical allusions to Mother Nature are far more than metaphor - and women's resistance to this oppression takes a diversity of forms. Women across Africa whose bodies and livelihood is threatened by mining near their villages have established WoMin, a continental anti-extractivist network with its own ecofeminist manifesto on climate change. India's Navdanya school for eco-sufficiency 'banks' traditional seeds to save local knowledge from pharmaceutical patenting. In the United States, a protective ethic of veganism circulates and meetings on Minding Animals are held;[8] Appalachian mothers take direct action against mountain top removal by the coal industry.[9] In Sichuan, China, peasant women restore soil fertility by reviving centuries old organic cultivation technologies; and in London, housewives volunteer their time to repair the River Thames catchment from centuries of abuse.[10]

7 Veronika Bennholdt-Thomsen and Maria Mies, *The Subsistence Perspective*. London: Zed Books, 1999; Vandana Shiva, *Earth Democracy: Justice, Sustainability, and Peace*. London: Zed Books, 2005.

8 Marti Kheel, *Nature Ethics*. Lanham: Rowman & Littlefield, 2008; Pattrice Jones, 'Liberation as Connection and the Decolonization of Desire' in Breeze Harper (ed.), *Sistah Vegan: Black Female Vegans Speak on Food, Identity, Health, and Society*. Brooklyn: Lantern, 2010.

9 Wo-Min: 'African Women Unite Against Resource Extraction': www.womin.org.za; Shannon Bell, *Our Roots Run Deep as Iron Weed*. Chicago: University of Illinois Press, 2013.

10 Navdanya: www.navdanya.org/; Chan Shun Hing: http://our-global-u.org; Pamela Odih, *Watersheds in Marxist Ecofeminism*. Newcastle: Cambridge Scholars, 2014.

Water: the Real Bottom-line

When activists don't see how 'the logic of reproduction' interconnects ecology, worker's, women's, and Indigenous' movements, a destructively competitive single-issue 'identity politics' pits the rights of one group against the rights of another. This competitive pluralism protects the liberal status quo by default. But when people focus on protecting the conditions of life-on-Earth, socially constructed differences recede. Moreover, if as ecofeminists suggest that nurture is a universal human capacity, its material bottom-line is another universal flow: water.

- Global climate stability depends on a regular water cycle
- The reduction of atmospheric carbon by plants depends on water
- Soil, plant, and animal health depends on water
- Human bodies are mostly made up of water.

The governments and multilateral agencies that run the growth--oriented international development model are in denial that the global economy is already facing a crisis of overproduction. More seriously, they deny that peak oil is about to be overtaken by peak water. The World Bank and even United Nations' Sustainable Development Goals promote privatisation of water supply. However, neoliberal water protection is a contradiction in terms, since markets can only increase the value of a commodity by making it scarce. Today, 10 private companies control water sales in 100 countries, and they're known to hike water rates, cut services to the poor, and refuse infrastructure maintenance.[11] Since the emblematic struggle of Cochabamba citizens against Bechtel corporation in 2001, South American communities have been leading the world in water politics. Venezuela and Mexico have strong movements for municipal ownership of services. In Europe, Spain is especially advanced in this.[12] Activists need to

11 Maude Barlow and Tony Clarke, 'Water privatization,' *Global Policy Forum*, 2004: www.globalpolicy.org

12 Lavinia Steinfort, Satoko Kishimoto, and Denis Burke, '10 Rousing Struggles for Public Water,' *Transnational Institute Newsletter*, 22 March 2017: http://www.tni.org.

forestall corporate water grabs and future big-power conflicts over water, as a matter of urgency.[13]

However, a Left strategy like public ownership of water is only half the story, because like liberalism, socialism remains an anthropocentric politics. *Post-development communities will be 'eco-centric', working hands-on with the water cycle itself to restore life-on-Earth.* In this, the global North can learn much from Indigenous worldviews and analyses grounded in women's care giving skills. At the same time, ecofeminist reasoning is indispensible to the necessary and urgent deconstruction of anthropocentrism. This is because traditional Western institutions from religion and law, to economics and science, were designed to serve the world's 'first political order' - patriarchal domination. Today a culture of 'masculinist entitlement' remains the international default position of liberals and socialists alike.[14] [14] The wheels of globalisation are still greased by Aristotle's 'Great Chain of Being' hierarchy; an ancient imaginary placing gods, kings, and men at the apex of social life, having power over underlings like 'women, natives, and Mother Nature'.

The conventional discourse of Humanity over Nature, masculine over feminine, white over black, defines and limits people's life opportunities, so it makes good sense for feminist, decolonial, and ecological activists to expose it. This increasingly globalised dualism is not easy to dissolve though, because it is seeded over and over again in each individual mind with the socialisation of every new generation.

Humanity	over	Nature
man	over	woman
production	over	reproduction
economy	over	ecology
capital	over	labour
mental	over	manual

13 Amanda Froelich, 'Coca-Cola And Nestlé To Privatize The Largest Reserve of Water In South America,' *The Dawn News*, 5 February 2018.

14 Denise Thompson, *Masculinity and the Ruling of the World*: http://denisethompsonfeminism.wordpress.com/.

subject	over	object
mind	over	body
clean	over	dirty
white	over	black
North	over	South
Land	over	Water

The subconscious 'common sense order' of everyday life looks like this - and most people accept it as 'a law of nature'. The old code has shaped historical structures, and in turn, material actions have reinforced the code. Women and conquered slaves became mere objects; and under Enlightenment reason, nature and bodies were conceptualised as machines with parts to be controlled by mathematical formulae.[15] This life-alienated scientific mindset has been indispensible to the functioning of capitalism. Again, by patriarchal default, land is valued as solid, while life giving water flows are as problematic as women's embodied fertility - when not husbanded ... Social entitlement gets to be symbolised in Land Title, and secured from unruly waters by man-made dams, channels and drains.

Advocates of 'the new water paradigm' describe the masculinist drive to master water through law and engineering as the 'the hydraulic mission'.[16] Another disastrous outcome of the conventional dualism reappears in the mis-match between the reductionist metrics of economists and the living ecological flows that they try to measure. People who reject neoliberalism, often socialists, may still take the industrialisation of nature for granted as 'the way to do an economy'. They do not grasp why mechanical provisioning cannot be rationalised, regulated, or repaired. The engineering claims of trans-Atlantic ecological modernists are deceptively optimistic in this respect. A digitised, automated future will not readily

15 Carolyn Merchant, *The Death of Nature: Women, Ecology and the Scientific Revolution.* New York: Harper, 1980.

16 Michal Kravčík, Jan Pokorný, Juraj Kohutiar, Kováč, Martin and Eugen Tóth, *Water for the Recovery of the Climate: A New Water Paradigm*. Košice, SL: Krupa Print, 2008: www.waterparadigm.org.

'dematerialise' into justice and sustainability. Meanwhile, gestures like the circular economy or the transvaluation of care labour by feminist economists are readily reabsorbed by the logic of capital.

Another Way of Knowing

Ecofeminists have created an extensive literature on the entanglement of global ecological crisis with eurocentric and sex-gendered privilege. This work critiques the premises of knowledge systems, academic disciplines, even marxism and social ecology. Ecofeminists offer an alternative epistemology, a relational way of knowing quite distinct from the instrumental rational manipulation of people and nature. The argument is sociological, certainly not an attribution of women's insights to some inborn 'feminine essence' as naive followers of the dualist code assume it to be. The source of ecofeminist perceptions is neither biological embodiment, nor economic structures, nor cultural mores, although all of these things influence human action. Rather, *the focus of an ecofeminist epistemology is labour; how people make and re-make their understandings and skills through interaction with the material world - including humanly material bodies.* People who work autonomously, outside of the numbing industrial routine - care givers, farmers, gatherers - are in touch with all their sensory capacities; able to construct accurately resonant models of how one thing joins to another.

The time frame of this 'meta-industrial' labour class is intergenerational, and thus intrinsically precautionary. Scale is intimate, maximizing worker responsiveness to matter-energy transfers in nature or human-bodies-as-nature. Judgment is based on an expertise built up by trial and error, using a cradle to grave assessment of ecosystem or bodily health. The diverse needs of species or age groups are balanced and reconciled. Where domestic and livelihood economies practice synergistic problem solving, multi-criteria decision-making is a matter of common sense. When there is no division between mental and manual skills, then responsibility is transparent; the labour product is not alienated from the worker as

under capitalism, but enjoyed in the sharing with others. *Here the linear logic of production gives way to a circular logic of reproduction. In fact, social provisioning in this way is simultaneously a vernacular science and direct political action.*

An exemplar of grounded epistemology in action is the South Asian anti-dam activist Medha Patkar, a world leader in getting people to preserve their water catchments for livelihoods rather than irrigated cash crops. But it would be decades before, in 2017, India's mighty Ganges acquired 'rights of personhood'. Also that year, New Zealand's Whanganui River, embedded in the Iwi lands of the Maori people was granted legal standing. On the other hand, Australia lags far behind in river care, despite the fact that its Indigenous peoples honour land and water as one. So too, their notion of 'country' combines ecology with identity and belonging, respect, and a relational way of knowing. Among Quechua people of the Andes, 'sumak kawsay', often adapted as 'buen vivir', carries a similar blend of life-affirming meanings. In 2008, South American Indigenous challenges to neocolonial extractivism inspired Ecuador's constitutional notion of Pachamama, giving Rights to Mother Nature.[17] From South Africa to Britain and beyond, a new academic field of Earth Jurisprudence or 'wild law' is helping resolve tensions between the wisdom of eco-centrism and the anthropocentric liberal language of 'rights'.

That said: jurisprudence and law remain in the world of ideas, whereas 'the new water paradigm' demonstrates politics in action. Potentially, new grassroots visions of an Earth Democracy can destabilise the trans-Atlantic hegemon with its grand technocratic schemes for Earth System Governance. But there is a way to go - not least because the United Nations' Sustainable Development Goals (SDGs) rely on trans-national water management.[18] The SDGs are described as a universal plan of action

17 Alberto Acosta, 'The Rights of Nature, New Forms of Citizenship, and the Good Life,' *Critical Currents*, 2013, No. 6, 108-112: http://www.fuhem.es/media/ecosocial/File/Boletin%20ECOS/ECOS%20CDV/Boletin_9/Acosta.pdf.

18 United Nations Sustainable Development Knowledge Platform, *Transforming our world: The 2030 Agenda for Sustainable Development*: www.sustainabledevelopment.un.otg/post2015/

for 'people, planet, and prosperity' to take effect over the next fifteen years. In fact, the goals are expected to be met with continued extractivism, growing GDP through technology innovation and transfer, market deregulation, and more power to the WTO. Given existing ratios between GDP growth and income growth of the poor, it will take 207 years to eliminate poverty with the SDG strategy. This is because the global economy will have to grow 175 times its present size, even as it is already overshooting the planet's material capacity by some 50 per cent each year.[19]

Sustainable Development Goal 6.a calls for international cooperation and capacity-building for sanitation, water harvesting, desalination, water efficiency, wastewater treatment, and recycling. For climate, a parallel 'clean energy approach' hangs on the mantra of the 3-Ds - 'decentralisation, decarbonisation, digitalisation' - described as 'incubated' - in the womb of entrepreneurs and accountants no less. The full 'cradle to grave' impacts of high tech problem solving: - energy intensive mining, smelting, manufacture, transport, and maintenance - are rarely factored in, even by exponents of the Green Economy. The metabolic costs of that extractivism - soil erosion, toxicity, water wastage, and greenhouse emissions, are plainly incompatible with any idea of sustainable development - let alone post-development. What is sustained here is superficial policy, protected by ancient patriarchal habits of psychological splitting, dualism, and denial.

Water for Climate

On every continent there are emblematic signs, as practical water strategies defy development models based on the separation of land and water. Rain on bare land without trees to break its fall or humus to absorb it, erodes slopes and washes fertile soil to the sea. The water paradigm is about working with biodiversity and soils to hold rain where it falls, so rehydrating subterranean

19 Jason Hickel, 'The Problem with Saving the World', *Jacobin Magazine*, 8 August 2015; see also Peggy Antrobus, 'Mainstreaming trade and millennium development goals?,' in Ariel Salleh (ed.), *Eco-Sufficiency & Global Justice: Women write political ecology*. London: Pluto Press, 2009.

aquifers, landscapes - and indeed, the atmosphere. Money is irrelevant; labour is communal, using local stone, wood, and plants. In India, Rajindra Singh revived the local tradition of building of 'johads' or mud swales across slopes to gather monsoon runoff, while Dhrubajyoti Ghosh has fought to keep the rich metabolism of Kolkata's wetlands safe from developers.[20] In post-communist Slovakia, Michal Kravcik has encouraged jobless and alienated rural villagers to re-skill and regenerate food growing land by creating small-scale water harvesting designs from abundant materials in their environment. Similar experiments can be found in China and France. Geographic, historical, and cultural conditions differ, but there is an exciting transnational convergence among these post-development moves.

A water paradigm is already demonstrated in Ecuador by the mothers and grandmothers of the once development ravaged hillslopes of Nabon. With foresight and innovation, these women have achieved erosion control, water harvesting, soil fertility, and food sovereignty by planting to restore old water catchments and streams. And in this, they have also done their bit for the global climate crisis.[21] By ecofeminist reasoning, peasants in livelihood economies, like many mothers in households of the global North, apply relational principles in their work to sustain metabolic cycles - humans are, after all, nature-in-embodied-form. The divisive eurocentric premise of Humanity over Nature has prevented many on the Left, even some feminists, from taking this marginalised labour force seriously as political actors. Beyond that recognition, water too has historical agency, as expressed in the self-creative capacity of life to organise, reproduce, sustain, adapt, and evolve.

In Portugal, the people of Tamera are designing their rural community precisely around this regenerative paradigm, with

20 Anil Agrawal and Sunita Narian (eds.), *Dying Wisdom: Rise, Fall, and Potential of India's Traditional Water Harvesting Systems*. New Delhi: Centre for Science and Environment, 1997; Patrick Barkham, 'The Miracle of Kolkata's Wetlands and One Man's Struggle to Save Them,' *Environment and Ecology*, 21 July 2016: http://vikalpsangam.org.

21 Neema Pathak Broome and Ashish Kothari, 'How an Ecuadorian Community is Showing Its Government How to Really Live Well,' radicalecologicaldemocracy.org, 16 December 2017.

all its ecological, economic, political, and socio-psychological benefits. Their post-development bioregional commoning integrates environmental health with embodied health, sex-gender reflexivity with spiritual wellbeing.[22] In Australia, farmer Peter Andrews has recoupled carbon and water cycles on his land by planting to enable groundwater infiltration, stop erosion, and enhance fertility by keeping carbon in the soil - which itself, is a living organism.[23] This also serves to mitigate global warming, because well-watered ecosystems, prevent aquifer loss, ground salinity, drought and flood - and help to restore the global heat energy balance. Water paradigm practitioners point out that every year, 50,000 square miles of forest are cleared, and urban soil is sealed by paving, amounting to a further 20,000 square miles of dead earth. The drying-out of soil and air results in potential heat of 25 million-terawatt hours annually - 1600 times more heat than is generated by all the worlds' powerhouses combined.[24]

As any campesina knows, a tree is a natural solar driven air-conditioning system based on atmospheric water evapo-transpiration. It is a free cooling system, and one without polluting electricity generation. In evaporation, a gallon of water absorbs 2.5-kw hours of solar energy; so urban areas with no trees result in dysfunctional heat plates in the air above them. This disturbs the small water cycle that brings local rain, and in the atmosphere at large, random heating sets up the chaotic weather patterns known as global warming. Harvesting rain to restore local and global water cycles is basic to the water paradigm. Letting nature hold water where it falls also helps stabilise the rising sea levels that threaten small island states in the Pacific Ocean. The UN Sustainable Development Goals 14 and 15 recognise that climate is a complex non-linear system closely implicated with the functioning of water

22 Tamera Peace Research Center | Environmental Education Media: <*eempc.org/healing-biotope-tamera-portugal/*>

23 Andrews, P. *Back from the Brink. How Australia´s Landscape Can Be Saved.* Sydney: ABC Books, 2006.

24 Martin Winiecki and Leila Dregger, 'Water: The Missing Link for Solving Climate Change,' *Terra Nova Voice*, 28 November 2015.

bodies. But the UN Intergovernmental Panel on Climate Change favours reductionist science, silo thinking, administered by technocrats - not solutions that people themselves can use.[25] In this way, global climate politics is kept top-down, away from people's own capacities to act in any way other than as consumer citizens.

At the 2015 Paris climate talks, alter-globalisation activists agreed to join-up with land and water struggles. As the international peasant union Via Campesina puts it: our small scale provisioning is actually 'cooling down the Earth'.[26] Popular approaches to sovereignty and self-reliance honour models like the ecofeminist subsistence ethic, eco-sufficiency, buen vivir, swaraj, ubuntu, commoning, and degrowth. These political visions foster livelihoods, skilled jobs, solidarity, cultural autonomy, sex-gender awareness, learning, empowerment, and spiritual renewal. Nevertheless, making social change in everyday life will call for a determined effort to expose and eradicate old habits masculinist anthropocentrism.

A post-development strategy will be multi-faceted and synergistic as it rolls back the ancient dualistic code.

- It will replace Human ecological domination of Nature with reciprocity rather than control.
- It will replace the class hierarchy of mental over manual labour with horizontal commoning.
- It will replace sex-gender and racial discrimination by revaluing marginalised regenerative skills.
- It will replace top-down schemes for Earth Governance with ground-up bioregionalism.

This is a politics of peace - post-capitalist, post-colonial, post-patriarchal, and eco-centric. As people reclaim their shared humanity-in-nature, so cross-cultural understanding will grow.

25 Ariel Salleh, Editorial: A sociological reflection on the complexities of climate change research, *International Journal of Water,* 2010, Vol. 5, No. 4, 285-297.

26 Via Campesina (2009) *Small Scale Sustainable Farmers are Cooling Down the Earth.* Jakarta: Via Campesina Views.

Post-development

Eco-sufficient economies do not externalise costs by exploiting others or externalising waste as pollution. This labour skill is indispensable to a future commons - and it is already practised by a global majority class of regenerative workers. The traditional Left preoccupation with exploitive relations of production - critically important as it is - has sidelined concern over oppressive 'relations of reproduction'. That said: there are passages in Marx's opus, which might have described meta-industrial labour had his humanist focus been less narrowly eurocentric and patriarchal. Try reading these words through the lens of ecofeminist reason:

> A class must be formed which has radical chains, a class in civil society which is not a class of civil society, a class which is the dissolution of all classes, a sphere of society which has a universal character because its sufferings are universal, and which does not claim a particular redress because the wrong which is done to it is not a particular wrong, but wrong in general ... a sphere which finally cannot emancipate itself without therefore emancipating all those other spheres.[27]

Reproductive work creates relational 'ways of knowing' that counter the mechanistic violence of eurocentric instrumental reason. Unless radical politics is guided by the experience of the global majority - care giving women, peasants, and Indigenous gatherers, it will readily slip back into the kind of Enlightenment that treats the Earth and its peoples as an endless resource. Whereas the linear reason of modern industry cuts through the metabolism of nature, leaving disorder and entropy behind, meta-industrials who nurture living processes develop tacit epistemologies expressing an alternative form of human creativity. Such labour, freely appropriated by capital from both its domestic and geographic peripheries, is prerequisite to its very mode of production. That is to say, this unique class of workers exists

27 Karl Marx, *Critique of Hegel's Philosophy of Right*, in Tom Bottomore and Maximilien Rubel eds., *Karl Marx: Selected Writings in Sociology and Social Philosophy*. Harmondsworth: Penguin, 1984, p. 190.

'inside of capitalism' when it's activity subsidises surplus value; *yet reproductive provisioning also exists 'outside of capitalism', sufficient to itself. And that is why it has considerable bargaining power in the international arena.*

Right now, peasant and Indigenous peoples in the global South are a highly energised fraction of international politics. In fact, the 21st century seems to be undergoing a postcolonial denouement, albeit continually rolled-back by trans-Atlantic opportunism and colonial clones like the BRICS states (Brasil, Russia, India, China, South Africa). Grassroots projects like the Global University for Sustainability, the Systemic Alternatives think-tank, Radical Ecological Democracy Network, all testify to positive post-development moves. Ecofeminist voices demand big-picture civilisation change too; but women's own emancipation remains problematic at this time. Neoliberalism promotes a new divide and rule in the workplace and universities, as women are encouraged to compete against each other for the ranks of masculine privilege. Like the worker's movement before it, feminism is easily reabsorbed by capitalist patriarchal strategies of repressive tolerance, just as Indigenous movements may be subverted by empty government promises. *For now, ecofeminists work patiently across the political movements joining the dots where they can.*

Mark C.J. Stoddart and Paula Graham

Offshore Oil, Environmental Movements and the Oil-Tourism Interface: The Old Harry Conflict on Canada's East Coast

Abstract: Offshore oil development and nature-based tourism offer alternative ways of living with and making use of coastal environments. We analyze a recent controversy over offshore oil extraction in the Gulf of St. Lawrence, in eastern Canada, and identify key points of alignment between environmentalism and the tourism industry that structure resistance to oil development. Our results are based on interviews with tourism operators, government, environmental groups and recreational organizations, as well as an analysis of key websites and web 2.0 content. Four discourses are used to challenge the normal separation of offshore oil and tourism development in Atlantic Canada: wilderness and wildlife; ecological risks of oil disaster; protecting existing social-ecological networks; and contesting political jurisdiction. Our findings show that the ecological and social value of the Gulf of St. Lawrence is used to justify opposition to oil development in the region. However, the project-specific nature of this opposition neglects larger questions of social-environmental sustainability in an oil-dependent political ecology.

Introduction

Offshore oil extraction and nature-oriented tourism offer different development pathways for coastal communities and environments. Offshore oil promises economic growth, employment and revenues from oil royalties, but is based on the extraction of a non-renewable resource that contributes to climate change (Freudenburg and Gramling 2011; Urry 2013). Nature-oriented tourism, by contrast, is built around wilderness iconography and promises economic benefits from non-extractive experiences of nature (Stoddart 2012; Urry and Larsen 2011). These industries are rarely analysed in relation to each other (Jennings 2015; Widener 2009). To examine what we term the 'oil-tourism interface,' or the relationships between offshore oil and tourism sectors, we use the proposed offshore oil project called Old Harry in the Canadian province of Newfoundland and Labrador. This development would be in a previously undeveloped area of the Gulf of St. Lawrence, which is where the St. Lawrence River meets the Atlantic Ocean, and is bordered by the provinces of Quebec, Prince Edward Island, New Brunswick, Nova Scotia, and Newfoundland and Labrador. The project is named after the town of Old Harry in the Îles de la Madeleine (Madeleine Islands), Quebec, which are approximately fifty miles (eighty kilometers) from the project site. Old Harry is close to the west coast of Newfoundland, where much of the region's nature-oriented tourism is based.

Our analysis answers the following research question: What discourses are used to create an alignment between environmentalism and tourism in opposition to offshore oil development in the Gulf of St. Lawrence? Our results add to a sociological understanding of oil development as we identify factors that lead to social movement-tourism alignments in opposition to oil in a region where it is often seen as unproblematic by politicians, media and the public. As such, our analysis builds upon other work in this journal on the social processes of building coalitions and collective identities across social movements (Fominaya 2010; Mayer 2009). However, while previous research focuses on

coalition-building across different social movement actors, our analysis focuses on the discourses that are used to create links between social movements and non-social movement actors.

Oil extraction has repeatedly prompted social movement mobilization elsewhere (Freudenburg and Gramling 1993; Gedicks 2001; Oriola 2013; Schlüter et al. 2004; Widener 2007; 2009). However, offshore oil and tourism are rarely incorporated into the same discussions about social and ecological sustainability in Atlantic Canada. Treating oil and tourism as parallel modes of development is an example of what Freudenburg (2005) terms the social production of "non-problematicity." In focusing on the oil-tourism interface, we emphasize that these are not parallel development paths, but have points of contact and interaction that may be more or less obvious. Coastal environments around the world are subject to impacts of resource extraction, tourism and ecological change. Our analysis contributes to better understanding how relationships between "tourism mobilities" and offshore oil shape social-ecological wellbeing in coastal regions (Sheller and Urry 2004).

Oil, Tourism and Environmentalism in Newfoundland and Labrador

The political economy of Newfoundland and Labrador was dominated by the cod fishery until the early 1990s, when a decline of cod stocks prompted a moratorium on the fishery. In the wake of the moratorium, oil and tourism have been pursued as parallel modes of development, reshaping the social, political, economic, and ecological networks of the province (Ommer 2007). The Newfoundland oil industry accounts for 14 percent of Canada's total crude oil production (Environment Canada 2009). It has contributed significant provincial per capita GDP increases since the 1980s (Locke 2011). However, as Sinclair notes, the "economic benefits of oil are much more visible in the capital city area than in the smaller communities around the coast, which continue to experience economic problems and population decline" (Sinclair 2011:42).

Tourism has also been pursued as a key area for economic diversification. While oil and gas has a larger per capita economic impact, more people are employed in tourism, and throughout a broader range of communities. Gros Morne National Park, located close to the proposed Old Harry development, is a UNESCO World Heritage Site and is one of the major nature-based tourism attractors in Atlantic Canada. It was established in the early 1970s and was intended to bring "the maximum funds into the local economy" (Overton 1996:182).

Compared with other parts of Canada, there is not an especially visible tradition of environmental activism in Newfoundland. The province has been the target of international animal rights campaigns against the sealing industry (Dauvergne and Neville 2011). As a result, environmentalism has negative connotations for many people. By contrast, workplace disasters in the oil industry have not tarnished public perceptions of oil development. The 1982 Ocean Ranger oil platform sinking, resulting in 84 deaths, and a 2009 helicopter crash, resulting in 15 deaths, did not lead to a generalized critique of the oil industry. Dodd argues that this is because the "promise of oil" with its "rhetoric of job creation and Newfoundland self-determination" carries significant cultural weight in a region with a history of underdevelopment and out-migration (Dodd 2012:142-3). Furthermore, many residents have personal experience or social network ties to the oil industry, either in the province or else in the Alberta oil sands, which employs a significant number of Newfoundlanders (Hiller 2009).

Despite often unfavorable attitudes towards environmentalism, environmental organizations are active in the province. These organizations work within the political and economic context of international campaigns against the sealing industry and a formerly-booming provincial oil industry (which has been impacted by recent oil price declines), both of which create cultural barriers to local activism. Environmental organizations in Newfoundland have been hesitant to criticize the oil industry, which also contributes to the "social construction of non-problematicity" (Freudenburg 2005:105) of oil and tourism as parallel development pathways.

The Old Harry project is in the assessment phase by the Canada-Newfoundland and Labrador Offshore Petroleum Board (C-NLOPB). Public hearings are in process and the project proponent, Corridor Resources, is carrying out their environmental assessment. Conflict over the project was recently described as being "in a holding pattern" in a talk by a member of the environmental group Save Our Seas and Shores (Jeffrey 2015). Government and industry promise that the Old Harry project will extend the economic benefits of oil beyond south-eastern Newfoundland, where most extraction takes place. The 2011 environmental assessment of the project concludes that a medium--to-large oil spill is "unlikely," but identifies environmental risks to wildlife from potential oil spills, particularly to whales and seabirds (Stantec 2011).

However, modelling by Bourgault et al. (2014) suggests that a large-scale oil spill from Old Harry could impact south-western Newfoundland or Cape Breton Island, Nova Scotia. A recent report from the St. Lawrence Coalition (2014) – a network of national and regional environmental, First Nations, recreation, tourism and community organizations – argues that the climate of the Gulf, with sea ice and frequent high winds and storms, makes responding to oil spills difficult. This report calls for a moratorium on oil exploration in the Gulf pending further scientific research, public consultation and the creation of an integrated management plan for the whole region. As such, our research is on a social movement campaign that is currently in progress.

While this research focuses on controversy over a specific offshore oil project, this conflict comes at a time when some local residents and social movement groups have begun to break from the pattern of quiescence regarding oil development. Public hearings held in 2015 about the possibilities for hydraulic-fracturing in western Newfoundland were well attended. Anecdotally, there are links between these issues, with many of those who are opposed to hydraulic-fracturing also opposed to the Old Harry project.

Theoretical Framework

Our analysis is grounded in a "networked political ecology" theoretical perspective. With origins in critical and Marxist orientations to studies of social-ecological relationships and conflicts, political ecology is a term that has been taken up by a wide range of researchers and theorists. Broadly defined, political ecology is a perspective that takes the relationships among non-human environments, culture and discourse, and political economy as its analytical focus (Bennett 2010; Latour 2004; Escobar 1999). Recent approaches to political ecology, such as those articulated by Bennett (2010) or Latour (2004), are useful for emphasizing the relationality between discursive and material dimensions of environmental politics. By framing our approach as *networked* political ecology, we emphasize links between economic networks of oil extraction and distribution, tourism mobility networks, political networks of environmental governance, communication networks, and the ecological networks of coastal environments (see Figure 1).

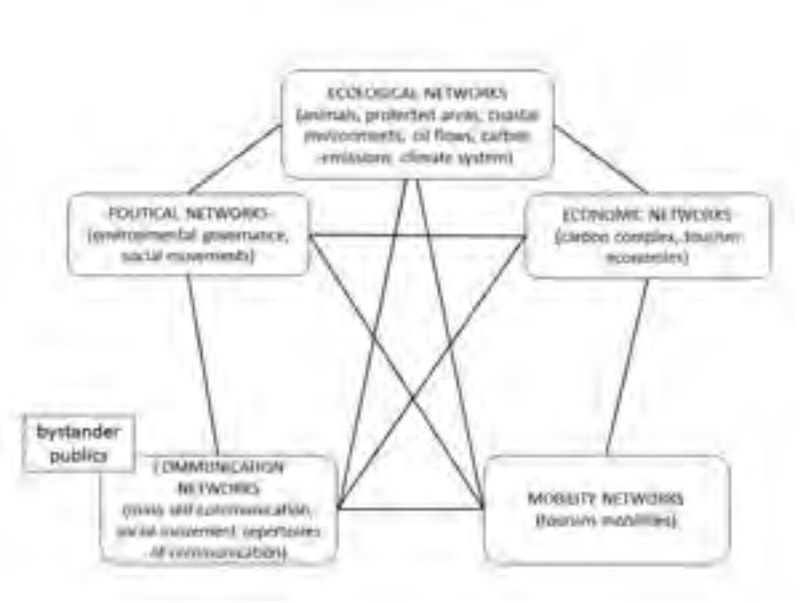

Figure 1

Urry's (2013) concept of the "carbon complex" asserts the importance of trans-national networks of oil development to structuring the social world. The carbon complex encompasses companies that are directly linked to oil extraction and related industries such as shipping or the auto and airline industries as well as institutions linked to carbon capital, including governments and media. For Urry (2013), the power imbalance between large oil corporations and the governments of many oil-producing regions creates tension between oil development and democracy, where the economic contribution of the oil industry distracts from negative impacts, such as health consequences due to water or air pollution.

While Norway stands as an example of a country that pursues oil development in ways that maximize its social benefits, oil development in many regions is seen to lack democratic control, or as being inattentive to the social and environmental health needs of host communities (Gedicks 2001; Oriola 2013; Ritchie 2012; Ritchie and Gill 2008; Schlüter et al. 2004; Urry 2013; Widener 2007). As well, as Norgaard's (2011) research on Norway demonstrates, the economic benefits of oil development can lead to the "socially organized denial" of climate change, wherein everyday talk helps legitimate political and personal inaction. Some environmental movements attempt to disrupt the normal operation of oil extraction in advance of a major disaster, as in the case of the Alberta oil sands (Davidson and Gismondi 2011). In other places, however, opposition does not emerge until after a disaster. In their work on the BP Gulf of Mexico disaster, Freudenburg and Gramling (2011) argue that by envisioning the Gulf primarily as a space for extractive development, social and ecological risks were normalized until the onset of a major spill.

Our concept of the oil-tourism interface highlights links between networks of oil extraction and distribution, and "tourism mobilities" (Sheller and Urry 2004). Tourism mobility is part the shift towards "cosmopolitanism" as a mode ways of engaging the world, which is characterized by "a kind of *connoisseurship*, of places, people, and cultures" that relies upon "extensive

mobility" (Szerszynski and Urry 2006:114, italics in original). Flows of tourists between home communities and destinations rely on systems of "automobility" and "aeromobility," comprised of networks of cars, highways, airplanes and airports (Lassen 2006; Urry 2008). As Cohen et al. note, "tourism is currently directly accountable for 4.4% of global CO2 emissions . . . with 40% of this figure conservatively attributed to tourist air travel" (Cohen et al. 2011:1073). While tourism is intimately bound up with mobility networks, the associated environmental costs are often overlooked.

Widener's (2009) research on oil tourism in Ecuador and the Philippines highlights the less obvious connections between oil development and tourism. The threat of oil development can draw the attention of potential tourists to endangered environments that should be seen before they are altered by oil extraction. Oil extraction can also serve as an incentive for "dark tourism" to places impacted by disasters like the Exxon Valdez wreck in Alaska (Widener 2009). Widener sums up the multifaceted, complex relationship between oil and tourism by noting that oil development "may attract media attention to the area; inspire community challenges to the oil industry or oil impact; increase funding for tourism infrastructure; and reinforce commitments to protect, build, or expand a tourism destination as an alternative to oil impacts or the oil industry" (Widener 2009:267). The notion that oil extraction can support the development of local tourism infrastructure is reinforced by Jennings' (2015) analysis of the Shetland Islands. Oil revenues "brought independence of action" for the region, and have been important for developing the local culture and heritage industry, which is a key tourism attractor.

Eco-tourism has evolved as a form of travel where nature is the central tourism attractor, and where travel is presumed to cultivate environmental awareness and provide a rationale for protecting endangered environments. (Luke 2002; Urry and Larsen 2011). However, as Waitt and Cook's (2007) research on kayaking in Thailand illustrates, environmental concerns raised through tourism are often limited to a particular experience and may not

translate to broader commitments to environmentalism. Similarly, Gould's (1999) research on Ecuador and Belize suggests that tourist operations that position themselves as environmentally and socially responsible often restrict community access to resources and produce large amounts of waste. Szerszynksi and Urry (2006) further suggest that while increased mobility may cultivate a more cosmopolitan worldview, the cost may be that it also encourages a more abstract view of the world that is detached from particular places and communities. Taken together, this research suggests there is a discursive alignment between environmentalism and nature-oriented forms of tourism, but this alignment is often shallow and economically strategic on the part of tourism operators.

Ellis' (2013) notion of "symbiotic ideology," though developed through an analysis of cattle ranching, is also productive for thinking about tourism. Ellis describes the symbiotic ideology as a set of narratives, including stewardship and husbandry of cattle and ranching environments, that allow ranchers to position their relationships to animals as "symbiotic and mutually benefiting from their active participation in capitalist production" (Ellis 2013:430). The symbiotic ideology produces an affective attachment to the environment, as well as a sense of environmental responsibility. At the same time, this discourse downplays the reality that rancher-cattle-environment networks are "dependent on producing exchange value through cattle, making ranchers symbiotic self-dependent on extracting the capital embedded in the natural environment and animal bodies" (443). The concept of the symbiotic ideology illustrates how cultural frameworks can simultaneously embody an emotional attachment to nature and an economic relationship.

Finally, we draw on research on the shift from government as the key source of environmental policy-making to broader social processes of governance. While governments retain a great deal of power, broader networks of social actors, including corporations, social movements, scientists and other experts, increasingly have a role in shaping environmental policy. This also increasingly involves action across local, sub-national, national or international

political spheres (Vasi 2007). Environmental governance research is attentive to how participatory or restrictive governance processes are, who is permitted or who has sufficient resources to participate, who sets the terms of reference and how these factors shape outcomes (Adkin 2009). In the case of Old Harry, governance operates primarily through the Canada-Newfoundland and Labrador Offshore Petroleum Board (C-NLOPB), a regulatory body composed of appointed federal and provincial government representatives. The main avenues for non-governmental participation in offshore oil governance are public input and Environmental Assessment processes facilitated by the C-NLOPB.

We build on these bodies of literature by analyzing how tourism-environmentalism alignment is mobilized to intervene in environmental governance around the Old Harry project. Our analysis also reveals how the discourses used to challenge Old Harry may inadvertently reinforce the presumed "non-problematicity" of the region's dependence on the carbon complex (Freudenburg 2005).

Methodology

Our data come from websites, Web 2.0 material, and interviews. The initial environmental assessment for Old Harry was released in 2011. Our website and web 2.0 data collection took place during late 2012 and early 2013, a period of increased social movement activity and heightened media visibility for the controversy.

We used keyword searches (e.g. "St. Lawrence Gulf" and "Old Harry") to purposively sample websites produced by environmental non-government organizations, the oil industry proponent for the project (Corridor Resources), and the government agency C-NLOPB (Canada-Newfoundland and Labrador Offshore Petroleum Board), which yielded a total of twenty-one websites. Data from the internet were collected using internet ethnography, which treats the internet as a field site in which the researcher immerses herself in order to observe a particular social phenomenon (Hine 2008). Our approach to data collection is what Hew-

son calls a "nonreactive" method of internet research, where the researcher does not set up a "research situation with the explicit intent of gathering primary research data," but rather derives data from existing online spaces, communities, or discussions (Hewson 2008: 545). A field note protocol was used with prompts to attend to the following: how oil development in the Gulf of St. Lawrence is described in reference to potential social, economic, and environmental impacts; imagery used to depict the Gulf environment; tourism and recreation in western Newfoundland; modes of interaction with the Gulf environment; climate change; sustainability and pro-environment practices. Website data collection took place between November 2012 and January 2013.

Web 2.0 data collection, consisting of repeated searches of Facebook, Twitter, and You Tube, was carried out between November 2012 and March 2013. This data set encompasses content produced by organizations who have intervened in this development from both inside and outside Newfoundland (i.e. Quebec, PEI, Nova Scotia), using the application Evernote to retrieve material for analysis. It includes Facebook pages produced by three groups (retrieved at multiple points in time, for 16 distinct documents), five separate Twitter hashtag searches for #OldHarry (with 83 distinct tweets), and 14 YouTube videos. We also included linked material from the Facebook and Twitter searches, including news media articles (24 documents), environmental organization web content (15 documents), community web content (2 documents), and blog posts (1 document). Following the completion of our analysis, we continued attending to the Old Harry conflict by following key organizations on Twitter.

We used purposive sampling to identify and contact forty-seven key organizations for interview recruitment. We conducted twenty-nine interviews: five with government-affiliated participants, thirteen with tourism industry participants, five with Newfoundland-based non-governmental organization (NGO) participants, and six with participants from NGOs based outside Newfoundland that were active in the Old Harry controversy. Eleven participants were female and eighteen were male. The inter-

views were conducted over one year, between May 2012 and April 2013. Pseudonyms are used to ensure participants' confidentiality. These pseudonyms were generated using a random name generator (which produces names based on U.S. census data), and were selected to match the gender of research participants.

Our data were thematically coded with the assistance of NVIVO qualitative analysis software. Several top-level coding categories were used to guide the analysis, including: animals, climate change, culture and history, environmental issues, mobility networks, modes of interaction with coastal environments, offshore oil industry, parks and protected areas, social movements, sustainability discourse, and tourism and economic development. Each of these was subdivided into more precise second-level coding categories. Preliminary analysis was completed for each of the different types of data. Qualitative comparison tables and mind-mapping (non-linear visual diagramming of links between different themes and data sources) were used as tools to draw comparisons across the different types of data.

As a qualification, while our data includes the Corridor Resources website (the corporate proponent of the project), we did not conduct interviews with oil industry representatives. Part of the reason for this is that our analysis of Old Harry is nested within a larger project on the social-ecological impacts of nature-based tourism in Newfoundland and Labrador, which is based on data from the tourism sector, NGOs and government. The asymmetrical focus of our data collection, with less attention to oil industry responses to social movement mobilization, is a limitation of the present study. As such, the scope of the present analysis is limited to opposition to the proposed Old Harry project.

Results

Figure 2 uses social network analysis techniques to visualize links between tourism (non-social movement) actors and environmental (social movement) actors, represented by square nodes, and key thematic categories, represented by circular nodes. Ties

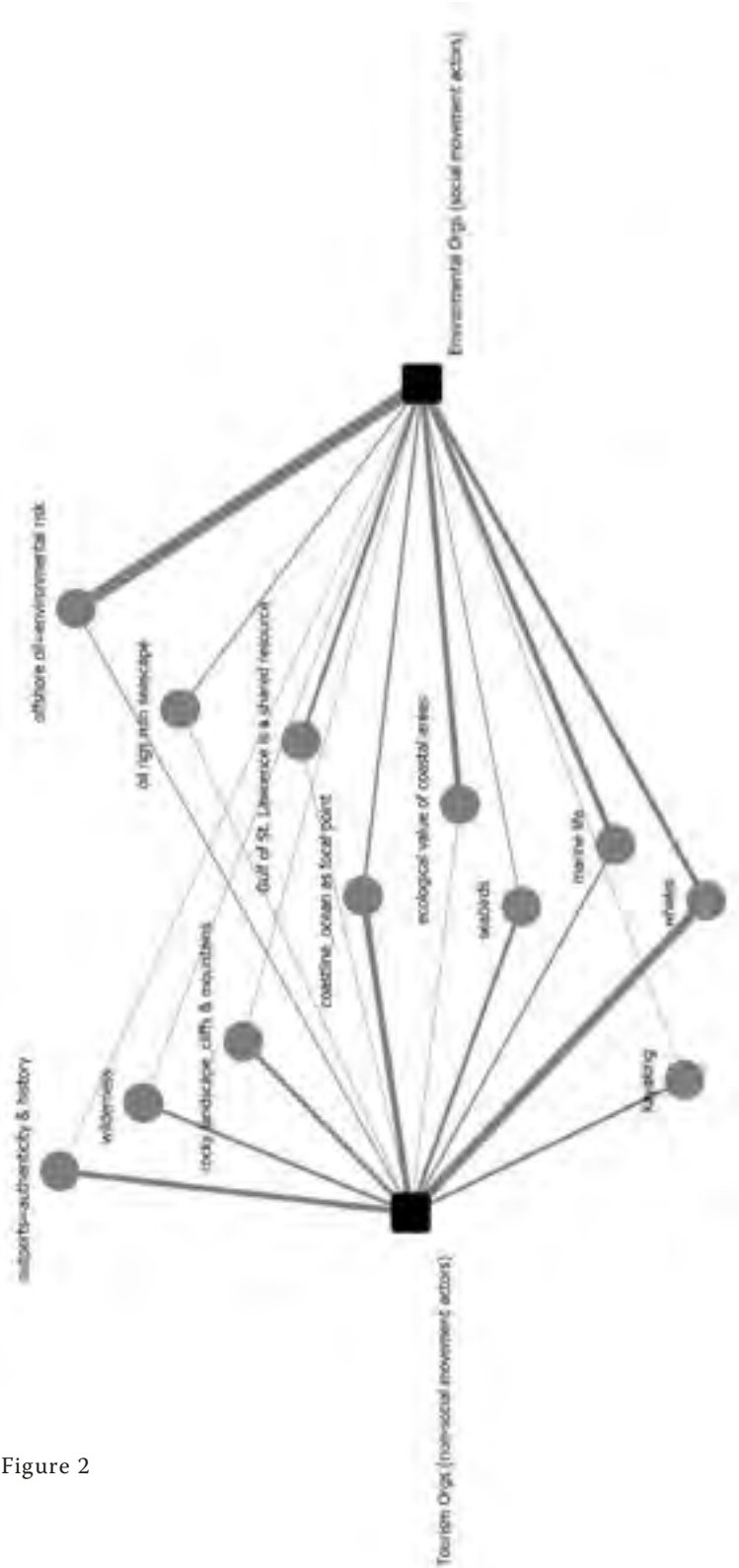
Environmental Orgs (social movement actors)
offshore oil=environmental risk
oil (rig) spill=seascape
Gulf of St. Lawrence is a shared resource
coastline_ocean as focal point
ecological value of coastal areas
seabirds
marine life
whales
kayaking
wilderness
rocky landscape_cliffs & mountains
salmon=authenticity & history
Tourism Orgs (non-social movement actors)

Figure 2

between nodes indicate that the sector uses a theme, while tie thickness is weighted to reflect the relative importance of themes for tourism operators and environmental organizations. These themes are descriptive, emerging from interviews talk and web content from tourism and environmental organizations.

Themes cluster around four key discourses: wilderness and wildlife, protecting existing social-ecological networks, ecological risks of oil disaster, and contesting political jurisdiction. These discourses also map onto our networked political ecology framework. Ecological networks are visible through discourses such as wilderness, whales, marine life, seabirds, Gros Morne, the ecological value of coastal areas, the environmental risks of offshore oil, and the climate change impacts of oil development (a marginal theme only articulated by environmental movement participants). Economic networks are visible through claims about the positive impacts of tourism, the notion of the Gulf of St. Lawrence as a shared resource (which emphasizes the value of tourism and fishing economies), and the social-ecological risks posed by extractive resource development. Mobility networks are visible through references to the positive impacts of tourism, to modes of tourism mobility (e.g. boat tours, hiking and kayaking), and to tourism attractors (e.g. the authenticity of outport communities and history as a tourism attractor). Political networks are visible through talk about oil development and environmental governance, and through the notion of the Gulf of St. Lawrence as a shared resource used by communities across political boundaries. Finally, communication networks are implicit in this discourse network, as it is through the "affordances" of tourism and environmental movement websites, Twitter feeds, Facebook pages and YouTube videos that these discourses are circulated to attentive publics (Earl and Kimport 2011).

Tourism and environmental organizations align around a focus on ecological networks. However, environmental (social movement) discourse devotes more attention to oil-based economic networks as producers of environmental risk, as well as to political networks of oil governance. By contrast, tourism (non-

social movement) discourse devotes more attention to tourism-based mobility and economic networks. We now turn to a closer analysis of four key discourses, demonstrating how they work to problematize a specific instance of oil development, but also to maintain a quiescent attitude towards regional dependence on the broader carbon complex.

Wilderness and Wildlife

Dominant images and themes emphasize a healthy environment and wild animal population, with a particular focus on whales and seabirds. Coastal environments are defined by uninhabited beaches, rocky coastlines, icebergs, expansive ocean vistas, lighthouses and fishing boats. This imagery is used in photos and video clips on environmental organization websites and Web 2.0 content to envision a coastal environment that is put at risk from oil development. Tourism promotion material also relies on these images to attract tourists. Despite different organizational objectives, environmental and tourism discourse draws on complementary themes and images. Luke (2002) describes how environmental movement discourse can function as a form of nature-based tourism marketing. In the 1990s protests against old growth logging in British Columbia, nature images used by environmental movements simultaneously worked as "enviroti-sements" for nature-based tourism development (Luke 2002). A similar phenomenon is evident in the Gulf of St. Lawrence, as wilderness and wildlife discourse is mobilized against oil exploration and extraction.

Gros Morne National Park, a UNESCO World Heritage Site on the west coast of Newfoundland, is a popular site for hiking and kayaking, and also provides the coastal vistas sought by many tourists. The oil-tourism interface becomes visible as offshore oil development threatens to disrupt the seascape of the national park. Patricia, who is a marine environmentalist with an environmental organization, emphasizes the risks to Gros Morne and tourism:

> Gros Morne National Park is a gemstone of Newfoundland and Labrador…And if there is potential oil and gas development, it may deter people from coming here. …If an oiled bird or a dead whale comes up, washes up on the beach, that is going to hit national news. And I think that will have a major impact on tourism in a negative way. (Patricia, interview)

These risks do not exist on the east coast of Newfoundland as oil rigs are far offshore and out of sight. Whereas oil development and tourism do not compete for the same space on the east coast of the island, offshore oil development in the Gulf would force a clash between ecological preservation, which helps sustain the tourism industry, and oil extraction.

Interview participants often define the coastal landscape through the language of wilderness, using terms such as "pristine" or "unspoiled" to describe the appeal of the environment for tourists. Invocations of wilderness frame tourism as a sustainable way to engage with nature in juxtaposition with oil development. Keith, an owner-operator in the tourism industry, describes this relationship:

> We're looking at this industry [tourism] and we're trying to sell ourselves as this pristine environment with a very unique coastline and great interactions with the seascape. Do you want to have oil rigs right in the middle of those harbors? . . . Because we depend so much on the puffins and the whales and that whole interaction with the marine life in coming close to shore. If something was to seriously disturb that balance well that would be very, very detrimental to the tourism industry. (Keith, interview)

As Keith's comment illustrates, marine life is an important part of the self-image the province projects to potential visitors. Wildlife habitat impacts, either through the regular operation of the oil industry, or from an oil spill, are recurrent concerns. Phyllis, who works for an environmental group outside Newfoundland, illustrates this theme:

> Every step of the way there are different types of risks. With the seismic exploration the noise levels are the main concern. . . . At a distance, [underwater noise pollution] can also influence behaviour in such a way that it could deter species from preferred or critical habitats. [There] are several species at risk in the Gulf, and that critical habitat is key to recovery. (Phyllis, interview)

Environmental movement and tourism industry discourse appeals to the preservation of existing ecological networks to justify their intervention in political networks and oppose oil development in the Gulf of St. Lawrence. Critical scholars of nature-oriented tourism argue that the tourism-environmentalism alignments are often shallow and economically strategic (Gould 1999; Waitt and Cook 2007). By contrast, Ellis (2013) describes how those working closely with commodified forms of nature develop a "symbiotic ideology," where social-environmental relationships can be economically-based, but also emotionally rich. Similarly, for many tourism stakeholders, ecological networks are defended at least partly because they can be integrated into tourism-oriented mobility and economic networks.

An economically-based justification for opposing oil extraction also contributes to maintaining the apparent non-problematicity of the carbon complex. As tourism operators appeal to tourists' experiences of nature to oppose Old Harry, sites of oil extraction that lack tourism value are disregarded. This helps explain why offshore oil rigs are a concern on the west coast of Newfoundland, but not on the east coast of the island where oil rigs are not visible to hikers, sea kayakers or boat tour groups. As such, opposition to oil development from the tourism industry seems to depend on connecting ecological networks to tourism mobility networks.

Protecting Existing Social-Ecological Networks

The tourism and fishing industries are often defined in web content and interview talk as environmentally, economically and socially sustainable, while oil development in the Gulf is defined as unsustainable. Sustainability discourse is linked to the value of tourism as an established social-ecological network that is threatened by oil development. For example, Deborah, a participant in an environmental organization based outside Newfoundland, states, "Well, the ultimate benefit to tourism is the fact that you're dealing with a renewable industry. You're dealing with an industry that if you treat it professionally and responsibly and sustainably it will be there for you forever" (Deborah, interview). Andrea, an owner-operator in the tourism industry, similarly describes the economic importance of tourism in comparison to oil development by saying, "Well for rural Newfoundland, it's the only thing that rural Newfoundland's got. . . . All the money that came into the province, every bit of it in oil and gas, hasn't gone beyond the Avalon Peninsula" (Andrea, interview). For these participants, tourism development is preferred to the potential economic benefits of oil for preserving the wellbeing of coastal communities.

Relying on tourism mobility for economic development is also seen to preserve local culture. By contrast, the oil industry risks transforming coastal communities, which are identified with fishing and tourism. As Nicole, an organizer with an environmental group based outside Newfoundland, comments:

> Yes, the environment is a major concern for us, but I think there's a lot of an intersection there with the concerns [around fisheries and tourism]. And so fisheries organizations and fisher people need to be aware of what's happening and the risks involved [in oil development] as to how those can impact their livelihoods and tourism as well is the same thing, right? (Nicole, interview)

Oil development is seen to pose environmental risks to coastal ecosystems, as well as social-cultural risks to fisheries-based culture and to communities that have made a transition towards tourism as a response to the cod fishery collapse.

This discourse gives the impression that opposition to the Old Harry project may be interpreted as a NIMBY (Not in My Backyard) or LULU (Locally Unwanted Land Use) movement. As Mannarini et al. (2009) note, two characteristics of such movements are that they rely on place attachment and the notion of "community" for mobilizing resistance to particular development projects, which are both present within this discourse. Opposition to Old Harry invokes place attachment and community to defend against the proposed oil development, but there is less reliance on creating us-them boundaries as part of building collective identity. In this sense, mobilization against Old Harry does not fit the model of LULU social movements (Mannarini et al. 2009). For example, research on oil-based communities near the Alberta oil sands, shows how oil development is perceived to exacerbate social problems and create tensions between long-term residents, newcomers and temporary workers (Hiller 2009). These types of fears are not articulated by our interview participants or in tourism or environmentalist web content.

Intervention in political networks is justified by the perception that new oil extraction creates risk for established tourism networks. This is consistent with Widener's (2009) work on oil tourism, which finds that environmental interests in Ecuador use the value of nature-based tourism when mobilizing against oil development. As with the wilderness and wildlife discourse, the drive to preserve existing social-ecological networks is linked to the degree to which ecological networks are integrated with economic networks. Again, Ellis' (2013) notion of "symbiotic ideology" is relevant, as protecting the environment is prioritized at least in part because it can be commodified for tourism mobility.

Ecological Risks of Oil Disaster

Opponents define the potential for an oil spill as a major risk of the Old Harry project. The Deepwater Horizon oil spill in the Gulf of Mexico is referenced repeatedly as the prime example of negative impacts of oil in a marine environment. Provocative visual imagery helps social movements convey their claims in

engaging ways (Doerr et al. 2013; Hoffbauer and Ramos 2014). Images of the Gulf of Mexico spill, including flames and oil slicks, are circulated by environmental organizations through YouTube, Twitter, Facebook and websites. This is often juxtaposed with images of the Newfoundland coastline as a natural, untouched environment. However, relying on the Gulf of Mexico spill as an iconic image reinforces a catastrophe lens for thinking about oil. This pushes aside questions about the chronic risks of oil, including impacts on air and water, wildlife habitat, or contributions to climate change (Davidson and Gismondi 2011; Oriola 2013).

The Gulf of Mexico spill is used as a reference point in interviews. Wayne, an owner-operator in the tourism industry, notes:

> Should we have something similar to the Deepwater Horizon [spill] . . . [it] could be catastrophic for the tourism industry here. It is a harsh environment, I mean, in the Gulf of Mexico they consider that to be a harsh environment and it's got nothing on the environment out here. (Wayne, interview)

Drawing on the Gulf of Mexico spill in social movement media and our interviews highlights the ubiquity of media and information technology in visualizing possible futures for Newfoundland. Through media communication networks, events like the Gulf of Mexico spill circulate far beyond the original disaster site and become part of the vocabulary that activists draw on to imagine the risks posed by oil development for ecosystems that support tourism.

However, many interview participants see the oil industry as key economic driver and do not see oil and tourism as incompatible projects. Consistent with Jennings' (2015) findings that oil revenues have supported tourism development in Shetland, our participants note that the oil industry pays high wages that enable oil industry workers to be tourists within the province and contributes resources to projects that benefit tourism. Ruth, an owner-operator in the tourism industry, describes the oil-tourism interface as follows:

> Without the offshore oil industry, this province would be in dire straits. We wouldn't have enjoyed all of the marketing dollars that have gone into promotion of Newfoundland and Labrador and we would not be where we are today, in terms of tourism, without the oil and gas development. (Ruth, interview)

Craig, who is affiliated with a Newfoundland-based recreational non-governmental organization, similarly describes the oil-tourism interface in positive terms:

> I think actually there's quite a good relationship because the oil industry actually promotes and encourages and supports some of the things that the tourism sector is trying to do. So I think the big bucks that come from the oil industry, supporting the tourism sector, which is a poor cousin in a way. (Craig, interview)

Resistance to oil extraction is largely project-specific, rather than extending to a critique of the carbon complex as a whole. In their work on the Gulf of Mexico, Freudenburg and Gramling (2011) argue that as the Gulf was defined as a space for resource extraction, ecological risks were normalized until there was a major spill. A similar dynamic is at play in Newfoundland. Many participants who identify oil as problematic do boundary work between the east coast and west coast of the island. As Patricia says:

> I understand that we need oil and gas to fuel tourism, because the cars, the planes, the trains, you know that kind of stuff. But . . . we're supposedly this pristine, beautiful island and even though we know we have [oil platforms] when they're out of sight, like this Hibernia stuff, they're out of mind. But to have it so close in proximity. And I think it could really damage everything we have here. . . . People don't want to come to a pristine coastline, a fragile ecosystem or something, and know that we're tearing it apart. (Patricia, interview)

Resistance to oil development appears contingent on whether specific projects are seen to pose threats to established social and economic networks.

Project-specific resistance is consistent with Norgaard's (2011) argument that the social benefits of oil can lead to the "socially organized denial" of larger-scale environmental problems like climate change. Our analysis of the Old Harry controversy demonstrates how project-specific mobilization works against cultivating the "reflexive processing" necessary to critically assess and negotiate engagement with the global carbon complex, of which Old Harry is but one localized part (Davidson 2012).

Contesting Political Jurisdiction

Much of our data focuses on whether oil governance processes led by the C-NLOPB are sufficiently democratic and open to public participation. These questions are most often raised in relation to communities outside Newfoundland, where much of the mobilization against Old Harry is based. Several governance-related issues are identified, including: 1) difficulty obtaining information about the project and decision-making process; 2) the composition of the C-NLOPB board and marginalization of non-Newfoundland groups from the decision-making process; 3) the timing and accessibility of hearings; 4) lack of supports for potential participants. Interview participants note that there has been little engagement of the tourism industry in oil governance and that increased communication across the two industries would be beneficial. Echoing previous research on environmental governance, environmental groups call for a form of governance that extends the boundaries of who is included in political networks (Adkin 2009). This focus on perceived ' procedural unfairness' in decision-making is a common characteristic of LULU movements (Mannarini et al. 2009). However, this political jurisdiction discourse is not an easy fit with the LULU model, as it is based on challenging current understandings of who counts as part of the affected community for decision-making purposes.

The ecological reality of the Gulf, as an environment shared by several provinces, is contrasted with a dominant "political rationality" that locates Old Harry inside the jurisdiction of New-

foundland and Labrador and its system of oil governance (Rose and Miller 2010). The economic benefits of oil development will go to Newfoundland and Labrador, while the risks will be borne across all five Gulf provinces and their tourism and fisheries-based communities. While this is a more prevalent theme in web content, interview participants also point to a mismatch between benefits and risks. As Phyllis phrases it:

> There are no ways in an environment like the Gulf of St. Lawrence to reduce those risks [of oil development] to an acceptable level. . . . If the industry was only allowed in some parts of the Gulf it would put the entire system at risk. And what is also difficult to accept is that the benefits would come to one province, but the risks are taken by all of the provinces that share the Gulf of St. Lawrence. (Phyllis, interview).

Social movement media also focus on the disjuncture between the ecological reality of the Gulf and the political rationality of oil governance. The David Suzuki Foundation is a national environmental organization which has supported the movement. Their media work includes a series of videos and images that model where potential oil spills would travel depending on dominant currents and winds. Viewers of these media see how a catastrophic spill would impact coastlines in throughout the Gulf region. These visualizations help legitimize claims that participation in decision-making about Old Harry should include a broader range of affected communities that are outside the current political rationality of oil governance.

Previous research finds that oil development is challenged when interpreted as undemocratic (Gedicks 2001; Oriola 2013; Urry 2013). Similarly, environmental governance around Old Harry is criticized because the proposal impacts ecosystems, tourism economies and fisheries that cross provincial political boundaries. Claims about the disjuncture between political and ecological boundaries legitimizes mobilization by groups from outside the province.

Conclusion

Offshore oil extraction and nature-oriented tourism are generally treated as separate development paths in Atlantic Canada. The proposed Old Harry project is a rare counter-example where the oil-tourism interface becomes controversial. By analyzing this controversy from a networked political ecology perspective (recall Figure 1), we identify four discourses that align project opponents and disrupt the usual "non-problematicity" of the oil-tourism interface (Freudenburg 2005). Opposition to oil development and support for environmental protection relies on connecting ecological networks to tourism mobilities. This is consistent with other research that shows that nature-based tourism can be strategically mobilized by activists to challenge oil development (Widener 2007; 2009).

First, the episodic risks (e.g. possibility of an oil spill) and ongoing risks (e.g. marine mammal habitat disruption) are interpreted as greater in the Gulf of St. Lawrence than off the east coast of Newfoundland, where most oil development takes place. In addition, these environmental risks affect Gros Morne National Park, which is an established tourism attractor for the province. By impinging on a vital tourism anchor, Old Harry disturbs the tendency of beneficiaries of oil wealth to engage in the "socially organized denial" of the ecological impacts of the carbon complex (Norgaard 2011). Our results are consistent with earlier research by Freudenburg and Gramling (1993) on public attitudes towards oil development in Louisiana and California. Their work found that public opposition was higher in California, where there were stronger ties to the tourism and fishing industries, and stronger views about the coastal environment as a public amenity. By contrast, oil development in Louisiana proceeded incrementally, alongside other extractive uses of the coastal environment. The focus on the economic benefits of oil development helped envision the Louisiana coast as a site of oil extraction, where critical attention to environmental risks did not emerge until after the catastrophic failure of the BP Macondo rig (Freudenburg and

Gramling 2011). The disaster had negative impacts on the well-being of community members and harmed the Gulf of Mexico tourism industry (Lee and Blanchard 2012). Despite this, in the aftermath of the disaster, many Louisiana residents opposed the idea of a moratorium on further offshore oil extraction (Ladd 2012). Our results similarly show that the non-problematicity of oil development is more readily disrupted when it impinges on well-established economies, such as tourism and fisheries, which are seen as incompatible with the social-ecological risks of oil.

Second, a wilderness and wildlife discourse focuses on images of the spectacular coast and emphasizes the ecological value of Gulf of St. Lawrence. Other research suggests that tourism--environmentalism alignments forged through eco-tourism are often shallow and economically strategic on the part of tourism operators (Gould 1999; Waitt and Cook 2007), so may not persist beyond short-term episodes of mobilization. Ellis' (2013) notion of "symbiotic ideology" suggests an alternative interpretation. Eco-tourism commodifies nature as a product to be experienced, thereby joining ecological networks and economic networks in a co-dependent relationship. Those who work closely with commodified nature often interpret this relationship as simultaneously economically valuable and environmentally sustainable. Whether it is in relation to oil extraction or nature-based tourism, provincial economic development relies on extracting profit from nature. That nature is understood as pregnant with profit is not contested. Rather, it is the method of extracting that profit within a particular landscape that becomes contested.

Third, an environmental disaster discourse invokes the BP oil spill in the Gulf of Mexico as an iconic image of the risks of oil development, which is positioned against a model of sustainability that connects tourism, fisheries, rural communities, and wildlife. As Bridge and Le Billon note, "Media coverage of dramatic events [such as the Gulf of Mexico blowout or Exxon Valdez spill] makes some of these [social and environmental] costs highly visible' to the general public (Bridge and Le Billon 2013, 129). As our analysis demonstrates, social movements are also able to draw on these

mass-mediated catastrophes as "critical events" to communicate the risks of oil development to bystander publics (Ramos 2008). A drawback of relying on critical events such as the Gulf of Mexico spill or the earlier Exxon Valdez oil spill in Alaska is that it interprets oil through a catastrophe lens, focusing on the "collective trauma" of impacted communities (Ritchie 2012), or the culpability of particular corporate actors (Hoffbauer and Ramos 2014). Relying too heavily on the catastrophe lens risks oversimplifying debates about oil development and downplaying the chronic, everyday impacts of oil extraction in terms of carbon emissions, water pollution, impacts to wildlife habitat, or environmental health risks (Bridge and Le Billon 2013; Davidson and Gismondi 2011; Oriola 2013; Schlüter et al. 2004; Urry 2013; Widener 2009).

Fourth, despite provincial boundaries, the Gulf is defined as a shared social-environmental resource. Environmental governance research notes that participation in the politics of environmental issues involves an increasingly broad range of non-state social actors that cross the boundaries of local, regional, national and international politics (Vasi 2007). The multi-scalar nature of environmental governance may be most apparent in global issues like climate change. However, as our analysis demonstrates, even local development projects, which proponents and provincial governments assert are firmly within one political jurisdiction, can be re-framed as multi-scale issues. Project opponents use the tensions between local and regional political, ecological and social scales to disrupt the prevailing "political rationality" and justify their intervention in environmental governance (Rose and Miller 2010). Mobilization by environmental groups from outside the province highlights questions about who benefits from and who is put at risk by oil development. This relates to concerns around political jurisdiction and democracy: who deserves to be included or excluded from the political networks of oil governance? Our analysis is consistent with other research that finds the perception of undemocratic governance provides a rationale for mobilization against oil development (Gedicks 2001; Oriola 2013; Urry 2013). However, we further show that claims about undemocratic gover-

nance work as a critique of how the boundaries of oil governance are constituted in the first place, not only as a critique of the democratic legitimacy of oil governance once it is in operation.

An environmentalism-tourism alignment focuses on the social-ecological wellbeing of coastal communities and uses this in project-specific opposition to the Old Harry proposal. By interpreting the issue this way, project opponents avoid entering broader debates about the ecological or social dimensions of Newfoundland and Labrador's dependence on the carbon complex. As Dodd's analysis of the 1982 Ocean Ranger oil platform disaster demonstrates, a major episode of catastrophic failure in the oil industry was successfully managed so that "governments and oil companies . . . [appeared] to have the same interests as communities, workers and families" (Dodd 2012, 10). Project-specific opposition reduces the risk of alienating governments and bystander publics in a region where the "'promise of oil' is a promise of infinite development, constantly growing wealth" (Dodd 2012). However, this strategy avoids a deeper discussion of the economic, social and ecological tensions inherent to the oil-tourism interface. Likewise, by positioning nature-oriented tourism as the sustainable alternative to controversial oil projects, there is a lack of reflection on the environmental costs of tourism mobility and its relationship to the carbon complex, such as carbon emissions that contribute to climate change (Cohen et al. 2011). In a recent article on Marxist social movements in Turkey, Gurbuz (2015) notes that as radical social movements successfully engage with local communities, their own ideological stances are tempered as they are influenced by mainstream discourses. Our findings suggest a similar process might be at play for environmental groups, whose critical stance towards the oil sector may also be tempered in the interests of working with broader coalitions of tourism, fisheries or community stakeholders against especially problematic episodes of oil development.

In their writing on cosmopolitanism, which is characterized by accelerated mobility and the ability to experience a wide range of places and cultures, Szerszynski and Urry ask, "Could it

be that the development of a more cosmopolitan, citizenly perception of place is at the expense of other modes of appreciating and caring for local environments and contexts?" (Szerszynski and Urry 2006: 123). Our results provide some insight into this question. While we do not address the experience of tourists, those who live in the region may cultivate a stronger sense of attachment to local environments because they are valued as anchors for cosmopolitan tourism travel. At the same time, the project-specific nature of oil opposition, which is grounded in place attachment and a defense of a particular vision of community, is reminiscent of NIMBY (Not in My Backyard) or LULU (Locally Unwanted Land Uses) social movements (Mannarini et al. 2009). This highlights a paradox in the relationship between tourism, cosmopolitanism and environmental politics. Local environments may be seen as worthy of defending from resource extraction because they are sites of cosmopolitan tourism travel, while the emphasis on protecting local places may limit space for a more critical and cosmopolitan politics of the carbon complex and its climate change impacts.

The key concept of the oil-tourism interface highlights the connections, as well as the points of conflict, between the carbon complex and tourism mobility. Ongoing longer-term research on environmentalism-tourism alignment in Atlantic Canada and elsewhere will help us better understand how tourism-environmentalism alignments emerge and persist – or disintegrate – over time. Further comparative research would also be valuable in order to see whether similar strategies are used beyond Atlantic Canada. Nature-oriented tourism and offshore oil development are being pursued as parallel development projects in many areas of the world. As such, a new phase of this research program is extending our findings to comparative analyses of sites across the North Atlantic region (including Scotland, Norway, Denmark and Iceland) in order to help us further understand the social dynamics of the oil-tourism interface. As a final qualification, our analysis of the Old Harry controversy is limited by an asymmetrical focus on social movement and tourism industry mobilization

in opposition to the project, which has not addressed oil industry responses to the movement. In our current research, we are addressing this limitation by adopting a more symmetrical focus on data collection from the tourism and oil sectors, as well as from NGOs and governments.

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Challenges for Social-Ecological Transformations: Contributions from Social and Political Ecology

Abstract

Transformation has become a major topic of sustainability research. This opens up new perspectives, but at the same time, runs the danger to convert into a new critical orthodoxy which narrows down analytical perspectives. Most research is committed towards a political-strategic approach towards transformation. This focus, however, clashes with ongoing transformation processes towards un-sustainability. The paper presents cornerstones of an integrative approach to social-ecological transformations (SET), which builds upon empirical work and conceptual considerations from Social Ecology and Political Ecology. We

1 Author Contributions: Christoph Görg and Ulrich Brand as lead authors contributed equally to the paper, the other authors are listed in alphabetical order. The whole paper was drafted and all sections were commented by all authors. Major contributions are in the following order: Ulrich Brand and Christoph Görg have written Sections 1, 2, 4 and 6, Helmut Haberl and Christoph Görg have written Section 3 and Diana Hummel, Thomas Jahn and Stefan Liehr have written Section 5.

argue that a critical understanding of the challenges for societal transformations can be advanced by focusing on the interdependencies between societies and the natural environment. This starting point provides a more realistic understanding of the societal and biophysical constraints of sustainability transformations by emphasising the crisis-driven and contested character of the appropriation of nature and the power relations involved. Moreover, it pursues a transdisciplinary mode of research, decisive for adequately understanding any strategy for transformations towards sustainability. Such a conceptual approach of SET is supposed to better integrate the analytical, normative and political-strategic dimension of transformation research. We use the examples of global land use patterns, neo-extractivism in Latin America and the global water crisis to clarify our approach.

Introduction

Transformation has become a major topic of sustainability research. The terminology indicates a shift both in the focus of research and in the understanding of the real scale of the challenges contemporary societies are facing. The consequences of this shift for policy-making are far reaching. In the last decades, incremental environmental governance was considered the cornerstone of a pragmatic policy approach. This approach, however, is increasingly criticised as being insufficient for coping with problems like climate change, biodiversity loss, resource depletion, food security or social inequalities. Consequently, the quest for a "societal transformations towards sustainability" [1–13] or even for a "Great Transformation" [14] emerged as a guiding theme.

This shift, on the one hand, opens up new perspectives. On the other hand, it runs the risk of narrowing down the scope of research and the corridor of possible action, leading to what has been termed "a new critical orthodoxy" [15]. The latter is characterised by a tension between the call for a comprehensive societal transformation and a strong trust in existing institutions like state, market, science, technology, and (Western) knowledge [15].

Without any doubt, transformations towards sustainability necessarily involve political-strategic aspects, including the capbility to intervene into ongoing socio-political, econ mic, institutional and technological transformation processes, as well as providing transformative knowledge in various different political-administrative settings. However, there is a tendency towards more political-strategic projections at the expense of rigorous analytical approaches, capable of bridge transformation requirements and transformation strategies. What is needed, therefore, is a more solid understanding of those dominant societal dynamics that hinder a transformation towards sustainability. This presupposes considering a variety of interacting and conflicting transformation processes. Whereas some of these intentionally aim at sustainability (for example, the German "Energiewende"), others pursue different targets (for example, geopolitical strategies to secure resource access). Moreover, some of these transformations are the outcome of policies and structural societal conditions and thus unintended (and perhaps difficult or impossible to influence) by those actors that focus on deliberate, intended transformations towards sustainability [5,16], but perhaps influenced by the interests of powerful societal actors. Thus, conflicting and to some degree antagonistic societal processes and the power relations involved have to be considered. Only by explicitly addressing a plurality of conflicting transformation processes, a better analytic understanding can be achieved, which offers a more realistic approach for strategic interventions [12].

Besides the analytical and political-strategic dimensions, a third, rather normative dimension

of the transformation debate remains unclear: What is a desirable, fair and feasible future for global societies? Sustainability transformations need adequate political strategies, but can only be successful if grounded in a robust analytical approach and a legitimate normative perspective. Drawing on the three-dimensioned sustainability discourse [17], we argue in this paper that a better integration of analytical perspectives on ongoing transformations of societal relations to nature and of normative

considerations of what may constitute a desirable goal of global transformations towards sustainability is needed to improve the political-strategical aspirations of transformation research.

Several conceptual and methodological challenges prevent an integrated, i.e., analytical, normative and political-strategic understanding of social-ecological transformations (SET). In this paper, we outline a conceptual approach that aims at meeting these challenges, based on Social Ecology (SE) and Political Ecology (PE) (we are aware, that the use of the term Social-Ecological Transformation is not limited to SE and PE and we do not proclaim to have an ownership. Moreover, in such an article, it is not possible to present in detail SE and PE that are—in themselves—ramified. We refer to our work at the Institute for Social-Ecological Research in Frankfurt [18,19], the Institute for Social Ecology in Vienna [20,21] and the Department of Political Science at the University of Vienna [22,23], see also [24]. We are also aware that several other "transition" concepts exist in various scientific communities which, despite some similarities, differ in important respects from our concept of transformation.

In ecology, for example, the concept of "ecological transition" or "regime shifts" denotes "substantial, long-lasting reorganizations of complex systems, such as ecosystems" [25]. In cultural ecology, the concept of ecological transition was used to describe sociocultural trends towards population growth, increasing mechanisation and growing exploitation of natural resources [26]. The "transition management" approach [27,28] asks for the processes how social innovations in niches are upscaled to regimes and landscapes. Both SE and PE refer to the concept of societal relations to nature (SRN), in German Gesellschaftliche Naturverhältnisse. However, the English translation of the German term Gesellschaftliche Naturverhältnisse is an issue: several translations are possible and in the use like societal nature relations. However, if we refer in the following to conceptual considerations how this concept may improve sustainability research, we explicitly use the term societal relations to nature (SRN), being aware that there are (minor) differences in the exact meaning even wit-

hin the institutions involved. See for an elaborated understanding of the concept in sustainability research: [17], for the history of the concept in the German tradition of critical theory: [29]). Both SE and PE emphasizes the interactions between and co-constitution of environmental conditions and societal dynamics including inequalities and power relations. They consider the societal roots of the ecological crisis as part of a "multiple crisis" [30] or as "a crisis of societal relations to nature" [19]—a complex constellation, that is centred on dominant societal patterns of production and living (at a material as well as symbolic level), their ecological implications, and controversies about how to respond scientifically and politically. Both SE and PE stress the relevance of shaping SRN for every society and they offer several insights about how a crisis of SRN develops, e.g., regarding the societal metabolism of industrial societies that depend on fossil fuel (see below).

The aim of this paper is to demonstrate why such a point of departure can help to advance an integrated understanding of the challenges for societal transformations. For this purpose, we discuss three key assets of a combined SE and PE approach. First, by focusing on SRN, SE provides a more realistic way of understanding the societal and biophysical constraints of sustainably transformations at the interplay between several spatial and temporal scales (see Section 3). Second, PE emphasises the conflict-driven and contested character of the appropriation of nature and thus the power and domination-shaped character of SRN.With that, PE counters the often unreflected understanding of governance and political steering within the transformation debate by analysing actor constellations, the structural conditions of policy making and power relations (see Section 4). Third, both SE and PE pursue a transdisciplinary mode of research (TD; concerning SEC, in particular local studies but also Health Studies are important areas of TD research, see: [31–33]; ISOE follows TD as a rule, and the TD approach is based on own research on transdisciplinary concepts and methods, see [34,35], see also Section 5 of this paper for more details). TD is, at its core, about the co-production and integration of different forms

of knowledge [25]. Such a mode of research is decisive for adequately understanding any strategy for transformations towards sustainability (see Section 5). Taking advantage of these assets, the conceptual approach of social-ecological transformations is supposed to help investigate problematic and non-sustainable structures and processes (analytical dimension), to contribute to transformations towards sustainability on the level of action and decision-making processes (political-strategic dimension) and analysing what are societally desirable and at the same time achievable conditions and ends (normative dimension).

In the following chapter, we discuss in more detail why a critical understanding of transformation is required. In Sections 3–5, we elaborate on the three assets of the combined SE and PE approach. In each of these sections, we try to demonstrate the relevance of their respective conceptual contributions by discussing particular examples from empirical research. Our aim here is merely to illustrate our arguments. We do not claim that the chosen examples can provide enough empirical evidence for actually proving the solidity of our approach—this is the object of further research. To conclude, we outline the contours of a critical and integrative approach to social-ecological transformations.

Transformations towards Sustainability—Strengths and Weaknesses of the Current Debate

Comparedwith the discussion about sustainable development that has evolved since the publication of the Brundtland-Report in 1987 and the Rio-Conference on Environment and Development in 1992, the current debate on transformations towards sustainability marks a progress [36]. The quickly growing relevance of the transformation concept is fuelled by the acknowledgement of a multiple crisis, including a crisis of SRN, which cannot be dealt with by environmental policy alone or by changes within other separated policy fields. In reverse, it questions the established institutional responses and its interplay [22,37,38]. However, as Nalau

and Handmer argue, the discussion around transformative change is still emerging and it is not clear as to what transformation means, how it can be evaluated, and how the conceptions of transformation fit within the current understanding of dealing with policy problems in practice. [10] (p. 349). Despite the fuzziness of the concept, they conclude that transformation can be understood as a "fundamental shift that questions and challenges values and routine practices and changes prior perspectives employed to rationalise decisions and pathways" [5,10] (pp. 350, 668).

There is, however, much ambiguity and disagreement about the meaning and function of the concept. First of all, as the terms "sustainability transformation" or "transformations towards sustainability" (often equated with the aim of a "low-carbon society") indicate, most research is committed to a normative or political-strategic approach to transformation. Analytical clarity is often superseded by visionary and strategic orientations as the quote from Nalau and Handmer suggests (for more details [12]). Undoubtedly, visionary and strategic claims are making the debate so important. Yet they might run the risk of downplaying the socio-economic, political, cultural, and subjective dimensions that are deeply inscribed into SRN. For instance, we currently observe the rise of authoritarian rule and authoritarian neoliberalism as well as of right-wing parties [39,40] as a response to the financial crisis of 2008. Our observation is, however, that these tendencies and their root causes are not properly addressed in the transformation debate. Such tendencies deepen the crisis of SRN as they go hand in hand with climate change scepticism, the promotion of unconventional fossil fuels, or increased mining activities even in ecologically sensitive areas. The motivation here often is to protect a certain mode of living against the ramifications of the crisis and against a profound social-ecological transformation. The societal causes of non-sustainable dynamics remain, however, in the debate often rather opaque (see below).

Second, further challenges within the transformation debate emerge around the question of how to address biophysical constraints of societal development. Concepts such as "planetary

boundaries" [41] or the "Anthropocene" [42,43] aim to operationalize those constraints, but they have several limitations. Beside limits of scientific certainty about the precise extent of thresholds (such as biodiversity loss), the spatial and temporal scale as much as the interplay of scientific analysis and societal appraisements (including cultural perceptions) represent major challenges. Scientific analyses are decisive to determine potential thresholds of (global) environmental change and resource use. However, boundaries have to be defined within societal and political processes, as they are necessarily linked to normative values. In other words, the biophysical constraints of societal development can only be determined with a transdisciplinary approach (see below). Moreover, the interaction between human activities (e.g., concerning land use) and natural processes (e.g., the services ecosystems provide or the contribution of land use to global warming) are crucial to determine the constraints and the option space for further resource use (e.g., concerning the options for feeding the world or for bioenergy use; [44]). These interactions are different at global or local scales or in short-term or long-term perspectives—but all these spatial and temporal scales are important to define the biophysical constraints of a desirable sustainable future.

If, for example, the boundaries for dangerous consequences of climate change are only addressed at a global scale, their impact on particular regions are neglected as much as the inequalities of certain modes of production or living across and within countries worldwide (as expressed with the term imperial mode of living, [13]). Thus, natural science analyses on the biophysical thresholds must be connected to social science analyses, dealing with both the existing societal demand of resources and the options and implications for desired futures. If the critical interactions between societal and natural processes and structures herein are neglected, a preference for large-scale technical solutions (e.g., for geoengineering as part of the "Good Anthropocene"; [45]) and a rejection of deep-rooted social-ecological transformations might be the political consequence.

Third, there is much ambiguity within the debate concerning the subjects or drivers, objects, scope and pace of such a trans-

formation. Whereas some scholars argue for more technical or social innovations, emerging from niches in an unplanned transition process [46], others argue for an important role of the state [10,14]. But to address the subjects or drivers of transformation more profoundly requires analysing existing interest structures and power relations, hegemonic constellations and the very structure of the state and its steering capacity at various scales. When it comes to the "objects" of transformation, it is analytically and politically highly relevant to identify what needs to be transformed. At the descriptive level, the global systems considered as overused reference objects include the global climate system, fertile land, soil or the oceans as resource sources or as the deposits of natural elements (prominently, [41,47]). Others point at "drivers" of change such as demographic trends, the globalisation of production, trade and financial markets, resource intensive modes of production and living, urbanisation, industrialisation in countries of the Global South, increasing resource use and prices, technological progress and digitalisation [14,48]. The multi-level perspective [28] focuses on stabilised lock-ins and path dependencies of existing socio-technological systems like energy, transport, housing or agro-food systems which are constituted by technologies, markets, policies, user practices and cultural meanings. This approach assumes that radical innovation emerges in niches and is pushed by dedicated actors. Innovation in niches might become relevant at the regime or even landscape level. By referring to the SRN concept, we argue that a more precise understanding of the objects of transformation is required in order to understand the "sustainability of unsustainability" and the rootedness of unsustainability in everyday practices [11,19,49,50]. It is neither an environmental crisis nor an interplay of multiple societal crises, but the interplay of both: a comprehensive crisis of the interactions between societal and biophysical processes (we will come back to this point in Section 4).

Moreover, there is a tension between a global and long--term transformation process and a plurality of transformation pathways at lower spatial, temporal and social scales marked by a

variety of individual and societal actions conflicting to some degree with each other. Despite the globalist view on problems (i.e., planetary boundaries), the implicitly privileged scale of transformation seems to be the regional or national scale (in some cases the EU level). Even the Sustainable Development Goals or the Paris Agreement of the FCCC are to be implemented by nation states or national governments, respectively. This has to do with the existing political and economic conditions and reflects frustration with global governance approaches: beside the processes of the internationalisation of the state [51,52] and the emergence of global binding rules, the national political system is the one where binding decisions are taken and where the financial, legal and knowledge resources prevail. The economic system and the dominant economic groups are partly internationalised, but, at the same time, they stick to the national scale in the sense that the conditions of production, strategic resources, and compromises with workers and trade unions are still linked to the national scale. Recent crisis politics are a clear indicator for this claim. The "own" (national) business and growth remain crucial for politics.

A further tension is related to temporal scales. Most of the debate on transformations towards sustainability is concerned with the urgency of far reaching transformations in the face of accelerating climate change. From the perspective of the global climate system, there is strong evidence that a delay of actions will increase impact and costs and that the window of opportunity to avoid dangerous climate change is closing fast [53]. At the same time, the debate about the Anthropocene opens up the discussion to time scales beyond institutional capacities and human imagination [54]. Moreover, ongoing processes to mitigate climate change (e.g., the quest for technological "solutions" like nuclear power or bioenergy with carbon capture and sequestration, abbreviated BECCS, [55]) may represent a threat for sustainability not only for some further generations but for millions of years (e.g., concerning nuclear waste; [56]). Thus, short term requirements and long-term impacts are conflicting and must be balanced in policy making. However, existing economic and political institutions, fo-

cusing mainly on short-term returns in terms of money or political power, are incapable to address such long-term, interwoven and conflicting time scales. Thus, realistic transformation approaches need to balance visionary and future oriented strategies with an analysis of the constraints for future anticipation and long-term policy-making (including scientific uncertainties).

Towards a Critical Concept of Social-Ecological Transformation

To sum up, current research on transformations towards sustainability needs a better understanding of ongoing transformation processes and a better integration of long-term and short-term perspectives as well as on large-scale and regional or local-scale transformation approaches. What is largely missing in the current transformation debate are analyses that focus in more depth on the interactions between globalized societies and the natural environment, analysing resource use patterns and its social implications in terms of global inequalities as much as its impact on global ecosystems without denying local (including everyday), regional and national scales of problems and action (see below). A critical concept of social-ecological transformations points at a better understanding of the social-ecological dimensions of current transformation processes. This includes a better understanding of scale interactions, i.e., global, regional and local processes, and the systemic processes as much as the actor constellations and power relations involved. What is decisive is a better integration of analytical, normative and strategic dimensions of SET research and to focus more systematically on the challenges for shaping interwoven and conflicting transformation processes and their implication for SRN—i.e., a critical concept of SET. In the following, only some elements of such a critical concept of transformations will be discussed, focusing on conceptual achievements and empirical results provided from Social and Political Ecology over the last couple of years. Thus, the paper will not follow a "conventional" structure but it will mix up conceptual considerations with analytical discussions and empirical results.

Sociometabolic Transitions and Social-Ecological Constraints

It is one of the major achievements of the current debate that it emphasizes the interplay of several dimensions of resource use and environmental problems—from climate change and biodiversity loss and other environmental issues, up to resource use patterns and related socioeconomic crises. As discussed above, the debate could benefit from a better integration of long-term and short-term processes and of different spatial scales. Here, the Viennese tradition of Social Ecology offers to better integrate these dimensions. For several decades, this school of thought focuses on the interactions between societal processes and its biophysical environment. Major concepts elaborated in this regard are the concepts of societal metabolism and sociometabolic regimes [57,58]. Similar to the notion of societal metabolism coined long ago by Karl Marx [59], societies are addressed not as pure communication systems and not as to be separated from their biophysical foundations. At the contrary, the historical perspective focuses on the dynamic pattern of the appropriation and transformation of "nature" and its repercussion on societal change. Several concepts (important in the regard are concepts like the colonisation of nature, i.e., the transformations of natural ecosystems to increase yields; [57], operationalised in the human appropriation of net primary production or HANPP indicator [60], Long-term Socioecological Research [61,62] and Socio-Natural sites [63], and in particular, the concept of metabolic regimes and the transition between different regimes [64]) offers an important dimension of SETs often neglected within transformation research. Focusing in particular on large-scale and long-term implications of energy and resource use, sociometabolic regimes are marked by a certain energy system and related basic technologies, which constrains the option space for societal developments [58]. Hunter-gatherer societies, agrarian societies and industrial societies are the major types of sociometabolic regimes [65]. However, not only are there significant variations within each of these types, most

existing societies include some features of several if not all of these regimes. For example, hunting and agriculture go hand in hand in many traditional societies, which are at the same time in contact with industrial society and use some tools and resources "imported" from there. In many parts of the world, the transition process between agrarian and industrial metabolic regimes are still ongoing, and about half of the world population is thought to still live rather in agrarian than in industrial society.

Three major messages can be distilled from research on sociometabolic transitions for the current debate, dealing with biophysical constraints: first, the industrial regime is in itself unstable and thus must be considered as a transformation society, due to its dependency on limited fossil energy sources [66]. The transition from biomass to fossil fuels as a main source of energy did not reduce society's biomass input; indeed, agrarian and industrial societies use roughly the same amount of biomass per capita and year (40–70 GJ/cap/year; [58]. The role of biomass, and hence of land use, changed fundamentally, however. While biomass represented quantitatively almost the entire source of primary energy available for all purposes in agrarian society, it largely served as the basis for food supply and some specific product groups (clothing, timber for construction and furniture, paper, etc.) in industrialized society. The factor 3–5 growth in primary energy supply associated with transitions from agrarian to industrial society was largely met by adding fossil fuels (and later large-scale hydropower, nuclear energy or renewables, which however still only represent relatively minor inputs today) to society's resource base. This allowed to overcome energetic limitations of agrarian societies (which ultimately were always limitations in access to land) and enabled enormous growth in resource use, and concomitantly economic activity and population density during the transition from agrarian to industrial society. However, this created new sustainability problems related both to the availability of resources and to the end-products of their use, e.g., climate change resulting from fossil fuel combustion.

From this perspective, the need for a "great transformation" and the search for a new energy system [61] is nothing astonishing

or suddenly emerging. In contrast, the societal ignorance towards a limited resource base and the "limits to growth" needs to be explained. The crisis of SRN are thus strongly related to the societal inability and political unwillingness to take these limitations into account. From a critical perspective, this crisis is not only a crisis of resource use, but an expression of the societal constraints to shape their basic relations with nature, its energy source and the environmental implication of its resource use [29].

Secondly, the debate on biophysical constraints of societal development can be improved by starting from an analysis of sociometabolic regimes. From a social-ecological perspective, constraints are nothing given and fixed in an untouched nature or anchored in a biophysical system as such; there are always interactions between biophysical systems (e.g., ecosystems, but also the global climate system) and human interventions (e.g., the colonisation of ecosystems, but also fossil energies) that create the constraints [67]. The global climate system will probably function also beyond the Holocene—but the repercussions on human societies are increasingly problematic. From the beginning, systemic thresholds and tipping points must be analysed in a way that these interactions are acknowledged. Seen from these interactions of society and nature, it must be asked which characteristics within contemporary societies are responsible for their persistence in an unsustainable development pathway, i.e., their structural characteristics but also its power relations. However, these characteristics are not only anchored in the deep-rooted structural conditions of capitalism, as sometimes argued by ecological Marxists [68]. More relevant are specific modes of economic growth in certain phases of capitalism, in particular within Fordism, where resource use accelerates. Different transition pathways can be analysed within capitalism in more detail to assess the potential for successful interventions and more sustainable development pathways. For example, the "Great Acceleration" after WW2 [43] is marked by totally different resource use patterns at different times in different world regions [69]—and these differences may provide a starting point to define alternative transformation strategies.

Thirdly, the global scale and the long-term perspective is absolutely necessary for any serious analysis of current SETs. Neither the long-term feasibility—and thus biophysical constraints—nor questions of justice and (global) inequalities can be ignored for any transformation towards sustainability that take this term seriously. As conflicts over access and control of natural resources are becoming more prevalent in the future, resource fairness and justice becomes a major topic of SETs, both between and within countries [70]. Several concepts exist to analyse such large scale and long term perspectives, e.g., unequal ecological exchange between countries [69], and the unequal carbon footprint of households within China [71].

Biophysical Constraints of Land Use from a Social-Ecological Perspective

It is one of the characteristics of the current debate that land and land use becomes an increasingly important topic. High expectations on future economic options of land use (e.g., bio-economy and renewable energies) as much as dependencies and constraints are intensively discussed. Thus, land is a good example for the complexity of biophysical constraints and social-ecological interactions. Intuitively it seems obvious that land area represents a biophysical boundary. Its size is well known and largely invariable. Most human activities, among those some that are indispensable for survival, such as food production, require land. The earth's land mass amounts to 149 million km2. Further, ~12% of this land area is covered permanently by ice and snow, and hence only ~130 million km2 of land is potentially usable. Also, ~75% of the ice-free area are already used for infrastructure, housing, cropping, livestock grazing and forestry, although with widely varying intensity [72,73]. Most of the remaining ~25% is dry, rocky, steep or cold, and hence unproductive. Only the last pristine forests (~5–7% of the ice-free land) represent a reserve of fertile land—but using them would entail huge ecological costs such as carbon or biodiversity losses. Almost all additional pro-

duction from land will hence entail either land-use competition or intensification of land use [74]. Hence, one might be tempted to think that it should be rather straightforward to define planetary boundaries [41] related to land, for example by calculating the "human appropriation of net primary production" or HANPP, i.e., the fraction of potential biomass productivity of land already used by humans, which has been estimated to amount to ~25% in the year 2000 [74]. However, empirical research has shown that in the past it has been possible to raise land productivity by large margins: In the last century, HANPP roughly doubled, but world population quadrupled and economic output grew 17-fold (but to some degree with negative side effects on biodiversity and regulating services; [75]). The transition from biomass to fossil fuels as society's main source of energy played a big role for this decoupling, as it helped in raising yields, e.g., through synthetic fertilizers, increased harvest indices of main crop plants (e.g., improved corn/shoot ratios of cereals) and almost limitless draught power from diesel-driven tractors [76]. Modelling for 2050 shows that further growth of food, fibre and bioenergy production is possible even without deforestation [44], but of course there exist important costs and trade-offs. For example, moving toward organic agriculture will require larger cropland areas and still provide less animal-product calories than the business-as-usual scenario. Sacrificing yield increases in order to reduce environmental pressures from intensive agriculture will reduce potentials to use land for carbon sequestration or biodiversity conservation, except if consumption in terms of overall volume and the fraction of animal products in diets is reduced accordingly. Thus, future options for SET need to consider option spaces for land use and its implications. Trade-offs and land use conflicts are unavoidable and current struggles on large scale land acquisitions ("landgrabbing") must be addressed properly: the power relations and dominant societal interests involved require a democratisation of SRN [77].

Political Dimensions of Social-ecological Transformations

The challenges of shaping SRN are at the heart of a critical concept of SET [19,78]. This unavoidably leads to questions of politics in a wider sense. Concerning the political, there are two blind spots within the debate about sustainability transformations. The first one is a certain equation of "politics" with the state or governments. Despite much talk about "governance" as participation of various stakeholders, governments and the state are seen as the centre of the political. They are addressed as more or less unitary actors, responsible for the dealing with manifold problems.

However, analytical as well as political-strategic approaches to social-ecological transformation need to consider the inherent conflictive character of the dominant and intended alternative forms of the appropriation of nature and related societal nature relations. The conflicts can be tamed, compromises installed and even broad consensus over dominant societal nature relations and dealing with environmental problems can be reached (beyond the scope of this article is the political-ecological insight that historically-specific societal relations to nature, like those during Fordism, and provisioning systems, like auto-mobility as the predominant mode for mobility, can become for a certain period hegemonic [22,51,78]). What is mostly ignored, however, are the root causes of the ecological and the multiple crisis: the specific constellation of powerful economic actors in line with their political allies, capable of imposing their interests in the colonising and valorisation of nature. This is linked to power--driven discourses and the contested construction of the very meaning of ecological problems and crises. The ecological crisis has inherently a bio-physical and material but also a symbolic-discursive dimension [19,52,79].

Against the dominant quest for better cooperation, far-reaching sustainability transformations require conflictive strategies and actions mainly against dominant economic and political actors [51]. Moreover, for far reaching transformations of

Northern modes of living, we need new mechanisms to integrate more or less large parts of the population into political processes and new institutions able to question the existing mode of production and living—i.e., a democratisation of political and social life [53]. In contrast, the mentioned "new critical orthodoxy" of sustainability transformations seems to trust very much in existing political and economic institutions and actors.

A second blind spot within the transformation debate is an under-determined understanding of political steering and the state themselves (we are aware of the fact that the "political" is much more comprehensive, including the public, civil society and even the site of production, consumption and the private. However, in the paper we focus on the state as a central instance of the political). A good example is the already mentioned overview by Nalau and Handmer with a specific focus on the interlinkages between sustainability transformations and policies. "Transformation has recently emerged as a suggested approach to manage change in societies given the increasing complexity of policy problems. . . . well-planned and facilitated transformation calls for a careful consideration of what exactly needs to be changed and how" [10] (p. 355). The latter part of the quote motivates also our approach. However, we see the management perspective as reductionist when it mainly consists of a call for "new regulatory frameworks" or—in other contributions—a "strong and activating state" [14]. Here, politics is equated with public policies. In the debate on social-ecological transformation, policymakers—and behind them governments or states—are often assumed to be interested in handling collective problems, and hence in creating general welfare.

Instead, we argue, that beside the focus on policies (e.g., certain environmental measures) the very structures of polity (i.e., institutionalised forms of policies) and of politics (i.e., actors and conflicts about structures and political strategies) needs to be transformed towards sustainability. Again, to achieve this we need an adequate understanding of the state and the political.

Historical-materialist social, state and governance theory made important contributions to PE (for historical-materialist

state theory in general see [80–84]; for the linking with PE see [37,52,78,85–91]). The analytical challenge is to conceptualise the state not only as a potential motor of sustainability transformations—this is important enough and dealt with in literature on the "green state" [92] or "environmental state" [93,94]. Beyond this it is key to understand how the state is deeply linked to un-sustainable modes of production and living, its links to dominant or even hegemonic social practices and rationalities, values, and discourses and how it became historically and still is crucial in the "generalisation" (Verallgemeinerung) of the fossilist metabolism.

In line with most state theoretical approaches, we understand the state as a specific materialised social institution that creates collectively binding decisions. Moreover, mainly the national state disposes over specific means to exercise a legitimate monopoly of the use of coercion (cf. on the recent debate about the internationalisation of the state: [52,95]. However, and in contrast to many other approaches, historical-materialist state theory considers the state not as a neutral entity, nor to be a mere instrument of capital or dominant social forces, but as a social relation. Therefore, the structures and actions of the state and modes of governance cannot be explained by themselves but rather through the consideration of social forces, practices and discourses, the (changing) societal context as well as the contested functions or tasks of the state in societal reproduction, e.g., the reproduction of existing societal nature relations. The latter implies that the state mainly secures and stabilises existing social relations like the social division of labour (along class, gender, and race, and also internationally); private property of the means of production and the private appropriation of the results of social production and the production of nature. Therefore, the institutional materiality of the state has to be understood against the background of the capitalist mode of production.

When it comes to this institutional materiality, it is a matter of fact that ecologically unsustainable societal structures and processes are deeply rooted in the state apparatus, its personnel and rules, their methods of functioning and their knowledge, and

their modes and practices. As Nicos Poulantzas famously put it: the state can be understood as "a specific material condensation of a given relationship of forces" [80] (p. 73). This points at the co-constitutive character of society and state.

Moreover, the relational perspective considers the state as a "strategic field and process of intersecting power networks" [80] (p. 136) where—especially under more or less democratic conditions—different societal and political forces try to promote their interests, norms and values. Social-ecological conflicts are fought out and forces in favour of sustainability transformations act also on this strategic field that is asymmetrically structured and the conflicting actors pursue their strategies in alliances with state personnel and under specific rules and conditions (e.g., as "growth acceleration laws" in times of economic crises or selective environmental laws that don't affect economic interests). In that sense, the state is crucial to deal with manifold societal, economic and political conflicts and to facilitate the creation of consensus through stabilised and shifting relations of forces and compromises with its means of force, law and regulations, discourses and legitimacy, and material and immaterial resources. Hence, the state maps out the multiple terrains of struggle in the relations of production, through labour laws, education processes etc. In that sense, the state is crucial in giving interests and constellations of forces certain durability, in organising compromises and alliances as well as possible hegemony.

Of utmost importance for a political-strategic transformation perspective is the fact that the state as a materialised institution develops contradictions, tensions, and explicit struggles between societal forces—within the power bloc or beyond—it also takes the form of contradictions between different apparatuses and branches [84]. Bob Jessop [96] (p. 364) proposed that societal practices and forces need to be able to develop and pursue hegemonic projects that potentially become state projects. Those projects might create a certain unity of the highly heterogeneous state and its policies.

Dynamics of Resource Extractivism as Powerful Global Social-Ecological Transformations

A relational and political ecology understanding of politics and the state can be clarified by looking at the recent dynamic in Latin America. In the context of the worldwide raw-materials boom in the first decade of the 21st century, the question of the opportunities and limits of raw-materials-based development has moved to the forefront of political and scientific debates. In particular, this issue is being discussed intensively and controversially in Latin America. Development paths based on the production, extraction and export of raw materials and natural products—including agricultural and forestall ones—with the goal of reducing poverty and social inequality by means of enhanced export revenues and their distribution, have been analysed and criticised under the terms "extractivism" and "neo-extractivism" [97–100]; applying the concept to other regions, [77,101]. This was not at all new, but due to the historically unseen rise of prices for raw materials since 2003–2004, governments had an enormous space of action. This becomes obvious in 2017 as we can see in many countries that the downturn of the oil price since 2014 puts the distributive policies of this model in danger.

The so-called pink tide in Latin America with such an emphasis on distribution started when progressive governments came into power. This was expressed through the electoral victories of several left wing presidents since Hugo Chávez in Venezuela in 1998. However, they wanted to go beyond distributional politics. In principle, all governments wanted to reduce the dependency from the world market. Also, in the Andean countries there existed conflicting projects about the dominant and desirable forms of the appropriation of nature. Indigenous struggles and broad anti-neoliberal alliances led in Bolivia and Ecuador to progressive governments and the development of new constitutions. They came into force in 2009 in Bolivia and in 2008 in Ecuador, respectively, and proclaimed a harmonious relationship between society and nature. For the first time in history, the Ecuadorian

constitution acknowledges in its article 72 the "rights of nature". However, in recent years their politics resulted in many respects in political frustration of many progressive social forces [100,102–105]. Analyses of the global resource boom are often undertaken from a PE perspective. This is especially the case when it comes to the role of politics and the state. Given the economic problems due to falling resource prices and demand and after the victories of right-wing candidates in countries like Argentina, the parliamentary victory of the right in Venezuela and the impeachment of the progressive Brazilian president, one of the intensively discussed questions in Latin America is: why were the governments not able—and in many cases even not willing—to reduce in an historically exceptional situation the dependency from the world market and foster certain forms of industrialisation and an internal market?

From the outlined political ecology perspective, it is accurate, in such world regions as Latin America, to characterise the state historically as "extractivist state" and currently as "neo-extractivist state". This might elucidate the social, and in fact political, rooting of "extractivist" projects formulated by manifold socio-economic and political actors—especially national and transnational corporations in the mining, fossil fuel and agricultural sector—and secured by international constellations, i.e., investment into resource extraction and demand for natural resources. However, the state is not only the executive instrument of dominant national and international groups or classes interested in resource extraction, but also is prepared to ignore, or, if resistance emerges, suppress other groups or classes. Although it is that, too, often enough; rather, it may also act as a mediator between interests and a "strategic terrain" that is dominated by powerful forces. Therefore, it will not be neutral but privilege certain interests over others [104,106,107]. Particularly, a hegemony-theoretical perspective oriented toward Antonio Gramsci might elucidate the fact that the development model of neo-extractivism has also ingrained itself into the mode of living of wage-earners, especially that of the Latin American urban middle

classes. Resource use conflicts are denied, actors who oppose official politics are coopted, ignored or suppressed. A reflection of dominant and problematic resource use patterns were—and still are—not at all part of political debates; critical research is under pressure.

It is important to note that political conjunctures might change for shorter or longer moments social power relations as it was the case after 2000 with a certain political weakening of the bourgeoisie, especially in countries like Bolivia or Ecuador. However, a critical reflection on the state—especially the post-colonial state—helps us to look at the deeply rooted state structures, the bureaucratic links to the bourgeoisie, ongoing dependency from international conjunctures and to avoid a confusion between a change of government with the transformation of the state.

Given the scope of our paper, we can learn from recent developments in Latin America even more. It is obvious that the short-term perspective of governments, the extractivist industry and the beneficiaries of the price boom prevails by large any long-term perspective that is mainly formulated by indigenous peoples, local farmers and their associations—supported by critical intellectuals—who experience the negative impacts of neo-extractivism at first hand. Concerning the multi-scalar character of many dynamics, neo-extractivism shows that the mode of development in particular Latin American countries is linked to the consolidation of resource-intensive modes of production and living in the global North, the economic rise of countries with "emerging markets," and the resulting growing global demand for resources. Moreover, high prices in the raw-materials sector as the basis of neo-extractivism are not only due to any rise in demand, but also to the discovery of their suitability as a field of investment for overaccumulated capital, which might be called the "financialisation" of nature [23]. This means that not only the analysis of patterns of resource use and the processes and structures linked to them need to consider socio-economic and political dynamics elsewhere. This is also the case for the political-strategic and normative orientations at sustainability

transformations. Against governmental discourses and promises, during the boom of resource prices and related state income is was not at all clear whether the neo-extractivist development dynamics lead to a reduction of inequality and poverty at all (cf. [108,109]). However, neo-extractivism became dominant and even hegemonic because distributional politics towards the masses without questioning social structures enables societal compromises and fulfilled the socially dominant imaginary of "progress", but took place at the cost of nature.

A Transdisciplinary Approach to Social-Ecological Transformations—the Example of the Global Water Crisis

The topic 'water', with all its aspects of management, conservation, use and cross-sectoral linkages is a good example for illustrating why a transdisciplinary approach is central to a critical concept of SET. In this chapter, we start with a description of key characteristics of the global water crisis, its historical development, and endeavours for solving it. Using the concepts of regulation and transformation of SRN, we then take an analytical perspective on this process. We argue here that the ongoing transformation faces a variety of challenges and that an open, creative, and transdisciplinary research process is needed in order to shape this transformation in the sense of SET.

Water is essential for human welfare and healthy ecosystems. Today, however, it is highly under pressure up and beyond critical thresholds, leading to limitations or even breakdowns of entire social-ecological systems [75]. Since the early debates on regional water crises [110,111], a broad agreement on the existence and even aggravation of a global water crisis has developed [112–116]. This global water crisis is characterized by complex problems, which involve the interplay between local and regional scales and their underlying dynamics (ibid.). In particular, these problems refer to the issues of water availability including overuse, water pollution, and access to water. If left untackled, they challen-

ge ongoing endeavours for bringing water, sanitation and food to the people and preserving the integrity of ecosystems. The emergence of such problems is usually not caused by only one, but by multiple interacting factors, which relate to how water is abstracted, made available, allocated, used, and finally released back into the environment.

Historically, the formation of the consensus that insufficient water availability is primarily not based in physical scarcity but in how water is managed was accompanied by the perception of an increasingly globalised crisis. This triggered the development of integrated approaches towards a more holistic management of water. The first regionalised approaches of co-ordinated management were brought on the international agenda at the International Water Conference in Rio del Plata (1977). The Conferences in Dublin and Rio de Janeiro in 1992 then marked milestones for the reanimation of already existing approaches for an Integrated Water Resources Management (IWRM) [117]—their arguably limited success in solving the global water crisis notwithstanding. Legislative processes in Europe (EU-WFD 2000) and normative processes of the United Nations (MDG 2000, SDG 2015) followed. Finally, scientific analyses of the role of water in various conflict situations [118] and of global water flows [119] made it eventually clear that the global dimension of water and in particular the societal impacts on water cannot be ignored anymore.

From the SRN perspective, the global water crisis addresses complex patterns of relations between natural water resources and social actors like households, farmers, enterprises, and suppliers [120]. In the Frankfurt approach to SE these patterns are also referred to as "first-order regulations" or "patterns of regulation" [19]. On a higher level, the manifestations of the crisis mentioned above are embedded in overarching structures and their dynamics: policies, multilateral treaties, and globalised markets are intentionally created second-order regulations, which influence how water is managed. They are defined by power relations, perceptions of rising social inequality, and global change processes like urbanisation and climate change. Such second-order re-

gulations are also described as "modes of regulation" in SE (ibid.).

This shortened description of the development of the global water crisis suggests how signs of a looming crisis can cause intended and unintended transformation processes. IWRM, for example, was developed as a response to the crisis discourse and laid out guidelines for transformations towards a sustainable water management (with a focus on balancing the interdependencies between water and other resources). In the European Union the adoption of the EUWater Framework Directive (EU-WFD) in 2000 carried this concept into environmental legislation—even though the legislative process did not explicitly refer to any crisis discourse. The Millennium and in particular the Sustainable Development Goals (MDG and SDG) have put water also on their agendas. Moreover, the rights to water and sanitation have been recognized as human rights in 2010.

IWRM and the EU-WFD were important triggers for transformations towards sustainable water management because they have a direct impact on how knowledge about solutions is generated and how they are brought into practice. They serve as valuable boundary objects for different actors and disciplines, respectively as an important sectorial legal framework. Nevertheless, partly competing sectors like agriculture, industry, and energy production tried to react to water shortages by adaption and also by structural changes such as building reservoirs and implementing long-distance supply schemes or new technologies for intensified water abstraction. As a consequence, the risk of overuse increased, problems were not solved but shifted, and new conflicts emerged. The close connection between the agricultural and water sectors, for example, led to conflicting developments as demonstrated by the case of subsidies for certain water-intense agricultural products, which counteract measures for more efficient water uses or against water scarcity [121]. Water pricing with environmental levies had unintended effects and the implementation of drip irrigation or other water efficiency technologies in agriculture allowed an extension of irrigated land, causing the desired reduction of agricultural water use to fail [122]. Cities

started to privatise their water supply and sanitation for improved economic efficiency but with the risk of higher barriers for interaction with other sectors [123,124]. This can be seen as part of commodification and commercialisation of water use. Often, these transformative actions were not coordinated and were driven by specific, isolated interests without an overall perspective. Thus, a truly transdisciplinary approach to the global water crisis is required, able for developing such a perspective.

The challenge of transformations towards sustainable water management is to move from partial solutions to an integrated and thus more sustainable balance of regulations concerning the competition on water with less unintended side-effects and critical trade-offs. In order to achieve that, we need to look at the issue of regulation of water-related SRN from a historical perspective. Many of today's patterns and modes of regulations developed over centuries and thus incorporate partly obsolete conditions. Therefore, old principles of water regulation—which are still strong drivers for long-term developments and action—may not hold anymore for the 21st century. An example is the shift from the principle 'one water for all purposes' to the more differentiated view of 'water of different quality for different purposes' [125,126] including the understanding of wastewater as a resource. Politicians and the international community are currently joining forces in order to achieve a consensus about this paradigm shift [127]. What becomes apparent is that it opens a space for innovative patterns of regulation. The differentiated management of blue, green and grey water flows along with corresponding alternative technological, infrastructural and socio-economic solutions can serve as an example here (ibid.). Furthermore, Goal 6 of the SDG addresses water prominently, has strong cross-linkages to several other Goals like food, health, energy, cities, climate change and biodiversity, and relates also to water and sanitation as human rights. The SDG call on developed and developing countries to take integrated action and apply holistic thinking depending on their specific needs. These developments pave the ground for a social-ecological transformation of water management. They are,

however, not the answer for everything as the issue of groundwater shows: Groundwater is neglected in the SDG despite its huge importance for water supply and its critical condition in many regions worldwide. All these things considered, sustainable water management approaches will show a higher complexity than previous ones because of the close coupling of scales and sectors. Cities, for example, are important drivers of development and in case future urban water supply and sanitation take the shift of paradigms seriously, infrastructures, resource flows and their governance will be transformed within the cities and in relation to the hinterland. Finally, relevant stakeholders have to become much more part of feedback processes in water management. This leads to new participatory structures, which are more adaptive to ongoing dynamics.

Shaping the transformations towards a sustainable water management is an open and creative process. This means that, in addition to empirical studies, new knowledge needs to be produced by differentiating, critically assessing and (re-)integrating what we already know. The combination of well-known technologies for innovative solutions in the case of greywater use and circular water economy is an example for this. The knowledge to be integrated is plentiful: natural science models and data from geohydrology, for example, have to be combined with an improved understanding of water governance regimes and institutions, innovative technological options and their requirements, and socio-economic and cultural practices of direct and indirect water users. Heuristic and analytical approaches like the concept of social-ecological systems (SES) as complex, adaptive systems [19,128] and a theoretical and conceptual foundation of 'regulation' [129] allow for the analytical decomposition of problems and the innovative (re-)composition of solutions. They also help to make new ideas like the water-energy-food nexus (FAO 2014) analytically accessible and to open up a participatory research agenda, which extends the knowledge base by incorporating extra-scientific knowledge [130].

Transdisciplinary research, which includes interdisciplinary cooperation, is able to capture the complex and multi-dimensional character of the global water crisis. This mode of rese-

arch aims to produce the three types of knowledge [131] that are necessary to link the analytical, political-strategic, and normative dimensions of social-ecological transformations: system knowledge for a better understanding of the structures and processes that fuel the global water crisis, orientation knowledge about the requirements and standards of a future sustainable water management, and transformation knowledge on how the process towards a sustainable water management can be shaped. In doing so, transdisciplinary research adopts a (self)reflexive and (self)critical attitude: it routinely scrutinises its own procedures, methods, and practices of knowledge production as well as the different new roles for scientists that come along with it [131,132].

Conclusions and Outlook: a Critical Approach towards Social-ecological Transformations

This paper argues that the current debate on transformations towards sustainability can be improved by a critical, inter- and transdisciplinary approach to social-ecological transformations, based on conceptual and empirical achievements from SE and PE. As shown above, several analytical challenges can be addressed building on existing work. An integrative perspective that aligns analytical, normative and strategic dimensions is at the centre of our proposal. For sure, this integrated perspective can only be developed within a wider research community, due to the broad array of competences required.

First, a focus on resource use patterns and their implications on ecosystems (especially biodiversity) and food, biomass production and water are important elements in this regard. It can be demonstrated that current societies are in themselves unstable and crisis driven "societies in transformation" and that it is a historically open question whether existing resource use patterns can be re-regulated in a sustainable way.

Second, resource use patterns evolve over long periods and are based on as well as stabilisers of power relations and hege-

monic constellations. We argue that a relational perspective is the differentia specifica for a critical concept of transformation. According to Marx, modes of production correspond to the 'relations of production—relations which human beings enter into during the process of social life, in the creation of their social life' [133]. The concept focuses on structures and processes by means of which society organises its material foundations (i.e., its metabolism with nature), socioeconomically, politically, culturally, and subjectively. It identifies dominant societal structures and processes and their necessarily contradictory and crisis driven reproduction. In that sense, resource use patterns might become hegemonic. However, in times of crisis or catastrophes or at particular scales—often the local one where those who are negatively affected by certain patterns live—existing SRN can be contested and shaped. The degree of shaping—a smooth modernisation or a profound transformation—depends on power relations and strategies, on feasible alternatives and biophysical constraints.

Third, inter- and transdisciplinary research had developed conceptual approaches and empirical methods to address the complex dynamics of SRN. However, the challenges of SETs are going further and require additional conceptual and empirical work to contribute to an improved strategical approach for sustainability transformations. Therefore, a critical understanding of current transformations towards unsustainability must be developed, that allows for improved strategies towards sustainability.

Fourth, this critical approach requires a consideration of the interplay of change and persistence, critical developments, ruptures and discontinuities, instead of simply linear developments. A major challenge is the interplay of several overlapping transformation processes, both intended and unintended, that requires an analytical perspective comprehensive enough to address the societal context (including the barriers for SET) and the side effects of certain processes while not neglecting the case specifics. It should also give a better picture of the potentials and obstacles of initiatives and proposals for sustainability transformations, i.e., the political-strategic and normative dimension.

Fifth, from a social-ecological and political-ecological perspective, SET always occurs: SRN are always regulated and only temporarily stabilized and the modes of regulations create the causes for further transformations. This is not a minor statement because it makes the respective analyses sensitive for the fact that the dominant tendencies or "grammars" of transformation need to be reflected [15]. Thus, from our perspective the question is not whether SRN will transform but what dominant tendencies or "grammars" stand behind such transformations. We assume three strong tendencies ("grammars") that structure the industrial and fossilist mode of production and regulation of SRN: one such a grammar is the colonising of nature or land taking, a tendency that exists throughout history and is shaped by societal power relations and domination. "Nature" is increasingly shaped by human activities, whereas global societies are increasingly affected by repercussions and crises tendencies, but in an unequal way in the Global South and the Global North. Beyond the pure economic rationality of capitalism, this grammar is deeply anchored within the dominant dualistic European pattern of understanding and its belief in the domination of nature [134] (cf. [135]). Therefore, it requires a plurality of worldviews and knowledge types, open for alternatives to the dominant modes of regulation of SRN.The second is the capitalist grammar of capital accumulation, the growth imperative and the predominance of the production of surplus values over the production of use values. The former goes hand in hand with the valorisation and overexploitation of nature (and the work force) and forms certain modes of regulation [19]. In that sense, political economy is "political ecology's bread-and-butter" [90] (p. 343) and crucial for our approach, too. This does not mean that all societal relations are structured along capitalist imperatives; they might co-exist with subsistent, solidary and cooperative forms of production and living. Moreover, non-paid care work is decisive to organise the material and symbolic reproduction of societies and, hence, the appropriation of nature [136]. In fact, different modes of regulations do not merely co-exist and are often co-constitutive but also

conflicting with each other [51]. Thus, the destructive "logic" of the valorisation of nature for capital accumulation is not without alternatives. In fact, these tendencies are contested, counter-tendencies can evolve—and do evolve—due to severe crises and social struggles of actors that intend to impede the destructive tendencies of dominant regulations of societal relations to nature. We assume that such struggles are decisive for alternative resource patterns and that a closer analysis of such resource use patterns in space and time may provide a starting point to define alternative transformation strategies (see above Section 3)—but this of course needs further investigation. Moreover, broader analytical lenses are required to understand societal and socio-ecological dynamics, e.g., a more comprehensive understanding of the economy and societal reproduction that goes beyond the formal market and money economy and towards considerations of non-monetarised forms of production and labour and related societal nature relations [136]. The third tendency or "grammar" is related to our strictly multi-scalar perspective that does not lose out of sight the global. We argued that—despite the relevance of the local level and in particular local struggles—the claims for sustainability transformations are, in principle, global but in fact they refer mainly to national or regional scales. The national scale, however, is dominant due to the density of the national political systems (compared to the international one) and the dominance of strategies of competitiveness that are mainly pursued at the national scale. This is the basis that capitalist development occurs unevenly, both in space and in time. It also installs a powerful mechanism or tendency to externalise the negative preconditions and consequences of production and consumption to other regions. Biesecker and Hofmeister [136] call this a constant and absent "shadow of externalisation" that drives societal dynamics in certain regions, makes life more attractive at the cost of the living conditions in other regions. These complex processes of externalisation are a cornerstone of constant social-ecological transformations and need to be considered and changed by any project of sustainability transformations.

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Xiangzhan Cheng

Ecosophy and Ecoaesthetics: a Chinese Perspective

Abstract: Inspired and encouraged by Norwegian philosopher Arne Naess' Ecosophy T, the chapter proposes Ecosophy C. C means eight expressions with the capital C, such as Chinese culture, Confucianism, Continuity of being, Creating life, Compassion, Cheng Hao, Community, Cultural evils. The chapter defines ecoaesthetics as the theory of ecological aesthetic appreciation based on ecosophy C, some Chinese classic poems are analyzed as samples of ecocriticism based on ecoaesthetics. By this exploration, the author hopes to attract more attention to the aesthetic dimension of ecological literature and arts, and to promote the aesthetic research for ecocriticism, which is proposed to be called "aesthetic ecocriticism" compared with other forms of ecocriticism such as "cultural ecocriticism" and "material ecocriticism."

Introduction

In 2010, *ISLE: Interdisciplinary Studies in Literature and Environment*, the official journal of the Association for the Study of Literature and Environment (ASLE), published a group of brief articles under the title of "Special Forum on Ecocriticism and Theory." The aim of the special forum was to propose the theoretical basis for ecocriticism. I contributed an essay titled "Ecoaesthetics and Ecocriticism" to the forum, trying to define ecocriticism as a new form of literary criticism based on ecoaesthetics (Cheng 2010), which means that, from my own perspective, the theoretical basis for ecocriticism is ecoaesthetics.

However, the construction of ecoaesthetics is an on-going project internationally far from being mature. The more fundamental question is, what is the theoretical basis for ecoaesthetics? In other words, what is the deeper basis for ecocriticism? In order to answer these questions, this chapter firstly describes ecosophy mainly from the perspective of traditional Chinese philosophy, then defines ecoaesthetics as the theory of ecological aesthetic appreciation based on ecosophy, and finally takes some Chinese classic poems as samples of ecocriticism based on ecoaesthetics.

By this exploration, I hope to attract more attention to the aesthetic dimension of ecological literature and arts, and to promote the aesthetic research for ecocriticism, which I would propose to call "aesthetic ecocriticism" compared with other forms of ecocriticism such as "cultural ecocriticism" and "material ecocriticism."

From Ecosophy T to Ecosophy C: a Chinese Perspective

Ecosophy as a term is the combination of the prefix "eco-" and the suffix "-sophy." The term can be taken to refer to "ecological wisdom" in a more general way. Norwegian philosopher Arne Naess proposed this term firstly in 1970s. Naess is most famous for the idea of "deep ecology." As the opposite of the word "shallow," the word "deep" expressed "the most general and basic views"

relating to ecology (Naess 1989, 28). As a branch of the field of biological research, ecology is an interdisciplinary scientific study of the living conditions of organisms in interaction with each other and with their environments, organic as well as inorganic. As compared with the science of ecology, the essence of deep ecology is to ask "deeper questions," whereby the adjective "deep" stresses the point that we ask why and how, i.e. questions related to value theory. So, ecosophy or deep ecology involves "a shift from science to wisdom" (Sessions 27).

Given the fact that *Homo sapiens* is a biological organism, Naess raised a "deeper" question: Do all possible studies of humankind's relations with all possible kinds of surroundings belong to ecology? This question inevitably implies a philosophical pursuit rather than scientific inquiry into the place of humanity in nature. In response to this philosophical pursuit, Naess clearly realized the limits of ecology and proposed what he called *ecophilosophy* or *ecosophy*. In Naess's understanding, ecosophy is combined of the prefix "eco-" found in economy and ecology, which has a broader meaning than the immediate family, household, and community and means "earth household;" and the suffix "-sophy" found in philosophy, which denotes insight or wisdom. So ecosophy becomes "a philosophical world-view or system inspired by the conditions of life in the ecosphere" (38). Given that every situation is unique and specific, Naess introduces Ecosophy T to denote his own kind of ecosophy. The "T" referred to Tvergastein, a mountain hut where he wrote many of his books. He encouraged his audience to develop his or her own systems of guides, say, Ecosophies X, Y, or Z.

Inspired and encouraged by Naess, I propose my personal ecosophy, Ecosophy C. C here means eight expressions with the capital C: 1. Chinese culture, which is my cultural background; 2. Confucianism, which is generally viewed as the symbol of China in the global cultural ecosystem; 3. Continuity of being, the metaphysical and ontological promise of Chinese philosophy and aesthetics; 4. Creating life, which is viewed as the great virtue of Heaven and Earth expressed significantly in one of the Chi-

nese classics, *The Book of Changes* (i.e. *I Ching*); 5. Compassion, which is mainly embodied in Zhuangzi's philosophical story of appreciating the fish's joy and means to have the faculty to share empathy with all life; 6. Cheng Hao, a philosopher in the Song Dynasty, whose aesthetic thought represents the most systematic expression of ecological appreciation in Chinese aesthetics; 7. Community, a key term in ecology, based on which Aldo Leopold developed his idea of ecological conscience; 8. Cultural evils, a key idea proposed in Cheng Xiangzhan's own aesthetic theory, "an aesthetics of creating life" (Cheng, 2012).

Firstly, let's begin with the discussion about point 7, community. In today's ecological theory, community is a general term applied to any grouping of populations of different organisms found living together in a particular environment. In his 1947 essay entitled "The Ecological Conscience," Leopold defined ecology as "the science of communities" and consequently defined ecological conscience as "the ethics of community life" (340). He asserted that what is lacking in philosophy, ethics, and religion is "ecological conscience" and a change in philosophy of values should be promoted. In order to develop his "land ethic," Leopold put the community concept in the central place. The single premise of all ethics is that an individual is a member of a community of interdependent parts. Leopold's land ethic simply enlarged the "boundaries of the community to include soils, waters, plants and animals or, collectively, the land" and affirmed the right of these resources to "continued existence in a natural state."

> In short, a land ethic changes the role of Homo sapiens from conqueror of the land-community to plain member and citizen of it. It implies respect for his fellow-members, and also respect for the community as such. (Leopold, 1949, 204)

It is clear that Leopold's statement is not a view of scientific ecology but a view of ecosophy: an ecological philosophical view about values embedded in the biosphere as the whole ecosystem. Based on his emphasis on the concept of community, Leopold expressed his value system in a widely cited maxim: "A

thing is right when it tends to preserve the integrity, stability, and beauty of the biotic community. It is wrong when it tends otherwise" (224-25). Scientifically speaking, from the perspective of geological time or scale, say 10,000 years, the planet earth keeps continuously changing dramatically. There is no "integrity" or "stability" at all. However, philosophically speaking, from the perspective of human civilization, humankind *should* take preserving the integrity and stability of the earth as his or her value orientation. Only by doing so can humankind face the challenges of the global ecological crisis.

Point 5, compassion, generally means sympathetic pity and concern for the sufferings or misfortunes of others. However, with the awareness of the community concept and an ecological conscience based on it, it would be most reasonable to understand that "others" should include any individual member sharing the same community, no matter whether it is a plant or an animal. What is more, we can reinterpret the meaning of the word "compassion" positively to investigate the possibility of sharing others' joy or satisfaction, not only the negativity of their sufferings or misfortunes. There is an appealing philosophical story about the joy of fish in *Zhuangzi*, the Chinese classic of Taoism, as follows:

> Travelling with Huizi over a bridge on the Hao River, Zhuangzi said, "The fish is swimming at ease. This is how the fish enjoy themselves." Huizi said, "You are not a fish. How do you know the fish are enjoying themselves?" Zhuangzi said, "You are not me. How do you know I don't know about the fish?"

The philosophical question here is related to what we call intersubjectivity applied here to the relation between human beings and non-human things. Is it possible for us to know a fish's joy or not? If yes, how? Zhuangzi did not answer these questions directly; he just said that he could know the fish's joy on a bridge on the Hao River. The key is how to understand the word "know" as a human activity. We may "know" something scientifically, philosophically, or aesthetically. It is reasonable to think in biological terms that when a fish's desire for survival is satisfied by its

living environment, it can experience a kind of joy or satisfaction. To some extent, it is mankind's natural faculty to understand or know this point. I argue that both from the perspective of traditional Chinese philosophy and of today's ecological ethics, mankind should respect non-human beings' intrinsic value and their right to enjoy their lives. Briefly, the positive feeling of compassion is a kind of human ability and sensibility based on ecological ethics, which exemplifies the aesthetic intersubjectivity between human beings and non-human life.

Community as a key term in ecology shows the interconnectedness or connectivity among community members, and compassion shows that the boundaries between these members may disappear to some extent. How, then, should we understand connectivity and compassion philosophically or metaphysically? From the perspective of Chinese philosophy, we may propose the concept of "the continuity of being" (i.e., point 3 of Ecosophy C), which is the title of an essay by Tu Weiming, a former Harvard professor of Chinese history and philosophy. In his paper, Tu introduces Chinese visions of nature and asserts:

> The Chinese belief in the continuity of being, a basic motif in Chinese ontology, has far-reaching implications in Chinese philosophy, religion, epistemology, aesthetics, and ethics (105).

This belief is based on the Chinese mode of thought about cosmogony as an organismic process, which holds, in F. W. Mote's words, that "all of the parts of the entire cosmos belong to one organic whole and that they all interact as participants in one spontaneously self-generating life process" (105). The most basic stuff that makes up the cosmos is a vital force or vital power, *ch'i* (i.e., matter-energy). This kind of metaphysical assumption is significantly different from the Cartesian dichotomy between spirit and matter. In the unified cosmos consisting of *ch'i*, all modalities of being, from a rock to heaven, are integral parts of a continuum which is often referred to as the "great transformation" (*da-hua*). Within the continuum, "the chain of being is never broken and a linkage will always be found between any given pair of things in the universe….

The continuous presence of *ch'i* in all modalities of being makes everything flow together as the unfolding of a single process" (Tu 108).

So, in order to understand Ecosophy C completely, it is necessary to return to traditional Chinese cosmology. In answering the question of "where do we and myriad things in the universe come from ultimately?" it is not hard to reach the philosophical presumption of the most primal origin. Ancient Chinese philosophers referred to it in various kinds of names, such as *Tian* (literally means Heaven), or *Tiandi* (literally means Heaven and Earth), or Dao (literally means way). As for the case of *Tian*, the most noticeable example is Confucius' following story and statement:

> Confucius said, "I do not wish to say anything." Tzu-kung said, "If you do not say anything, what can we little disciples ever learn to pass on to others?" Confucius said, "Does Heaven (*Tian*, Nature) say anything? The four seasons run their course and all things are produced. Does Heaven say anything?" (Chan, 47)

In Confucius' view, *Tian* produced all things in the universe. Compared with *Tian*, Dao, a more philosophical term which is generally translated also as Tao in the West, is more widely used to describe the ultimate origin and its creations of myriad things in the universe, including the universe itself. The most important example is chapter 51 of *Laozi*, which says:

Tao produces them (the ten thousand things). Virtue fosters them. Matter gives them physical form. The circumstances and tendencies complete them. Therefore the ten thousand things esteem Tao and honor virtue. Tao is esteemed and virtue is honored without anyone's order. They always come spontaneously. Therefore Tao produces them and virtue fosters them. They rear them and develop them. They give them security and give them peace. They nurture them and protect them. (Tao) produces them but does not take possession of them. It acts, but does not rely on its own ability. It leads them but does not master them. This is called profound and secret virtue. (Chan, 163-4)

The "profound and secret virtue" in *Laozi* is also called the "great virtue of Heaven and Earth" in the traditional Confucia-

nism classic, *The Book of Changes (I Ching)*, which says that "the great virtue of Heaven and Earth is to produce" (Chan, 521), and this classic holds that "Changes mean production and reproduction" (Chan, 266). In both *Laozi* and *The Book of Changes*, "to produce" and "production" in Chan's English translation is the same Chinese character, *sheng*. When *sheng* is used as a verb in Chinese language, it literally means "to give birth to" or "to create"; when it is used as a noun, it literally means "life." So, the verb-noun group of *shengsheng* in *The Book of Changes* means "to create life" or "creating life." Chan's English translation of the sentence quoted here can be revised accordingly as: "Creating life is what is called changes." This is the point 4 of Ecosophy C.

Point 6, Cheng Hao and point 8, Cultural evils, a key idea proposed in Cheng Xiangzhan's aesthetics of creating life, will be discussed accordingly in the following sections.

Ecoaesthetics: the Theory of Ecological Aesthetic Appreciation

Ecoaesthetics or ecological aesthetics first appeared in 1972. In that year, Canadian scholar Joseph Meeker's article "Notes Toward an Ecological Esthetic" was published in *Canadian Fiction Magazine* (Meeker 1972a) and in the same year this article was collected in the author's book *The Comedy of Survival: Studies in Literary Ecology* as the sixth chapter of the book, with a slightly revised title "Ecological Esthetics"(Meeker 1972b, 119–136).

Meeker's argument starts with the reflection of western aesthetic theories. He declares that since Plato, western aesthetics has always been dominated by the great "art versus nature" debate. Traditionally, aesthetic theory emphasized the separation of artistic from natural creation and assumed that art was the "higher" or "spiritualized" product of the human soul and not to be confused with the "lower" or "animal" world of biology. For Meeker, no matter how we regard art, as "unnatural" product or as man's spiritual transcendence over nature, both ideas distort the relationship of nature and art. Darwin's evolutionary theory

shows the evolution processes of living creatures and indicates that traditional anthropocentric thinking has overestimated human spirituality and underestimated biological complexity. From the 19th century, philosophers began to re-examine the closeness of biology and humanity and began to re-evaluate aesthetic theory "in the light of new biological knowledge" (Meeker 1972b, 120). Under such kind of science-oriented thinking, Meeker asserts that "aesthetic theory may be more successful in defining beauty when it has incorporated some of the conceptions of nature and its processes which have been formulated by contemporary biologists and ecologists" (Meeker 1972b, 124-125). Briefly put, the strategy and connotation of Meeker's ecological aesthetics is to take Darwin's theory of biological evolution as theoretical foundation and to lay emphasis on human's biological nature, thereby reflecting and reconstructing aesthetic theory in light of contemporary biological and ecological knowledge.

Meeker's work did not play an important role in shaping ecoaesthetics after him, because scholars in the West mostly developed ecoaesthetics within the framework of environmental aesthetics, a much more mature and noticeable field mainly developed in the West since 1960s, whereas scholars in China did not realize his importance until recently. Frankly speaking, there is still disagreement among ecocritics about the exact object of eco-aesthetic study. Many scholars confuse ecoaesthetics with environmental aesthetics, and some scholars still question the legitimacy of ecoaesthetics (See Cheng et al, 2013, chapter 1).

My strategy of proposing ecoaesthetics is to consult the more mature discipline of environmental aesthetics to help define and develop ecoaesthetics. The objective of the study of environmental aesthetics is "environmental appreciation," which is clearly different from "art appreciation." It critiques and transcends the Hegelian philosophy of art, which views an artifact as an object of study. For scholars of environmental aesthetics, the main issue concerns the distinction and relationship between "environmental appreciation" and "art appreciation." As for the study of ecoaesthetics, its object of study concerns a key question of

"how to appreciate aesthetically and ecologically" (Cheng, 2010). While it disapproves of traditional aesthetic appreciation that is not ecologically oriented (or without an ecological awareness), it does not necessarily oppose a mode of aesthetic enjoyment based on artistic form. In a nutshell, the argument of environmental aesthetics centers on the issue of the aesthetic object: is the object for the study of aesthetics an art work or the environment? By the same token, the argument of ecoaesthetics concentrates on the issue of the aesthetic way (or manner) and asks how to engage an aesthetic activity governed by an ecological awareness. In other words, it asks how to form an ecological aesthetic way (or manner) by letting ecological awareness play a leading role in human aesthetic activity and experience (See Cheng et al, 2013, Chapter 3). My statement goes as below:

> Briefly put, ecoaesthetics is different from non-ecological oriented aesthetics (or "traditional aesthetics" hereafter). It is a new type of aesthetic way and concept responding to global ecological crises, using ecological ethics as its theoretical foundation, relying on ecological knowledge to inspire imagination and elicit emotions, and aiming at conquering conventional, anthropocentric aesthetic preferences. (Cheng et al, 2013, 86)

With the above considerations, I define ecoaesthetics as "the theory of ecological appreciation" (Cheng, 2013) or "the study of ecological appreciation" (Cheng et al, 2013, 103). The basic assumption behind the working definition of ecoaesthetics is the following statement: we can appreciate something aesthetically and ecologically. The key point is the difference between modern Western aesthetic appreciation and contemporary ecological appreciation. In order to explain the crucial difference, it is helpful to introduce American scholar Arnold Berleant's aesthetics.

Berleant is a leading scholar in the field of environmental aesthetics. He proposes a key phrase called "aesthetic engagement" and he even calls his aesthetic theory an "aesthetics of engagement." He asserts that the concept of aesthetic engagement "claims continuity rather than separation" (1991, xiii) and pro-

poses that this conception of aesthetics centers on appreciative "experience characterized by continuity, perceptual integration, and engagement" (4). With his criticism of modern aesthetics' reduction of experience to a subjective response, he emphasizes "experiential continuity" and even calls his aesthetic theory based on this idea an "aesthetics of the continuity of experience" (15). In order to support his new aesthetic conception of experiential continuity and its related idea such as empathy, Berleant borrows the idea of intellectual sympathy from Henri Bergson, the idea of *Einfühlung* (empathy) from Theodor Lipps and the idea of "the interaction of the live creature with his surroundings" from John Dewey (16-17). In brief, Berleant's aesthetics of engagement is based on his key idea of the continuity of appreciative experience, which asserts that artist, object, appreciator, and performer are no longer understood as separate constituents but become functional aspects of the aesthetic process.

It is easy to raise a more fundamental question: how should we understand philosophically and metaphysically some key terms in Berleant's aesthetics of engagement, such as continuity, empathy, and process? Ecosophy C can explain the three terms without too much difficulty, say, point 3 "Continuity of being" can explain the ontological basis of continuity; point 5 "Compassion" can explain empathy and point 4 "Creating life," i.e., the underlying cosmology, can explain process.

With the reinterpretation of Berleant's ideas from the perspective of Ecosophy C, I assert that "we can engage with something aesthetically and ecologically" (Cheng, 2013). So "aesthetic and ecological engagement" is the core of ecoaesthetics, which implies a "why-how-what" model of nature appreciation.

Firstly, this model inquires into the question of *why*: Why should we appreciate nature with respect and awe and believe that everything enjoys its intrinsic value rather than have only instrumental value? The answer is that ecological engagement is based on the ontological assumption that everything within a community enjoys connectivity and continuity (the continuity between mind, body and world) with each other. Community may vary according

to different geological and spatial scales, from a small pond to a mountain area, from the planetary earth to the entire universe. Scientifically speaking, the inherent tie among all things in the universe is energy (or *ch'i* in the Chinese philosophical term), which means that the whole universe is a great process of the transformation of energy and everything within it is an intrinsic part of that process. Ecoaesthetics should rest its philosophical base on this ecological worldview. An important part of ecological literacy, which includes an enhanced respect for and deeper feeling of connectivity with the different parts of the natural world, should be cultivated by ecological education (See Laura and Cotton, 162-73).

Secondly, the model inquires the question of *how*: How are we able to appreciate nature? With the ontological assumption and worldview just described above in mind, to engage with something ecologically means to be able to experience compassion for all life, human and non-human. Human beings have evolved to be equipped with the natural ability to have compassion for others' positive joy or negative sufferings. This kind of faculty should be explored scientifically, psychologically, and philosophically.

Thirdly, the model inquires into the question of *what*: What should we appreciate in the natural environment? The answer to this question is that we should be aware of and appreciate everything that has appeared or is appearing in the great transformational processes of the universe. This means that the perception of a landscape is not simply the awareness of scenery but of the complex and dynamic fields of energy transformation. In terms of Chinese aesthetics, it is the appreciation of nature's vitality (*shengji*) or spirit resonance (*qiyun*).

With this model, a new ecological model of nature appreciation is constructed. The new model based on Ecosohpy C is substantially different from the dominant model of nature appreciation in today's Western environmental aesthetics, which can't explain some related key terms in a philosophical way, such as continuity, empathy, and process. The major difference lies in Ecosophy's emphasis on metaphysical promise, which can remedy the limitation of the model of nature appreciation based mainly on scientific knowledge.

Ecoaesthetics' Effectiveness and Application in Rereading some Chinese Poems

The function and value of a theory lies in its power to explain phenomena. So, this section will put ecoaesthetics based on Ecosophy C into practice to test its effectiveness.

The first example comes from J. Baird Callicott, an outstanding scholar in the field of environmental ethics. In his 1983 paper, Callicott narrates his personal experience as below:

> I am acquainted with a certain northern bog which is distinguished from the others in its vicinity by the presence of pitcher plants, an endangered species of floral insectivore. I visit this bog at least once each season. The plants themselves are not, by garden standards, beautiful. They are a dark red in color, less brilliant than maple leaves in fall, and humbly hug the low log floor of sphagnum moss in the deep shade of fifty-foot, ruler-straight tamaracks. To reach the bog I must wade across its mucky moat, penetrate a dense thicket of alders and in summer fight off mosquitoes, black and deer flies. My shoes and trousers get wet; my skin gets scratched and bitten. The experience is not particularly pleasant or, for that matter, spectacular; but it is always somehow satisfying aesthetically. (Callicott, 1983)

Callicott is very clearly aware of the fact that pitcher plants "are not, by garden standards, beautiful," which means that according to traditional aesthetic preference, this kind of plant is totally impossible to be appreciated aesthetically, because it is "unscenic nature" as discussed in Saito's paper titled "The Aesthetics of Unscenic Nature" (Saito, 1998). However, as a scholar with strong ecological awareness, Callicott does his very best to reach the "endangered species." His experience of wading across mucky moat "is not particularly pleasant;" "but it is always somehow satisfying aesthetically." The story shows that the aesthetic experience of appreciating endangered species from ecological consciousness is dramatically different from traditional aesthetic experience.

The second example is a theoretical statement by Allen Carlson, another leading scholar in the field of environmental aesthetics. At the beginning of his paper titled "Nature and Positive Aesthetics," Carlson asserts:

> I examine the view that all the natural world is beautiful. According to this view, the natural environment, insofar as it is untouched by man, has mainly positive aesthetic qualities. ……All virgin nature, in short, is essentially aesthetically good. (Carlson, 1984)

This statement has caused widely controversial response internationally. Carlson himself has not offered sufficient reasons for his view yet. However, from the perspective of Ecosophy C's point 8, "Cultural evils," the positive aesthetic quality and value of "virgin nature" comes from a deep reflection and strong criticism of human culture, say, the cultivation or humanization of nature. In the Chinese language, the term "civilization" is called *wenming*. *Wen* literally means culture and *ming* literally means bright, so *wenming* indicates human creations with positive values. However, with the increasingly serious ecological crisis, more and more people have realized that human creations are not always positive, more and more human creations including pollution are very negative. In order to describe the negative side of human culture, I coined a new Chinese term called *wenbi* firstly in 2003 and revised it in 2005. *Bi* literally means evils, so *wenbi* is the antonym of *wenming* (i.e. civilization). Global ecological crisis is the biggest cultural evil caused by the cultivation (or humanization) of nature (See, Cheng, 2012, 113, 127). Compared with heavily polluted areas, the "natural world untouched by man" in Carlson's words is a kind of escape from cultural evils. That is why nature's virgin state is so valuable and significant for the appreciator with an ecological awareness and consciousness.

As for point 6 of Ecosophy C, Cheng Hao (1032-1085), reading his poem titled "An Occasional Composing in an Autumn Day" is a very good starting point:

> At leisure, nothing is not in an unhurried way.
> Waking up, the morning Sun appears red in the eastern window.
> Appreciated in a peaceful way,
> myriad things are enjoying themselves.
> The four seasons have various fine moods,
> which can be shared with me.
> Dao extends beyond the shape of Heaven and Earth,
> A myriad of thoughts enter into the changing shape of clouds.
> Riches and honours can't corrupt him,
> he enjoys poverty and humbleness,
> He can be called a hero when he reaches this spiritual state. (Cheng, 1981, 482)

As one of the most important philosophers in Neo-Confucianism in Northern Song Dynasty, Cheng Hao inherits the key idea in *The Book of Changes*, "the great virtue of Heaven and Earth is to produce." Based on this idea, he realizes the spirit of life in all things. To him, this creative quality is *ren* (humanity), which removes all distinctions between the self and the other and combines Heaven, Earth, and man as one. As an outstanding teacher, he expresses his philosophy of education as the following principle, "The student must first of all understand the nature of *ren* (Humanity). The man of *jen* (or *ren*?) forms one body with all things without any differentiation" (Chen, 523). So, there are no boundaries between human beings and non-human beings. Everything in the universe is a whole. When a person reaches this spiritual state, he or she can appreciate everything's joy equally in a peaceful way. In Cheng Hao's view, the universe is conceived as a continuous process of production, creation, and growth, an unceasing process of life-giving; everything in the universe is an intrinsic part of the universal process and should enjoy the same right to grow and develop. Based on two quotations from *The Book of Changes*, Cheng Hao explains his philosophy as follows:

> "Change means production and reproduction." This is how Heaven becomes the Way. To Heaven, the Way is merely to give life. What follows from this principle of life-giving is good. Goodness

> involves the idea of origination (yüan), for origination is the chief quality of goodness. All things have the impulses of spring (spirit of growth) and this is goodness resulting from the principle of life. "That which realizes it is the individual nature." Realization is possible only when the myriad things fully realize their own nature. (Chen, 532)

With this philosophical view, it is not too hard to understand many Chinese poems with ecological significance. Let's read two of them by Du Fu (712-770), "the sage of poetry" in China:

One of the Three Quatrains
A cormorant out my door left and dared not come back again.
Looking at me suspiciously,
when we meet by chance in the river bank.
Knowing my friendship since then,
She visits my home one hundred times every day. (Yang, 1981, 396)

The poet treats the cormorant as a friend and the bird can realize the poet's friendship. The friendship exists not only between man and a wild bird, but also between man and grass:

Yard Grass
The lovely grass becomes green after the cold winter,
Its color grows thicker in my eyes when spring comes.
The old fallen leaves are raising again,
The new sprouts are growing fast.
Every step should be careful when you walk,
Appreciating them again and again, while you are enjoying feasts.
Admiring the beauty of flowers,
following the rhythm of the seasons,
Daring not to change the appearance of the flowers with my effort.
(Yang, 1981, 737)

The poet respects the grass and its natural process of growth, through which he obtains a lot of aesthetic pleasure.

Conclusion

Since William Rueckert published his paper titled "Literature and Ecology: An Experiment in Ecocriticism" in 1978, ecocriticism has grown to be a special field internationally. However, a commonly shared model of doing ecocriticism has not been constructed yet during the past four decades. Ecoaesthetics based on Ecosophy C might act as such a model in the practice of ecocritical study. The possibility depends on its effectiveness in explaining literary works.

In an interview with Lawrence Buell, a leading scholar in the field of Ecocriticism, I proposed to differentiate two kinds of ecocriticisms, one called "literary ecocriticism," and the other "cultural ecocriticism." The major idea behind this differentiation is my working definition of literature, which can be expressed here as below:

> Literature is one of the artistic forms taking language as its expressing medium in the cultural system.

According to the definition, two points must be taken into account here. Firstly, literature is an intrinsic part of culture as a whole; secondly, literature has its own unique characteristics and is not just a cultural phenomenon in general. These two points show clearly that any work of literature can be analyzed as a cultural text; however, if it is restricted to this dimension, the analysis misses the specific characteristics of literary texts. From my personal observation, the dominant tendency of ecocriticism internationally is actually "cultural ecocriticism," which reduces literary works of art to cultural texts in general (see Cheng and Bull, 2000).

I propose that literary ecocriticism should be "aesthetic ecocriticism," which is based on ecoaesthetics and focuses not only on cultural issues, but also on aesthetic issues. This chapter might be viewed as the beginning of the new form of ecocriticism.

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A Degrowth Project: a Strategy to Counter the Crisis

The idea of degrowth has always been a strain green thought, but what exactly would degrowth mean for our economy, society and relationship with the planet. Does degrowth provide the answer to the social and ecological crisis?

Given the convergence of interconnected crises, which one could call an anthropological crisis, degrowth, a catch-word for a recent explosion of thought and socio-economic experimentation, aims to initiate a democratic and peaceful transition to new models of sustainable and desirable societies. This is what we have tried to elaborate upon in our collective work "A Degrowth Project-Manifesto for an Unconditional Autonomy Allowance". Thus, based on our discussions, debates, experiences, and proposals, we support the establishment of an unconditional revenue, issued in non-monetary drawing rights on resources and access rights to public services, in addition to monetary allocations in local currencies rather than in Euros.

1 A Degrowth Project – Manifesto for an Unconditional Autonomy Allowance, Utopia. Vincent Liegey, Stéphane Madelaine, Christophe Ondet Anne-Isabelle Veillot. Questions and answers freely inspired from interviews conducted by Emmanuel Thomas for the Basic Income website and by Coralie Schaub for Liberation.

- Advocating for degrowth in the midst of soaring unemployment, isn't it indecent/absurd?

Growth does not ensure full employment: it's a myth. Over the past forty years, GDP has grown but so has the unemployment rate. Imposing austerity, which has devastating human consequences, and hoping for growth to return, while turning a blind eye to ecological collapse is simply irresponsible. We cannot grow infinitely in a finite world.

- The term degrowth frightens…

Degrowth is a provocative word used to instigate an in-depth debate. What are we producing? How? Why? Growth requires us to produce more and more useless things by exhausting resources. How does one escape the vicious circle and reinvent a society that values human relationships and an alternative relation to the tool, production, and nature? What is happening in Latin America around the concept of "buen vivir" [« good life », ed.] interests us. Degrowth by no means suggests we return to the Stone Age. The first of all degrowths must be a degrowth in inequalities.

- How to achieve degrowth?

First, we must forsake the religion of economic growth. We must reclaim the authority to issue money, cancel repayments for illegitimate portions of the debt, partially or totally nationalise the banking system, ban tax havens, and tax financial transactions. Establishing a maximum acceptable income (MAI), around four times the minimum income, in contrast to the current situation where the maximum revenue is 4,000 times greater than the minimum revenue. In parallel, we propose an unconditional autonomy allowance (UAA) enabling everyone to have access to a decent and frugal life, from birth to death.

- What is the unconditional autonomy allowance (UAA)?

The idea originated within the degrowth movement from concepts such as unconditional basic income, the extension of free usage spheres, the proper or improper use of resources, and pra-

ctical alternatives. We have also led discussions regarding the maximum acceptable income, the debt crisis, administering the monetary system within a democratic framework, and then end of the religion of economic growth.

Putting that all together, within a transitional approach that incrementally re-locates the economy, we came up with the idea of a demonetised basic income, provided mainly through drawing rights on resources and allowances in local currencies.

- Unconditional Autonomy Allocation and Unconditional Basic Income?

We support an unconditional basic income for reasons of social justice, because it would reduce the suffering caused by growing inequality and austerity. We are also in favour of it because it's a tool to prevent alienation from work, to overcome the centrality of labour value, and to progress towards a society of chosen activities.

However, we are very cautious, for if such a measure is implemented without an understanding of the meaning of our production, our consumption, or the very important role publicity plays in our societies, it may lead to something rather worrying where the consumption of things that aren't useful is continued. Basic income, according to Milton Friedman's version, could also lead to the destruction of a number of social minima or labour rights.

We are therefore entirely favourable to a basic income, provided it is encompassed within a vision of society; broader thinking about a transition towards new local, alternative, economic models that take into account environmental concern; and considers questions at the heart of our thought: What are we producing? How? For what use?

- Would basic income constitute a step towards UAA?

We have developed three implementation scenarios. In the first, we rely on the transition already underway, the set of concrete alternatives emerging around the world (local currencies, permaculture, local recycling workshops, and local exchange systems). We can gradually develop a new way of producing, alternative

economic models and put the UAA in place. But this step, while necessary, is not sufficient because it doesn't take into account the problem of power, conflicts of interest, and power struggles.

In the second scenario, while continuing to focus on practical alternatives, we imagine a significant reduction of working time in order to share the fruits of labour and put an end to unemployment. Free time could be invested to further develop alternative models of local economies and to re-appropriate tools and production at the local level.

Finally, the third scenario effectively involves establishing an unconditional basic income. That's fairly easy to set up technically, but it requires a lot of political courage. It would entail political power, democracy re-appropriating the economic system, total or partial cancellation of the debt, and a re-appropriation of central banks and monetary creation. We would establish an unconditional basic income coupled with a maximum acceptable income and, little by little, we would convert the income provided in Euros into drawing rights on resources and alternative local currencies.

- How should disparities among territories be dealt with?

The UAA would offer more rights to people who use them to organise local citizen-deliberations, a strengthening of democracy, and a discussion on what we consume. We ask ourselves about the level of sustainable consumption, how to produce and deliver energy, and at what level of consumption a higher price should be paid.

All this is has to take place over time, not overnight or in an authoritarian manner. We start to provide part of gas, water, and electricity consumption for free and progressively (we increase prices according to a price increase curve over ten years, for example), which allows time for everyone to adapt. In addition, this allows people to make necessary changes to their lifestyle, houses, and relation to others.

It thus simultaneously affords protection for the poorest, by providing quick access to basic needs free of charge, and works as a transitional tool that makes us think about how we produce and use energy and how to change our lifestyle in order to change our consumption significantly.

Isn't competition between territories likely to increase?

There is a risk, but today the competition exists, especially when it comes to water and it's extremely violent. Water is not managed in a democratic fashion or in a way that takes into account major environmental issues, but according to the delusional myth of the invisible hand. One of the challenges of the UAA and for the degrowth movement in general is redefining our needs and behaviour to organise locally and openly through exchanges with others to produce what we need in a sustainable manner.

From a transitional perspective, the objective it to reduce our carbon footprint. Clearly, solidarities will have to be imposed. But the goal, ultimately, is to strive for societies that are as autonomous as possible.

- UAA transfers in the form of drawing rights and local currencies denies individuals the liberty to consume products that aren't local, doesn't it?

We are not against maintaining local, regional, national, or supra-national currencies. This is not about having everything local against everything global. It's about trying to find the right balance. Local currencies, apart from being fairer economic tools, are tools that help re-appropriate politics and re-politicise society, because people are led to question their consumption, production, and uses. This is by no means something that is opposed to freedom of movement and currency exchange will likely continue to exist. We are not in favour of banning people going for joyrides in the forest with their large 4x4s. However, they do have to pay the real price for it, in terms of the environmental impact it has, as well as its impact in terms of human labour and petrol used to make it work.

Globally, 20% of the population has appropriated 87% of the world's natural resources. In Europe, we live in a cocoon – especially the rich – because we never see the negative externalities our consumption is generating. We pay dearly to keep the illusion of freedom to consume, both in terms of the environment and in terms of the exploitation and destruction of other populations around the world. The logic behind re-locating our production

is to break with this illusion of freedom. If environmentally harmful products that required the exploitation of lots of people were produced locally, I would find myself face to face with the consequences of my actions.

- You talk about democratic transition over the long run, devoid of authoritarianism, but at the same time you discuss imposing a maximum acceptable income and requisition housing. How do you have the part of the population that stands to lose from such a proposition accept it?

The choice is between degrowth by choice or recession by necessity. The European Union has imposed the latter through barbaric austerity plans. Greece's ecological footprint has decreased because people have nothing, consume only the minimum when they can, no longer work or use their car. The human consequences are devastating.

But we also see that the Greeks have developed alternative economic models. Notably, we have the example of the potato revolution [direct producer to consumer sales, ed.]. Some print drachmas, others set up time exchanges (the unemployed doctor offers his services to the unemployed carpenter and vice versa … The recession experience has lead to the results chosen degrowth is aiming for. However, the path taken would have been extremely different.

Editorial Note

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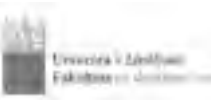

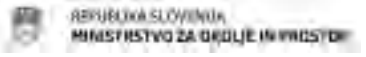

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Political ecology is distinguished from political environmental sciences in such a manner that not only posits “the environment” as the subject of investigation, but also places and contextualizes environmental issues in the asymmetrical relations of social and political power.

Due to their differing notions and assumptions regarding technology, economy, democracy, nature, the environment, etc., environmental discourses are a source of many (mis)understandings among societal actors. This often leads to mutually conflicting proposals for solutions and consequently political struggle over and among them.

The overarching aim of the school is to establish a common understanding of different perspectives concerning environmental and ecological issues (i.e., environmental discourses) and thus to enable a more comprehensive and nuanced mental framework to emerge.

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