

Where to Now?

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"Against Political Ecology"?

In a 1999 essay, Andrew Wayda and Bradley Walters made an argument "against political ecology," insisting that the move away from apolitical human ecologies of the past, while refreshing, had gone too far, producing an analytically weak and dogmatic research trajectory where political economic forces always determine ecological outcomes. Political ecologists, they charged, know the answer before they start to do their research. Instead researchers should pursue "event ecology," where single environmental events are explained inductively, and less politically, in an expanding set of causes and effects.

Only three years earlier, Richard Peet and Michael Watts offered an inverse criticism. They suggested that, rather than a clear and coherent theory to account for environmental change, political ecology offered haphazard, contextual, and ad hoc accounts following "chains of explanation" with no coherent privileging of central driving and systemic tendencies. Instead researchers should pursue a "liberation

ecology," where a more political theory of political ecology might better direct coherent normative explanations of social and environmental change, using materialist conceptions of consciousness, poststructuralist theories of discourse, and some form of environmental determinism.

It would be easy to get the impression, if one were to simply read criticisms and not actual research in the field, that political ecology can't seem to get anything right. Either it is hedged-in by dogmatic theory or it has too many loose accounts of causation. Either it is too little concerned with environmental impacts, or too little concerned with the relative and constructed nature of environmental process; by trying to be all things to all people, perhaps political ecology has failed altogether.

Too much theory or too little?

In reviewing *Land Degradation and Society*, Peet and Watts conclude that political ecology offers only:

an extremely diluted diffuse and on occasion volunteeristic series of explanations. Degradation can arise under falling, rising, or stable population pressures, under an upswing or downswing in the rural economy, under labor surplus or labor shortage; in sum under virtually any set of conditions. . . Political ecology is radically pluralist and largely without politics or an explicit sensitivity to class interest and social struggle. (Peet and Watts 1996b, p. 8)

Such a description seems alien to the literature I surveyed in the preparation of this volume. Whether in the record of the conservation state as an expression of colonial/postcolonial order (Chapter 8) or in the class and gender processes that define and redefine control of productive resources (Chapter 9), the persistence of a few key patterns and forces, even amidst diverse regional differences, is impressive.

Indeed, when united, these patterns form a coherent, if somewhat eclectic, theory of political ecology. Consider the theoretical claims, concepts, and conclusions that are demonstrated in research around each of the four theses summarized previously.

That land degradation:

- is a regionalized phenomenon conditioned by trans-regional patterns of accumulation and declining producer margins
- is mediated by the adaptation of land managers and the variable reversibility and multiple equilibria of environmental system states

That global conservation efforts:

- are ordered around the increasing governmentality and internalization of state rule
- tend towards the territorialization of conservation space despite the non-territorial character of social and ecological processes
- depend on the construction of "wilderness" where human populations have often been active agents of environmental change in the past
- present an aggressive challenge to historically important local social ecologies

That environmental conflicts:

- result from environmental development practices that are conditioned by classed, gendered, raced imaginaries
- fall along extant faultlines of regional social stratification that determine differential environmental access and responsibility
- embody classed and gendered struggles over highly malleable property institutions

That emerging environmental movements:

- are born of the differential risk and ecological injustice that develops from patterns of uneven development
- develop from challenges to traditional ecological economies and so lead to resistance centered around producer livelihoods
- rarely follow simple patterns of resistance to "development" and "modernization" articulated by romantic observers, since the terms of resistance are set on the anti-colonial margins

In light of these, it would be difficult to defend the claim that there "is no serious attempt" on the part of political ecologists "at treating the means by which control and access of resources or property rights are defined, negotiated, and contested within the political arenas of the household, the workplace, and the state" (Peet and Watts 1996b, pp. 8-9).

At the same time, political ecologists continue to hedge their bets before predicting anything so bold as a single set of structural forces under which land degradation must happen. The literature suggests complex networks that organize over time to produce new environments, each contextually quite different. Consider, for example, the complex case of St Vincent surveyed in Chapter 7. Clearly, global markets set the terms of nutrient extraction from regional soil, but the politicized local responses and innovations that result create highly variable outcomes. As Rangan explains, unlike its apolitical counterparts, theory in political ecology recognizes human/non-human relationships to be linked through dynamics that may yield unpredictable consequences (Rangan 2000, p. 63). In light of this kind of robust contextualized explanation (which leaves political ecologists open to the kind of criticisms launched by Peet and Watts), Vayda and Walters's claims are all the more unconvincing. It is certainly clear that there is no single, overriding, or dogmatic set of inevitable conclusions in political ecology, despite some claims to the contrary.

Denunciations versus asymmetries

These kinds of critiques really represent a form of mutual denunciation. Peet and Watts remain admirably skeptical of concepts like "event ecology" because they smack of *ad hoc* and apolitical science, long demonstrated to be a dead end. Vayda and Walters justifiably wonder where the environment has gone, as well as the surprise, in political ecological explanation. But even as these two positions denounce one another, they are forwarded on a very thin and purposive reading of the political ecological literature. What I hope this book has demonstrated is that this field is hard

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to characterize in any such blanket criticisms. While I am sure we can find samples of research that fit the contradictory profiles of Peet and Watts and Vayda and Walters, they poorly capture such a dynamic enterprise.

More than this, these critiques are, in many ways, false issues, in that they point to inevitable tensions in all forms of explanation, none of which are unique to political ecology. A single emancipatory theory of socio-environmental degradation, as called for by Peet and Watts, must inevitably collide with Vayda and Walters's call for an inductive event ecology. Vayda and Walters call for a refocusing on the material, while Peet and Watts call for a refocusing on the constructed. Vayda and Walters insist political explanation has gone too far, while Peet and Watts argue that it has not gone far enough. Each represents a denunciation of the other, but neither may have much bearing on the issues facing political ecology.

Having said this, the impatience that Peet and Watts and Vayda and Walters express in their criticisms does suggest several problems within the explanations dominant in political ecology. These are threefold. First, it is indeed difficult to reconcile a serious effort to understand the objective conditions of ecology, especially as a determinant biophysical explanation for social events or conditions, with our increasingly clear understanding of the constructed character of the categories we use to describe and assess that ecology. Second, it is difficult to see how the lessons and theoretical insights of traditional political ecology can be applied to processes away from third-world agrarian environments, even while we intuitively know that first-world cities and other spaces are enmeshed in the same processes. Third, it is hard to imagine an explanatory framework that takes seriously both the highly localized conditions of production as well as the power and impact of non-local players (states and firms) as well as those of non-human agents, without retreating to a crude global/local hierarchy on the one hand, or surrendering to determinism on the other.

Three Calls for Symmetry

I would argue that these problems are less about "too little" or "too much" theory, ecology, or anything else. Nor are they the result of anyone going "too far" in one direction or another, materialist, constructivist, or otherwise. Instead, I would argue that these weaknesses are a result of asymmetries in explanation. By opening the focal length of political ecology's lens to capture symmetrical processes, many of the apparent theoretical conflicts over explanation may yet disappear.

★ From destruction to production

The efforts of traditional political ecology have been directed as reactions to apolitical ecologies. As such, research has often focused on demonstrating that the causes of environmental "problems" (defined by ministries, media, and other powerful agents) were not always what they appeared to be. These problems, for example soil erosion, were assumed to exist in an unproblematic way, only their explanation was challenged.

As both better environmental science and genealogical approaches were applied to these problems, however, two parallel discoveries were made. First, the environment turned out to be more complex and variable than was previously known. This

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made a simple focus on explaining land degradation difficult, since the biophysical phenomenon of degradation became harder to define, measure, and predict, at least in any simple way. At the same time, historical examinations of conservation science were beginning to suggest that the very apolitical notion of "degradation" is itself a highly relative and power-laden concept (Demeritt 1994).

The implications of this happy convergence of thinking are twofold. First, it demonstrates that while tensions between scientific ecology (measuring degradation) and constructivism (defining degradation) are perhaps inevitable, they need not restrict cooperative and mutual exploration of social/environmental phenomena. "Why has the environment changed?" is a question inevitably intertwined with "How are the terms of change defined and by whom?"

Second, this increasing ambivalence towards prognostications of environmental degradation further suggests that a switch from metaphors of environmental destruction (or construction) to those of production would benefit all parties to the dispute. Following Neil Smith's (1996) essay on the subject, I would suggest simply that the environments around us, including and especially those composed of non-humans, are clearly produced. Forests are produced as much as factories, polar ice sheets as much as reservoirs, Yellowstone's wilderness as much as a toxic dump. That human beings are by no means the only players in the production of these spaces makes them no less artificial (in the sense of "created"). Indeed, as political ecologists continually emphasize, the environment is not a malleable thing outside of human beings, or a tablet on which to write history, but instead a produced set of relationships that include people, who, more radically, are themselves produced.

The case material reviewed in this volume seems to support such a proposition. Indeed, research in political ecology, whether by accident or by design, seems to meet the challenges laid down by Smith in his essay, simultaneously expressing: "the inevitability and creativity of the social relationship with nature; the very real project of domination embodied in the capitalist mode of production; the differentiated relationship with nature according to gender, class, race, sexual preference; the implausibility of autonomous nature; and a strong response to the almost instinctive romanticism which pervades most treatments of nature" (Smith 1996, p. 49).

This does not mean a retreat, however, from normative environmental struggles against undesirable outcomes: lost species, ugly life spaces, toxic landscapes. Just because all environments are produced does not mean all environments are inevitable, desirable, just, or sustainable. It simply represents a renunciation that there is a social/environmental state to which we can and should ever return. This does not undermine environmental struggles; it simply suggests we approach them with a new language. Indeed, this conception helps us to symmetrically imagine human and non-human processes in the landscape, surrendering a position of "mastery" over the non-human world; this being, after all, the ultimate goal of mainstream environmentalism (a movement Smith unfairly chastises).

From peasants to producers

A second tension in political ecological explanation is that between typical research in third-world environments amidst primary producers and emergent work in first-world environments amongst very different populations, including professionals,

consumers, and other players in global political ecology. At first blush, it would certainly seem as though the tools and lessons from one location poorly transport to another. What does the "moral economy of the peasant," with its inherent orientation towards calculation of cropping risks, tell us about someone driving an SUV in Peoria, after all, or about a delegate to a conference on global warming? This conundrum has occupied the attention of several scholars recently, with some calling for regional approaches to the problem (North American political ecology, West African political ecology, etc.), rather than assuming first world/third world binaries (Walker 2003). What I would suggest, however, is that while political ecological concepts seem ill suited to different worlds, these differences might well dissolve if their frameworks were directly applied to differing and apparently alien circumstances (McCarthy 2002).

Consider, for example, the case of the American lawn, a consumer ecology with serious implications for human health and ecosystem integrity because of the high levels of inputs required in its maintenance. An explanation of the lawn, usually viewed as a unique historical artifact of American regional culture and therefore fundamentally different from crops in Africa or forests in India, has typically proceeded in an apolitical cultural-historical fashion. Where did the aesthetic come from? How was it introduced? (Jenkins 1994).

But by symmetrically imagining the lawn to be, on the contrary, exactly like third world food crops, political ecological doors are flung open. Consider: the lawn produces instrumental capital value for its cultivator in property values (Robbins et al. 2001); the lawn represents shared community capital and is enforced by cooperative/coercive neighborhood moral economies (Robbins and Sharp 2003); the lawn becomes a chemical treadmill for its owner since green revolutionary inputs are increasingly required to maintain its form and value (Robbins and Birkenholtz 2003); the lawn is a sink for global corporate chemical firms desperately seeking new markets amidst declining margins (Robbins and Sharp 2003). How does this differ from the complex and embedded decision context of a wheat cultivator in Rajasthan?

Analysis of systems of ecological production should therefore be extended to all manner of players and actors, treating them all as *producers*. This means doing detailed ethnographic analysis of soil science laboratories, ministry offices, and housing and urban development meetings, since lab technicians, ministers, and bureaucrats are all producers, enmeshed in moral economies, with structured production incentives, embedded in local knowledge systems, cognizant of the classed, gendered, and cased divisions in access and power as they produce landscapes.

From chains to networks

An equally vexing problem for political ecologists is the habit of explanation born of Vayda's progressive contextualization and Blaikie and Brookfield's chain of explanation. By always following explanation "upwards" from produced environments, through producers, and on to increasing scales of interaction (typically the community, the state, and the global economy), a conceptual hierarchy of power and causal force is imposed on political ecological problems that is empirically unfounded, and perhaps politically undesirable. Producers control landscape outcomes, their

Foresters, and people

If political ecology teaches us anything, it is that forestry can be a violent, accumulative, and ecologically problematic business. But what do we really know about the people who enact forestry programs, or about the way they imagine forests, farmers, soils, or anything else for that matter? Despite decades of research in political ecology, these questions seem mysteriously unanswered. As anthropologist Michael Dove notes: "The acknowledgment that the interests of the farmer must be reckoned with if forestry development is to succeed, while once a radical idea, is now widely accepted in forestry development. Yet development setbacks and failures in the forestry sector persist, in part because one player remains to be recognized: the national forest services and their forester" (Dove 1994, p. 333).

Dove further argues that the study of peasants rather than extension agents, and a focus on farmers instead of project planning rooms, is a habit of thinking inherited from traditional ethnography, and its focus on the exotic Other. Therefore, even where critical scholarship seeks to redress problems and advocate the rights of producers it remains focused on members of producer communities - business leaders, laborers - rather than examining state agencies and civil servants who create the conditions in which other people toil. This represents disproportionate attention to the "study of indigenous movements and NGOs rather than government ministries and to the study of local organizations of resistance rather than central organizations of oppression" (Dove 1999, p. 240).

As Dove insists, however, this problem is "a predisposition, but not an incapacitation. In the past decade or two, we have seen ample evidence of the capacity of ethnographers to study not just distant and marginal communities but close and powerful national and transnational institutions" (Dove 1999, p. 239).

Returning to our first question then. As it turns out, careful exploration of the social life of foresters reveals that they are often poor people, in marginal economic positions, with peculiar local ecological knowledges, situated within confined fields of agency by socio-economic structures of environmental control and power, all within conservation discourses promulgated by distant elites (Robbins 2000). In other words, they are a lot like the rest of us, except that their official context constrains their imagination of the world in a specific way. These official constructions of reality often create a barrier to more democratic and sustainable practices, but they are amenable to change, if they are well understood.

Michael Dove has opened a box for political ecologists that has been closed too long. A new generation of scholars will have to take up this challenge, don their pith helmets and enter the thickets of ministry offices, forestry nurseries, water quality laboratories, the realms of many intriguing indigenous peoples.

behavior is prefigured by community dynamics, set within state policies, controlled by trade agreements, all within a vast system vaguely described as "global capitalism." The ascent in scales also imposes a "chain of command" where players at distantly removed scales (peasants, states, the World Trade Organization) have little interaction.

Always and upward
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But using this approach, how do we understand the relationship of varying producers of nature – those on the farm, in the lab, and in the office – as they mutually create the landscape while mutually coercing one another? Moreover, how do we understand the role of non-human actors – soil microbes, animals, and trees – as they participate in this production, acting either in a cooperative fashion (some trees grow well in agroforestry plots and increase production) or an uncooperative one (some trees favor human disturbance habitats but further invade and decrease production)? The chain of explanation is a poor conceptual tool to manage such linkages and relationships. A shift away from this way of thinking towards a comparative-anatomy of networks is therefore a more viable mode of explanation.

Networks organize and are organized by a range of human and non-human actors, through systems of accumulation, extraction, investment, growth, reproduction, exchange, cooperation, and coercion. While diverse, each network is by no means unique. Common patterns of exploitation and environmental change reflect common network morphologies and common processes. By explicating networks, therefore, we come to a better understanding of recurrent socio-natural situations, especially undesirable ones. Rather than manipulating or waiting for changes in global political economy to trickle down a chain, a network allows us a range of places for progressive political action and normative change.

The Hybridity Thesis

None of the revelations I have suggested above are altogether new, even if they are somewhat fresh to formal political ecology. A focus on production of nature rather than destruction/construction follows the call of social studies of science and technology (Latour and Woolgar 1979; Latour 1987; Porter 1995; Latour 1999; see Hess 1997 for a comprehensive overview). A focus on networks reflects ongoing evolution of explanation in the social sciences, but especially in critical development studies (Bebbington and Batterbury 2001). An increasing interest in non-peasant producers, laboratories, and bureaucrats is well established in feminist approaches to science (Haraway 1989; Merchant 1989; Harding 1990; Keller 1995) and in critical analyses of policy science (Salter 1988; Jasanoff 1990). Together this work paints a picture of a produced world, where politics hold sway, but which involves global migrants, both human and non-human, who produce and consume landscapes and knowledge, remaking the world as they go. This is nowhere more evident than in the circulation of non-human biological agents through the global political economy, including the plants, animals, and microbes, which, in the words of Spencer and Whatmore (2001), create as they continuously collide with human affairs, “the circumstances and anxieties of today’s world, characterized as it is by a widespread sense of a massive and irreversible socialization of the bio-physical world, whether purposefully through biodiversity conservation programmes or unintentionally through global climate change processes” (p. 140). Clearly a shift towards production of nature, producer politics, and networks of interaction – a “more-than-human geography” – is on the agenda throughout the social sciences, and political ecologists would benefit from the innovation it offers (Whatmore 2003).

At the same time, however, research in cultural and political ecology brings many things to this agenda that are clearly lacking. First, political ecological work has

historical depth, which reminds us that such collisions, between plants and people, animals and crops, or soils and research institutions, are neither new nor unique to first world practices of genetic engineering. Indeed it is that very modern conceit – that society is at last triumphant, having mastered the boundary walls between nature and culture – that disintegrates under the scrutiny of political ecology surveyed previously in this volume.

Political ecology also has a highly flexible focal length, which crosses scale and frames its analysis as easily on global institutions and scientific labs, a focus typical of much work in critical science studies, as on peasants, hunters, and homemakers, constituencies which are sometimes overlooked. Similarly, political ecology brings a problem orientation to these issues that is immediate, practical, and designed to show flaws and propose alternatives to real policy measures, a much-vaunted goal in critical environmental studies (Castree 2002).

Finally, cultural and political ecologists, especially the former but to no small degree the latter, are experienced in examining biophysical processes or at least talking to biophysical scientists. This is so much the case that when Whatmore (2003) advocated hybrid research by stating that “perhaps it is too late to repair the gulf that has opened up between human and physical skills that once permitted conversations between cultural geography and biogeography” (p. 139), one would need only consider the wealth of skills and practices of political ecologists described in this volume to imagine a retort.

The resulting approach indicates a new argument, which for lack of a better name I call here the hybridity thesis. It suggests certain tendencies and trends in the collision of human and non-human nature and paves the way for new research. While this thesis is as yet perhaps too underdeveloped to paraphrase here, its abstract outlines are suggested.

The hybridity thesis: the ecological characteristics of non-human nature and its objects (dung, climate, maize, lawn grass, bacteria, goats, and tropical soils) impinge upon the political world of human struggles. Yet as these characteristics and agents are altered in their interactions with humans, whether purposefully or unintentionally, they assume new roles, set new terms, and take on new importance. People, institutions, communities, and nations assemble and participate in the networks created in this interaction, leveraging power and influence, just as non-human organisms and communities do. In recent history, powerful modern institutions and individuals (environmental ministries, multinational corporations, corrupt foresters) have gained undue and disproportionate power by explicitly attempting to divide and police the boundaries between human and non-human nature, even while allying themselves and building new connections to the non-human world, leading to unintended consequences and pernicious results. In the process, resistance emerges from traditional, alternative, and progressive human/non-human alliances marginalized by such efforts (usually along lines of gender, class, and race).

Political ecologies of success

Far from a revolutionary break with the way political ecologists are thinking, this network approach is essentially a distillation of *de facto* practice in the field. It is perhaps best exemplified by several recent works on peasant adaptation to changing

markets and local environments, which are surprising since they show success stories, rather than the usual disasters that are more commonly the stuff of political ecology.

Lawrence Grossman's *Political Ecology of Bananas* (Grossman 1998) and Tom Bassett's *Peasant Cotton Revolution in West Africa* (Bassett 2001) both startlingly conclude that the development of commodity production for the global market amongst small producers, which typically leads to social and environmental trouble, has proved successful. In both cases – Grossman's St Vincent and Bassett's northern Cote D'Ivoire – peasant production of cash crops has led to relatively stable incomes, stable ecologies, and stable communities, despite predictions to the contrary. Why should this be so?

In answering, Bassett and Grossman both draw attention to the specific networks formed between (1) biophysical conditions, processes, and agents, (2) producers and producer communities, and (3) state actors and policies. In Cote D'Ivoire rural peasants did not abandon their social networks and modes of exchange in their transition to intensive cotton production. They did, however, reconfigure their cropping rotations and crop ecologies as they simultaneously began to negotiate new gendered rules for labor and expand their use of new systems of credit and technology. Most significantly, local producers began to make demands on the state, organizing strikes and forcing new relationships with state pricing boards. New alliances between state actors and producer groups set the stage for a surprisingly progressive outcome in a global environment otherwise typified by marginalization (Bassett 2001).

In St Vincent the growth of contract farming resulted in the maintenance of peasant communities, rather than their dissolution. Here, the specific ecological conditions of banana production made the extension of an industrial model of processing difficult. Producer cooperatives, formed in and through the state, spread risk and costs through new, wider channels, and allowed locally specific practices and technologies to thrive. Like the Ivoirian case, St Vincent defies the predicted decline of the producer, predicated on the decline of the state, in a context of supranational markets and institutions. This is because a specific configuration of ecological elements, producers, producer groups, and state agents was formed to resist and adapt to change, a causal process that poorly resembles a vertical chain.

Both of these networked outcomes may indeed be quite fragile. Major changes in global crop prices or the institutional autonomy of these small countries in the face of GATT (General Agreement on Tariffs and Trade) and the World Trade Organization, for example, would force serious changes in either situation. The robustness of these networks may make them adaptive to changing conditions, however. So too, the common configurations of these networks may provide a model for other producer polities around the world, as they similarly seek to retain their rights, their land, and their dignity. Consider, for example, the concerted and successful pressure exerted by poorer cotton-producing nations in challenging what they saw to be unfair trade restrictions during the October 2003 Cancun negotiations of the WTO; these inversions of "free trade" in commodities challenge relationships between the environmental periphery (like Cote D'Ivoire and Brazil) and the established core (the United States and the European Union).

New substantive research mandates

Like political ecologies of success, there are obviously countless substantive areas of research that remain unexamined in political ecology, including the political ecology of Eastern European transition, the political ecology of the drug trade, and the political ecology of trash, waste management, and garbage subsistence. But the conceptual re-imaginings that follow from the hybridity thesis draw attention to three specific areas of concern that need far more attention than they currently receive: human population dynamics, genetically modified landscapes, and the urban environment.

Population is too important to be left to the Malthusians The primary legacy of Malthusian explanation for political ecology is that researchers in the field are constantly on guard for its logics and constantly unteaching it in classrooms and development institutions. Massive demographic shifts are occurring around the world, however, that are worthy of critical attention. Consider some parts of Latin America, where birth rates are falling precipitously through changing fertility behavior, or AIDS-driven depopulation in many parts of the world. What do these mean for household labor, the politics of local service provision, and the environmental power of differing age cohorts? What new ecologies will be formed in such demographic and technological shifts? What new farms, factories, and markets may emerge in the aftermath of population decline?

Conversely, many tribal communities, who were on the brink of extinction only a few decades ago, are achieving tremendous population growth and expanding in an explicitly political effort to secure and occupy traditional territories, many of which are conservation areas. What might this portend for future environmental dynamics and relative political power in tribal areas and the states within which they are nested? The aversion political ecologists feel for some population theory must not keep them from understanding the political ecology of demography.

Genetic modification won't go away In the last few years, Monsanto's Bt Bollgard cotton was released legally in South Africa. It was also planted in Zimbabwe without permission and has applications pending in many southern African nations. United States companies have further introduced the plant in Zambia despite state resistance (Kuyek 2002).

Bt plants, inserted with the genes that make the soil microbes of *Bacillus thuringiensis* toxic to insects with the aim of creating a plant that will naturally resist common pests, represent a novel influence on politics, economy, and ecology, like other transgenically modified cultivars. Yet unknown is the degree to which these plants may cross-pollinate with pernicious weeds. So too, it is unclear how quickly these new cultivars are replacing local agricultural diversity. Nor are the local peasant economics of these species clear, or whether the plant's introduction may lead to consolidation or instead to opportunities for small producers. State efforts to keep such plants out of their borders, moreover, are challenged both by illegal introduction and incidental contact and pollination.

The ramifications of these introductions for landscapes, local power relations, and global economic exchanges are tremendous. Critical environmental research has so far been slow to empirically engage the question, however, and little work has been

done by political ecologists to examine transgenic landscapes in detail on the ground. If the effects of these changes, which seem now to have a lot of momentum, are to be tracked and the forces at work in their introduction challenged, political ecologists will have to start now.

Cities are political ecologies While we often think of the densest flows of nutrients, elements, and energy to be those of tropical rainforests and diverse savannas, they are certainly at their most complex in urban environments. City streets, gardens, golf courses, kitchen sinks, and garages are all teeming with life, connected and regulated through systems of power and fixed through investments of capital. Cities offer many of the same complex conditions as a rural town, moreover: environmental conservation remains a mechanism for control; marginalization of communities is tied to the production of new, and often undesirable, ecologies; political conflicts are commonly articulated as ecological ones, owing to differential human access and responsibility in nature; social movements emerge from the daily business of making a living.

A political ecology of the city can expand beyond simply identifying the unequal distribution of risks and environmental "bads" to explain how these urban ecologies are produced and why these ecological networks look the way they do. Tracing flows and clusters of garbage, trees, energy, runoff, and disease through built urban space, and examining governance of green spaces, both public and private, should be all the easier in a political ecology informed by a notion of the produced character of nature. Agnostic to whether or not a forested "wilderness" or a suburb is more natural, political ecology might integrate critical theories of urban growth, decay, investment, and control with ecosystem analysis of daily life.

Against "Against Political Ecology": Retaining both Theory and Surprise

Obviously, there is too much important work to do to surrender the field to any new form of "ecology" that purports to explain a complex world without a broad range of critical tools. Even so, many of the old habits of political ecological explanation will have to be transcended if the field is to move forward conceptually. Political ecologists will have to seek simultaneously the theoretical coherence suggested by Peet and Watts, while opening their methods to the empirical surprise suggested by Vayda and Walters. It will also mean wrestling with a bold new range of substantive topics. The next generation of research stands to make real strides in critically explaining environmental problems and facilitating the environmental successes to come.

In the Meantime . . .

In the meantime, however, forests in Asia are being cut down to line the pockets of already wealthy officials and global timber traders. Simultaneously, monocultural tree plantations have displaced traditional tribal forest and grazing lands from Latin America to South Africa.

Each United States citizen consumes 1,600 liters of gasoline every year, with obvious implications for global warming. Petroleum exporting countries like Nigeria remain some of the world's poorest.

Migrant workers exposed to agricultural chemical pesticides experience daily bouts of weakness, fatigue, nausea, muscle pains, and cramps, while living with a grossly heightened risk of leukemia. Voluntary applications of similar organophosphate pesticides on middle-class lawns put children and ambient ecosystems at risk. Together these uses fuel a multi-billion-dollar global industry.

During the last century 90 percent of global agricultural crop diversity has been lost, even while pests and diseases are mutating and expanding at an accelerating pace. Even so, introgressed transgenic maize has been introduced into central Mexico, the original center and origin of native maize landrace diversification, risking serious genetic decline.

The best-selling books that address these issues, on the other hand, insist that the disparity of nations is a product of the shape of continents (Diamond 1997) and that environmental crises are statistical fictions (Lomborg 2001).

If political ecology has taught us anything, it is that we can do better than that. We can do better than that.