

Allocating Ecological Space

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Liberals have long been committed to two axiomatic claims about freedom: that the exercise of control within one's private space epitomizes individual liberty, and that each person must be free to define and pursue the good life for themselves. Together, these claims form a conception of freedom as *autonomy* (from the Greek *Auto-Nomos*, giving law to oneself), conceptualized as a personal space in which each can act according to one's own view of the good, free from external constraint. Liberal theories of justice have embraced such claims about autonomy, defining justice in terms that recognize sovereignty within one's personal space and protect individuality. John Rawls's primary goods,¹ Ronald Dworkin's resources,² and Amartya Sen's capabilities approach³ all focus on instrumental goods within a metric of egalitarian justice, allowing individuals full control over their personal spaces of autonomy while maintaining the bases for interpersonal comparison that distributive justice requires. This spatial conception of liberty has dominated liberal thought at least since J. S. Mill's observation that "the only freedom which deserves the name, is that of pursuing our own good in our own way, so long as we do not attempt to deprive others of theirs, or impede their efforts to attain it."⁴ Here, Mill not only defines individual liberty in terms of autonomy, but he also specifies its limits: each of us should be free to pursue our own ideas about the good within our own space, bounded only by the space of others, where our acts infringe upon their autonomy.⁵ If this autonomous space is to play the role that Mill and other liberals have long assumed, it must be sufficiently large to allow for a wide range of actions and choices, allowing each to express their individuality without encountering the limits that Mill mentions and the constraints on action that they entail. If almost everything that I do impedes others from pursuing the good in their way—harming them directly, limiting their opportunities, or otherwise infringing upon their space—then my personal space becomes vanishingly small, and my liberty but a trivial abstraction.

This spatial conception of freedom is challenged by analyses emerging from the ecological crisis, which offer competing accounts of personal space with quite different implications for the exercise of individual autonomy.⁶ Given ecological limits, aggregate *ecological space*⁷ (i.e., life-supporting natural resource-based goods and services, conceived in spatial terms) is finite and threatened by current patterns of over-appropriation, yielding imperatives to fairly allocate that space among various claimants, present and future. Uninhibited autonomy, as construed above, is not sustainable, justifying significant limits on both personal space and

acceptable conceptions of the good life if one person's exercise of liberty is to be prevented from diminishing another's opportunity to do the same. The personal space of autonomy has always been physical and temporal as well as conceptual in that actions undertaken within it could affect current and future others, and consideration of such effects has always set the boundaries of each person's space. Ecological limits highlight the urgency of fairly allocating personal space, bounded in this same way but increasingly scarce, and require us to resurvey its conceptual boundaries in light of its physical and temporal ones. Nearly everything we do to survive (e.g., eating, breathing), not to mention activities associated with living well, makes a *de facto* claim on ecological space, and under conditions of scarcity this could be construed as (following Mill) depriving others of the ecological space they need to pursue their good, thus justifying severe limits on our actions and choices. Given such limits, basic actions like breathing and eating may reside wholly within my personal space of autonomy—at least as it is construed in the strong sense, in which I am completely autonomous—since they occupy ecological space that could be claimed by others and which is subject to distributive justice. Insofar as my sphere of personal liberty is construed as the domain of what Mill terms “self-regarding conduct” and in which he argues that “the public has no right to interfere,”⁸ it appears that this sphere of individual autonomy becomes vanishingly small in light of analyses concerning ecological limits. If activities as basic as eating and breathing make claims on shared ecological space rather than taking place within a purely private domain, then the liberal sphere of autonomy may be restricted to exclude even rudimentary human functioning, let alone my cultivation of the sort of individuality that Mill imagined.

Since nearly all of my acts and choices make claims on ecological space, justice can no longer tenably be theorized primarily in terms of goods designed to maximize or maintain personal space, but must instead begin with considerations of how much shared space any person may defensibly claim. To challenge Mill's conclusions with his own logic, ecological limits suggest that very little of our conduct is genuinely “self-regarding” in the sense that justifies our “absolute” sovereignty within the personal spaces of autonomy in which persons enjoy “the liberty of tastes and pursuits.” Rather, nearly all of our conduct “concerns others” and thus makes us “amenable to society” and the limits placed upon our liberty in the interest of justice.⁹ Given the commitments of classic liberal theory transposed against the recognition of contemporary ecological limits, liberal justice must be transformed from a set of principles safeguarding liberty and autonomy to ones placing spatial limits on the ecological claims that persons make in their pursuit of the good life if it is to continue to play the role of arbiter among competing claims of individual freedom and guarantor of the social bases for personal autonomy. It must recognize the causal role that environmental conditions play in human welfare as well as the links between many of the activities associated with human welfare and declining environmental conditions. And it must treat the scope of justice as coterminous with that of the impacts of the relations that it governs,

extending analyses of justice across national borders and over time where the circumstances of justice require. That is to say, justice must now be centrally concerned with allocating ecological space.

The scarcity of ecological space need not undermine the classic liberal conception of freedom as autonomy, and indeed the allocation of ecological space defines the sphere in which persons can make the kind of autonomous choices that liberalism celebrates, within the constraints that it recognizes. Absent some notion of individual entitlement to ecological space, there can be no space for autonomy, for the two spaces are one and the same. I can be sovereign within my own space of autonomy only so long as I do not claim an unjust share of ecological space in the process. But the recognition of this scarcity by liberal theories of justice does require some rethinking of several classic liberal assumptions that are maintained by contemporary theories of egalitarian justice, and some changes of emphases and amendment of several normative judgments issuing from those theories in light of retained commitments from classic liberalism. In this essay, my aim is to consider how liberal egalitarian justice theory might be reshaped by heretofore unacknowledged ecological limits and how it might respond to the under-theorized but urgent imperative to fairly allocate ecological space.

What Is Ecological Space?

The fact of ecological limits and its implications for various dimensions of human endeavor have been slow to be incorporated into many existing scholarly fields, and political theory is no exception. As Aldo Leopold observed of the absence of an “ecological conscience” within the “intellectual emphasis, loyalties, affections, and convictions” of persons and normative theories, “the proof that conservation has not yet touched these foundations of conduct lies in the fact that philosophy and religion have not yet heard of it.”¹⁰ Since the development of classical liberalism predates the recognition of ecological limits and since the contemporary inheritors of that tradition remain beholden to many of its core premises about the human relationship with the natural world, it may not be surprising that political theory continues to be informed by unrealistic assumptions and to be naïve about the human potential to degrade the essential conditions for ongoing human flourishing. As this fact comes to be incorporated into political theory, its several normative implications will shape the continued evolution of liberal political thought in the same dynamic between empirical understanding and normative prescription that has marked that tradition’s adaptability to change and ongoing relevance for the past three centuries. How, though, might liberal concepts of justice and autonomy be informed by this fact, and how might they be transformed by it?

The fact of limits has been adequately observed elsewhere, but warrants a brief synopsis here to explicate its relevant features. Humans require environmental goods and services in order to survive, and desire additional goods and services beyond mere survival levels in order to flourish. We need clean air to breathe,

clean water to drink, and agricultural produce for food, clothing, and shelter. Our waste must be assimilated back into the environment, whether from bodily processes of digestion and respiration or from our use of energy and consumption of commodities. These needs are *basic* in that, following Henry Shue's distinction between basic and nonbasic rights, "any attempt to enjoy any other right by sacrificing the basic right would be quite literally self-defeating, cutting the ground from beneath itself,"¹¹ and their dependence on natural ecosystems is essential in that technological substitutes for degraded resources do not currently and may not ever exist. The satisfaction of these basic human needs and further wants has some impact on the natural environment somewhere, and we can conceptualize our aggregate impacts in terms of ecological space, or the amount of the planet's surface area needed to sustain our demand for environmental goods and services at average levels of biological productivity. The best known of such measures is the *ecological footprint*,¹² which offers perhaps the most ecumenical of matrices for gauging ecological demand at both individual and aggregate levels, but in order to focus on the spatial concept of ecological demand rather than the specific index for measuring it I shall use the more general term here.

Demand for ecological space varies widely among persons and peoples. According to Mathis Wackernagel and William Rees, who developed the ecological footprint idea and index, the average American requires 5.1 hectares of ecological space in order to sustain her annual resource consumption and waste production, while the average Indian requires only 0.38 hectares and the average ecological footprint for all humans is 1.8 hectares.¹³ Manifold external drivers affect the size of such averages, including national stages of economic development, population density, housing patterns, and so on, but within any given society and social stratum considerable variation in footprint size exist. While one's social milieu is a factor in determining one's footprint, individual acts and preferences also clearly play a significant role. Members of a common social class in the same geographic region vary widely in the amounts of energy that is required to heat and cool their homes, the distances that they must commute for work or choose to travel for leisure as well as the fuel efficiency of their transportation choices, and otherwise make a wide range of choices that can significantly increase or decrease their individual claims on ecological space. Among the drivers of such wide interpersonal variation is a personal commitment to environmental sustainability: Some have a strong preference for reducing the amount of ecological space they require as part of their conceptions of the good, often for some mix of environmental and economic reasons, while others do not. Beyond some survival threshold, individual demand for ecological space is largely discretionary, and varies according to individual preferences and social norms that can increase or diminish that demand, making some norms and preferences more sustainable than others.

One fact about ecological space has become manifestly evident in recent decades: there is not enough space to accommodate the current *de facto* claims made through human consumption patterns, let alone those of a more populous or affluent world. Wackernagel and Rees illustrate this fact and some of its

implications: given the 8.9 billion hectares of biologically productive land and aquatic ecosystems worldwide and reserving the ecological goods and services from one-sixth of that space to support all nonhuman terrestrial and aquatic species, they estimate that the planet contains 7.4 billion hectares of ecological space that can be directed toward the satisfaction of human needs and wants. With a current global population of 6.7 billion persons¹⁴ and an average individual ecological footprint of 1.5 hectares, the world is currently running an ecological deficit of 0.4 hectares/person. This alone bodes ill for the planet's future, for reasons to be considered shortly. But as the authors provocatively observe, if all current persons were to consume resources and produce waste at the rate of the average American, we would need the ecological capacity of an additional three earths in order to support this one planet's human population alone. Average human footprints paint a disturbing enough picture of unsustainable human consumption patterns, but these wide deviations from the mean reveal equally wide variations in current claims on ecological space and the related difficulties in bringing about a sustainable planet. It is possible to accommodate this sort of excessive demand on ecological space in the short run, for example, by depleting stored energy reserves and natural capital like forests and fish stocks that generate natural resources or absorb waste. But this ongoing pattern of overuse is unsustainable and degrades ecological productivity over time, resulting in decreasing amounts of available ecological space to accommodate future demands. A sustainable planet is one that is able to live within its available ecological space, given various demands on that space by all its human and nonhuman residents. An unsustainable one is literally living on borrowed time, whether that debt is incurred to the planet's past, through depletion of stored nonrenewable resources like coal and oil, or to its increasingly bleak future, through the insidious bequest of depletion and pollution to future generations.

From this one central fact, several related observations follow, and some normative implications that are often thought to follow cannot indeed validly be inferred. As I have argued elsewhere,¹⁵ global limits on ecological space based on the earth's ecological capacity cannot justify highly unequal national limits on ecological demand based solely on the unequal ecological capacities within national territories, as if nation-states are entitled to all and only the ecological resources located within their borders. Those with the good fortune of territorial natural resource wealth have no legitimate claim to far greater per capita ecological footprints merely by virtue of this natural abundance, and those fortunate individuals that command the contemporary surrogate for abundance in land cannot necessarily make a justified claim to proportionally larger shares of ecological space than their less fortunate counterparts. Principles of national and individual allocation cannot simply be inferred from global limits, which concern physical facts rather than normative claims. The sort of wide inequality in access to ecological space that is seen in current use patterns requires a separate justification from the natural distribution of ecological wealth, and may be indefensible on any terms. While the fact of ecological scarcity has been invoked on behalf of

a variety of social and political agendas, other and more controversial premises are required before many such normative judgments can validly be reached. My interest here lies in what *must* follow for liberal political theory from recognition of ecological limits, not in what *might* follow from that in combination with other assumptions or biases.

Another observation also necessarily follows: global limits combined with global demand that is well in excess of those limits entails *some* international, interpersonal, and intertemporal allocation of ecological space. At least some claimants on such space will be forced to curb their ecological demands in light of scarcity produced by the demands of others. Indeed, allocation must occur even when global demand for space does not exceed ecological limits, since it does not require competing claims but rather entails the division of some finite good among various parties. The conscious recognition of or effort to observe ecological limits is not a prerequisite to conceiving of human claims upon ecological space as constituting an allocation, as I use the term here, since to “allocate” presupposes neither a fair process or outcome nor any intention to deprive those receiving less or to reward those getting more. Allocations of this sort can be intentional and based in justified principles of distributive justice or they can be the unintentional result of current and future use patterns. If the present generation of humans ignores limits on its aggregate ecological footprint, whether from ignorance, antipathy, or outright malevolence, this necessarily comes at the expense of future generations. If the present generation as a whole observes such aggregate limits, then the refusal by one nation to do so comes at the expense of other nations, and within a country that observes national limits, individual refusals to limit consumption come at the expense of other citizens. Such is the logic of limits: more for any one necessarily means less for others.

Several normative judgments can also be inferred from the fact of ecological limits combined with the inevitability of allocating scarce ecological space and a simple principle of non-maleficence. If the present generation, through its words and deeds, continues to ignore ecological limits and claims more than its share of ecological space, this will almost certainly make later generations vulnerable to current *de facto* allocation choices, just as the pollution of a river by upstream riparian users will almost certainly affect those living downstream. While scholars may debate the appropriate degree of culpability for harm that is unintentionally caused, this does little to mitigate the impact of the harm itself. Unsustainable levels of resource consumption and waste production *cause* avoidable harm and suffering, and we know enough about the causal chains linking over-appropriation of ecological space with the predictable harm that results to fault such acts as morally negligent, if not willfully malevolent. The over-appropriation of ecological space constitutes an unjustified claim to more than one’s share of a finite resource that carries with it the necessary consequence that later generations will have to survive with less than their fair share of that shared resource, and so is unjust. Thinking about how ecological space *ought* to be allocated is thus not some optional and empty intellectual exercise, but is rather an inescapable imperative

that can drive contemporary environmental policy decisions and act as a principled constraint on individual life plans and conceptions of the good, or its unfair allocation can be the unintentional but inevitable result of a collective failure to exercise due moral care. The fact of ecological limits and unavoidability of its allocation leaves open only two possibilities: the way in which persons, nations, and entire generations allocate ecological space can either be justified or unjustified. The claims that each makes on that space through their patterns of resource use and waste production can be just or unjust, a judgment that stands whether or not the parties in question acknowledge this to be the case.

Allocation and Normative Judgment

But what does it mean to *allocate* ecological space among persons and peoples? The term often conjures the image of some authoritative body that weighs opposing claims and issues limited use rights on the basis of such claims. While it is obvious that no such body exists, particularly at the global level, this image nonetheless captures the essential aspect of an allocation framework. When determining which of two or more contending parties are entitled to some scarce good, fair decisions must be guided by the strength of the respective claims rather than the identity or other irrelevant characteristics of the parties in question. That one party to the conflict may be wealthier, stronger, or better connected to political power cannot be allowed to influence allocation decisions unless these constitute criteria relevant to entitlement claims, regardless of the role that each plays in the *de facto* allocation of ecological space through current use patterns. Decisions about each party's warranted share of ecological space must be principled rather than merely deferring to greater power or granting concessions to the first claimants, and should be justifiable to all on the basis of publicly defensible reasons and objectively measurable criteria. Such decisions, that is to say, are matters of distributive justice¹⁶ rather than issues of "might makes right" or its equivalent.

By appealing to principles of distributive justice to allocate ecological space, it might appear as though the conventional distinction between ethics and political philosophy has been collapsed. Actions that make claims on ecological space—a broadly inclusive category that not only contains much of what was previously regarded as the domain of ethics but also much of what was once thought to exist outside of that sphere—must now be subject to principles defining the just distribution of that space. Should one exceed their just share, this transgression could be condemned as unjust in the distributive sense. That is, the normative judgment that they should not have acted as they did would be based on their indefensible claim to more than their share of ecological space, to the detriment of others. But notice that this is not identical to evaluating the *act* as wrong in a moral sense. Had the agent not already made all their prior claims on ecological space that caused the act in question to be the one that exceeded their individual budget, that act itself would not be unjust. Hence, it would be mistaken to describe particular acts or choices as unjust in this sense, though there may be some that by themselves

bust ecological budgets and so result in injustice by necessity. Rather, a person's full package of actions or pattern of choices may adhere to or exceed their just allowances of ecological space. Normative judgments are thus applied to these packages or patterns, and not to the discrete acts or choices that exceed some threshold. Ethical judgment therefore remains in the picture, serving as a supplement to judgments based in distributive justice; the former is not subsumed within the latter. An act can be wrong without being unjust, as when the offense is other than an excessive claim on shared resources, and unjust without being wrong. To this latter possibility, which forces the reevaluation of a wide range of acts and choices, we now turn.

Feminists invoke the slogan "the personal is political" in order to challenge the conventional division between public and private spheres, where the latter denotes acts and choices that are regarded as beyond the gaze of normative social or political judgment. Women's choices about whether to work or remain within the home as primary caregivers to their children, whether or not to marry or to conform to other conventional gender roles, and so on, have been successfully challenged as adversely affecting other women, and therefore not being the strictly personal choices that they were once considered. Resting on the liberal distinction between public and private, the feminist effort to politicize the personal choices of women (as well as men) can be regarded as less an effort to break this dichotomy and more an attempt to redraw the line dividing public and private spheres to accurately reflect the causal connections between the acts and choices of some and the opportunities of others, often through the constraining mechanism of social norms. Campaigns to politicize acts and choices that harm women aren't meant to obliterate the liberal sphere of protected self-regarding conduct, where persons can exercise autonomy free from the influence of state coercion or social pressure, but rather aim to ensure that other-affecting conduct does not insidiously masquerade as private in order to deflect normative critique. The aim and effect of such campaigns is not to make *everything* a political act, to be subject to public scrutiny and the force of social norms and possibly also to coercive regulation, but rather to update the boundary to reflect mistaken past assumptions and shifting intellectual terrain.

As with feminist campaigns to politicize acts and choices that had previously if mistakenly been regarded as private, environmentalist efforts to call critical attention to many consumer choices likewise accept a liberal division between public and private but assert a mistaken identification of political acts and choices as strictly personal. Campaigns against highly fuel-inefficient sport utility vehicles (SUVs), for example, politicize personal transport choices on grounds that such decisions can potentially harm others and so must be subject to more than purely private esthetic and economic preferences.¹⁷ By the line of argument that emerges from this critique of automotive choice, the state not only has a right to regulate motor vehicle fuel economy but also has an obligation to do so, since excessively inefficient options significantly raise the likelihood that the consumers purchasing them will contribute to ecological harm through their over-appropriation of

ecological space. While it would be hypothetically possible to avoid such harm with even the most fuel-inefficient choice of vehicles at sufficiently low rates of use, this logical possibility does nothing to mitigate the harm that does occur or to blunt the fact that it would be avoidable through fuel economy regulation. Moreover, one consumer's decision to buy a large and fuel-inefficient vehicle makes it more difficult for others to purchase smaller and more efficient models, given weight and bumper height incompatibilities that raise kill rates when the former collides with the latter.¹⁸ According to this claim, then, one's transport choices are political rather than personal; they are subject to normative consideration in ethics and/or political philosophy rather than being the purely personal choices that some opponents of automobile fuel economy regulation maintain.

Regardless of the merits of this SUV critique, it serves to illustrate how a concern with ecological limits can politicize consumption choices that were previously treated as subject to personal preferences alone. It might be *wrong* to purchase and drive a vehicle that necessarily harms others, as by exposing them to higher risk of injury or death in collisions (as is the case with most SUVs)—an ethical judgment that holds regardless of what other choices that consumer makes. On the other hand, it would be *unjust* to consume energy and produce waste at rates that exceed one's fair personal allotment of ecological space, which is far more likely to result from the use of a fuel-inefficient vehicle than the comparable use of a fuel-efficient one. Normative arguments for regulatory standards on vehicle fuel efficiency take the latter form, claiming a public interest in personal transport choices that justifies the use of public coercion over such choices, here in the form of prohibitions against excessive inefficiency. Their concern is with just allotments rather than particular acts, so they focus on the relationship between vehicle choices and their effects on ecological space over time, noting the disparity in ecological impacts for otherwise-similar transportation services. But such regulations do not themselves allocate ecological space, for they place no upper limit on the overall amount of petroleum that any vehicle can consume or pollution it can emit. While their motive is derivative of concerns for allocating ecological space—assuming that regulatory incentives for promoting efficient transport choices will reduce aggregate as well as individual demand for such space—they lack the hard cap of a formal allocation. Appeals to justice such as these aim to remove the consumer's automobile choice from the realm of purely private acts, calling for external coercion to facilitate the mitigation of harm without directly prohibiting harmful acts. In doing so, they call attention to limits on ecological space, but stop short of any allocation of it to particular persons. In this sense, environmental standards for individual commodities like automobiles rest on a kind of second-order moral imperative in that the acts and choices they prohibit may not themselves be wrong or unjust, but they make it easier for users of such regulated commodities to avoid contributing to harm and thus to realize the demands of justice.

Allocating ecological space therefore involves the assignment of moral responsibility to persons or peoples who exceed their fair shares of ecological

goods and services, holding them culpable for harm that results from the depletion of those goods and degradation of those services as well as the additional constraints that they unfairly impose on others through their over-appropriation of shared resources. This assignment of moral responsibility may be accompanied by some state-sponsored rationing scheme and the legal forms of responsibility for unjust claims that one would entail, but it need not. It is a way of causally connecting harm that results from aggregate patterns of unsustainable behavior to the individual acts and choices that produce those aggregate patterns, even where such discrete acts by themselves are insufficient to cause unique and discernable harm.

Notice that the allocation of ecological space allows for some threshold of justified claims on ecological space before further claims become unjust, leaving in place a sphere of autonomy in which acts and choices that are not otherwise wrong are treated as private and thus immune from moral or political critique, at least while associated with purely self-regarding conduct. But many of the consumer choices and consumption activities that are protected as private below the threshold of fair shares become public above that threshold, inviting normative critique like that of the fuel efficiency of one's personal transport choices. Because limited claims on ecological space are viewed as benign, but excessive ones as harmful and unjust, the allocation of ecological space makes it impossible to classify many consumer choices as categorically benign and therefore subject to consumer sovereignty alone. Many such acts and choices *become* harmful and unjust beyond some threshold that defines fair shares of ecological space—and so are neither wholly private nor public, neither purely self-regarding nor other-affecting—challenging the classic liberal assumption that discrete acts viewed in isolation can be categorized as harmful or benign, where the latter “occasions [no] perceptible hurt to any assignable individual.”¹⁹ Liberal autonomy thus takes on a quantitative rather than qualitative hue once ecological space is allocated, changing the nature and application of the concept within political theory and requiring a fundamental rethinking of justice theories that have been grounded in outmoded conceptions of this classic liberal commitment.

Egalitarian Justice and Ecological Limits

Normative concepts and theories that have been premised upon natural abundance or practically infinite ecological space may become invalid under more realistic conditions of ecological scarcity. For example, Locke's theory of property acquisition posits a set of conditions for the justified appropriation of land from the commons so long as each withdrawal leaves “enough, and as good” behind for others. As Locke writes, “he that leaves as much as another can make use of, does as good as taking nothing at all.”²⁰ Of course, the converse of this position is that appropriations of land from the commons that exacerbate scarcity do “prejudice” others and thus may require their consent, or at least the ability to justify that appropriation to them. While Locke recognized that the Enclosure

movement²¹ had already undermined this condition in the British Isles and throughout most of Europe during his lifetime, he suggested that continued abundance of land in America enabled this premise, which is crucial to his analysis. Under conditions of perfect abundance in land or ecological space, the appropriation from the commons by one person has no practical effect on opportunities for others to similarly appropriate, even if it exacerbates scarcity at the margins. As Locke argues, under such conditions the community has no legitimate interest in individual claims on common property when none are harmed by them, and the act of appropriation need not be regarded as a matter of ethics or justice. But perfect abundance has never existed anywhere, and Locke's conclusion is invalidated under more realistic conditions of scarcity, as others have noted.²²

Scarcity of ecological space may invalidate many other long-standing normative commitments from the liberal canon, forcing us to rethink judgments reached on the basis of obsolete premises in light of a more realistic set of assumptions. One such commitment concerns the way that liberal autonomy is theorized with egalitarian justice theory. Rawlsian justice theory, for example, endorses social primary goods as the objects of just distribution in part because they can be more readily redistributed than can natural primary goods, but also because as all-purpose instrumental goods their recognition as primary is neutral with respect to various conceptions of the good life. All persons need resources in order to pursue their own versions of the good life, regardless of what their individual conceptions of the good entail, so a resource-based view of justice preserves the classic liberal emphasis on autonomy against objectionable equality of welfare views as well as perfectionist strains within political thought that seek to instantiate one particular view of the good within society. As Dworkin's version of liberal egalitarian justice theory makes clear, equalizing resources makes it uniquely possible to hold persons responsible for their choices, allowing for an endowment-insensitive but ambition-sensitive allocation of social goods.²³ Free to choose any life plan or conception of the good that they desire, persons in Dworkin's view are granted virtually unlimited autonomy and then held responsible for the choices that they make from an equal starting point, after redressing the natural injustice of unequal endowments and neutralizing the effects of luck. By this conception of individual autonomy, which pervades egalitarian justice theory generally and provides the characteristic feature that connects it to the liberal tradition, the focus is on allocating instrumental goods that persons may deploy as they see fit, subject only to the constraints that they not use them to harm others and that each bears responsibility for their choices in how such goods are used.

But by making instrumental economic goods the objects of egalitarian distribution, and decisions regarding how those goods are used the core element of individual autonomy, egalitarian justice theories like those of Rawls and Dworkin obscure the potentially wide variation in claims on ecological space that results from the way that people use their just shares of goods. This blind spot is due in large part to the way that both Rawls and Dworkin rely on economic theory to

conceptualize the personal space of liberal autonomy. Dworkin, for example, bases his envy test on the market-based metaphor of a hypothetical auction, where egalitarian distribution is achieved so long as no participant prefers someone else's post-auction bundle of goods to their own. According to Dworkin's "market procedure" thought experiment, "people decide what sorts of lives to pursue against a background of information about the actual cost their choices impose on other people and hence on the total stock of resources that may fairly be used by them."²⁴ When, for example, multiple bidders desire the same auction lot, the scarcity of that good drives up its price, providing information to each bidder about the costs to others of losing access to that good. But this feedback concerning costs to others ends once the auction is concluded. Unless participants were required to bid on the ecological space that they will claim through their various consumption-related activities—they are not on Dworkin's island, where such space is assumed to be abundant and therefore valueless—then not only do they lack any "background of information" about how these claims harm others but they have incentives to impose externality costs on others through unjust claims on ecological space,²⁵ frustrating the envy test. Only if each person had to either bid on shares of ecological space in the initial auction or purchase additional unused shares from others when their claims on space exceeded their personal allowances (as a form of *ex ante* compensation for the other's excessive claims) could Dworkin's scheme ensure the genuine equality that it promises. So long as ecological space is not treated as among the goods to be subject to egalitarian distribution, incentives toward environmental despoliation are inadvertently built into Dworkin's model of autonomy and genuine equality will remain elusive.

Similarly, Rawls's influential difference principle is premised upon the absence of limits on the aggregate quantity of social primary goods to be made available and subject to egalitarian distribution. At the core of the Rawlsian argument for justified inequality is an assumption, grounded in economic theory and flavored by economic commitments to unlimited growth, that incentives created through unequal allocations of social primary goods can increase the size of the overall economic pie to be divided among all members of society, making it possible for such inequality to benefit the least advantaged. Whether or not this sort of unlimited economic growth is possible shall not be my concern here, but suffice to observe the sharp contrast between the objects of conventional egalitarian justice theory and those associated with ecological space. The latter are finite in a way that the former are assumed not to be. Allowing some to claim larger shares of ecological space *may* result in a larger overall quantity of Rawlsian primary goods, satisfying the difference principle if this surplus is redirected toward the least advantaged, but it cannot increase the amount of ecological space available to disadvantaged persons and groups. If the *maximin* rule is to apply to allocations of ecological space, it cannot be in the same way or for the same reasons as are invoked in Rawlsian justice theory, since any inequality in the allocation of a finite good necessarily entails less of that good for the least well off. Both of these models view autonomy through the metaphor of free persons

deploying instrumental resources in the service of private ends, unconstrained by external interference, where justice is concerned primarily with the initial allocation of those economic resources. In ignoring the crucial role of noneconomic resources like ecological space, both Rawls and Dworkin fail to recognize the causal role that ecological space plays in human welfare and relegate to a protected sphere of autonomy many of the activities that contribute to ecological degradation.

This implication of ecological limits has begun to be recognized within egalitarian justice theory, albeit indirectly. Ethical cosmopolitans like Charles Beitz²⁶ and Thomas Pogge²⁷ have noted that highly unequal claims on the earth's natural resources stocks are causally responsible for the impoverishment of the world's least advantaged, giving rise to claims of compensation in order to redress earlier injustices, whether through Beitz's "resource redistribution principle" or Pogge's "global resources dividend." Both reject the Rawlsian premise that an unequal allocation of the desideratum in question (natural resources themselves for Beitz, the wealth that results from their exploitation for Pogge) can be beneficial or even benign for those left with less of it as a result. Neither applies their analysis to ecological space, however, focusing instead on natural resources like timber and minerals that can be exploited for economic gain but ignoring the effects of industrialization and increased consumption on ecological capacities for absorbing waste.²⁸ Moreover, neither takes seriously the way that ecological limits potentially constrain economic development and thereby pose obstacles to further human development or the causal role that uninhibited individual autonomy in consumption choices can play in causing ecological harm half a world away.

In short, cosmopolitan justice theories have begun to display some insights from the recognition of ecological limits, but there remains much further insight to be gleaned and implications to be followed. For example, since some nations routinely make uncompensated claims on the ecological capacities of others by producing more waste than the sinks within their borders can absorb, a comprehensive analysis of ecological space that included ecological inputs as well as outputs would yield an even stronger case for redistribution and compensation than those that have been advanced thus far. Beitz and Pogge may be correct in observing that ecological goods are subject to egalitarian distribution and perhaps compensation for past and present over-appropriations, but the case for fault-based liability may be even clearer with ecological services. Moreover, at least some of these waste assimilation capacities transcend national borders and the property-based entitlement claims with which they are associated, undercutting one potent objection to regarding the planet's resources as commonly held rather than privately owned and providing additional ammunition against those denying that justice applies across national borders. Perhaps the best example of a fully global allocation conflict involves the atmosphere's capacity to absorb the greenhouse gases that cause climate to change. Since this capacity is not located within any national borders, rights to it cannot be territorial in the way that entitlements to other resources are often thought to be. And since climate change

threatens all nations and peoples, independent of their respective emissions of greenhouse gases, it offers a clear case of global ecological interdependence against communitarian denials that the capacity to harm across borders establish the circumstances of justice.²⁹ This finite atmospheric capacity and the interdependence of harmful causes and effects further undermine national claims to larger shares of atmospheric space based in territorial ecological abundance and avoid other objections that plague the terrestrial resource-based accounts that have thus far dominated cosmopolitan justice debates.³⁰

Conclusion: Theorizing Ecological Space

So how might egalitarian justice theories be wielded on behalf of allocating ecological space, and how does thinking about ecological space constrain or transform existing theories of distributive justice? Constructing the problem of global justice in terms of allocating space offers several unique advantages and illuminates several key features of an adequate normative theory. As noted above, ecological space is a genuinely global resource in that it transcends national borders, giving rise to conflicts over individual and national appropriations of space that adversely affects other nations and persons. Given the zero-sum nature of such conflicts over finite resources, this spatial conception establishes causal chains connecting over-appropriation of ecological space by some and avoidable harm suffered by others. Andrew Dobson suggests that the ecological footprint idea creates a “space of potential obligation” for grounding a “thick cosmopolitanism”³¹ based in culpability for harm rather than the thin forms of obligation that might be generated through membership in a common humanity or mere ability to assist. The first advantage of conceptualizing justice in terms of ecological space, then, concerns its scope and site, and the second lies in the robustness of the obligations that it creates. The spatial conception reveals the global scope of many cases of anthropogenic environmental harm and the irrelevance of national borders or membership in either the causal chains that degrade ecological space or the suffering that results. Climate change is again illustrative: the phenomenon is largely caused by the world’s most affluent persons and peoples and is expected to disproportionately harm its poorest, yet the geographical point sources of emissions are not relevant to either its causes or effects.³² The problem’s scope is fully global, so the site of any effective remedy must involve institutions capable of avoiding this international injustice, and the failure by those culpable to mitigate ongoing climate-related harm presents a clear example of fault-based liability, which offers perhaps the strongest available normative foundation for cosmopolitan justice.³³

Because the overuse of ecological space by any generation leads directly to its degradation and resulting deleterious conditions for future generations, whereas the several metrics of egalitarian justice cannot so readily be allocated over time,³⁴ construing distributive justice in terms of ecological space allows for more robust analyses of intergenerational obligations. Finally, because the aggregate human

appropriation of ecological space is causally related to declining habitats for nonhuman animals, which also require ecological space for their survival and flourishing, the analysis of anthropocentric obligations like those inherent in distributive justice can be made commensurable with duties of environmental ethics insofar as both involve allocating ecological space as the core means of satisfying their distinct categories of obligations. In contrast with those goods that are instrumental to human welfare but typically useless to nonhumans, ecological space offers an object of distribution that clearly illustrates how the demand for justice among humans exists in tension with obligations between human persons and communities and nonhuman ones. Conceiving of distributive justice in terms of the allocation of ecological space among all affected parties thus makes possible a view that takes into account the international, intergenerational, and inter-specific aspects of conflicts over scarce resources.

A focus on ecological space rather than social resources like primary goods need not require the abandonment of autonomy, and indeed maintains some space for persons to exercise control over their own personal spaces in a fashion that is derivative of Mill's classic expression of the concept. But as noted above, this sphere of unconstrained liberty shrinks considerably once ecological limits are taken into account, so the focus on autonomy can no longer play the hegemonic role in justice theory that it once did. Also relevant to each person's ability to exercise control over their personal space of autonomy is the restraint exercised by others in their own personal spaces. Justice theory must therefore incorporate some metric of ecological goods and bads, allocating not only what people need to survive and flourish but also what they produce as by-products of that activity. Conceptions of social justice that envision increasing shares for the least advantaged as the key to rectifying unjustified patterns of inequality depend on a naïve model of beneficial or at least benign economic growth in which increases in consumption for the poor are possible without even larger decreases in consumption by the affluent. A realistic view of ecological limits would posit at least some decrease in consumption rates by the affluent as a necessary condition for the advancement of the poor. While this critique has played out in global environmental politics, against the cornucopian assumptions of those advocating a version of sustainable development which supposes that growth of production and consumption in developing countries can be sustainable in the absence of economic contraction in industrialized ones,³⁵ its force has not yet been reflected in egalitarian justice theories that limit their purview to domestic inequalities. Egalitarians have not, for example, called for a "contraction and convergence" on consumption within or even among nations, as cosmopolitan climate justice advocates have with respect to global greenhouse gas emissions.³⁶

Recognition of ecological limits within egalitarian justice theory need not necessarily take the form of calls for the leveling down of national economic production and consumption, as in contraction and convergence climate policy scenarios. Rather, it might take the form of a more prominent distinction between those social goods which are subject to zero-sum ecological limits, such as the

forms of wealth that are translatable into increased consumption and therefore require larger shares of ecological space, and those which are not, such as rights and liberties as well as the other indices of human development. It may be possible to expand the array of rights, liberties, powers, and opportunities to be made available to the world's less advantaged without decreasing those of the more advantaged, whereas the same cannot be said of expanding their shares of ecological space. The incentive effects of the difference principle might be redirected away from economic growth in general—which, when accompanied by increased claims on ecological space, is necessarily averse to the interests of some disadvantaged party, now or in the future—and toward the promotion of greater ecological efficiency, understood as deriving more human welfare from the same ecological resource inputs and waste outputs. Such efficiency gains may be technological, allowing users to experience qualitatively similar consumption options with smaller ecological footprints, or they may involve shifts in social norms, allowing persons influenced by those norms to decrease their consumption without concomitant declines in welfare or happiness.³⁷ Insofar as these ecological efficiency gains can be transferred to the disadvantaged, they satisfy the egalitarian logic of the difference principle, but do so without the inegalitarian consequences. Innovations in ecological efficiency *already* benefit the innovators—they derive more welfare from a constant share of ecological space—rendering unnecessary what would likely be an unjustified claim on larger shares of that space in order to support their entrepreneurial efforts. Incorporation of ecological limits within egalitarian justice theory would by necessity discourage conceptions of the good that depend on unsustainable acts and choices, as it currently discourages preferences whose satisfaction necessitates injustice toward others. But it need not compromise the core intuition that has guided the development of contemporary justice theory in general: that for all to be treated as free and equal, some limits on freedom are necessary in order to protect the freedom of others. Conceiving of this balancing act in terms of allocating ecological space merely highlights how difficult but nonetheless urgent this endeavor can be.

Notes

¹ Rawls defines primary goods as “things which it is supposed a rational man wants whatever else he wants,” and describes as including “rights and liberties, opportunities and powers, income and wealth.” John Rawls, *A Theory of Justice* (Cambridge, MA: Belknap Press, 1971), 92.

² Ronald Dworkin, “What is Equality? Part 2: Equality of Resources,” *Philosophy and Public Affairs* 10, no. 4 (Autumn 1981): 283–345.

³ Amartya Sen, *Development as Freedom* (New York: Oxford University Press, 1999), esp. chaps. 1–4.

⁴ John Stuart Mill, “On Liberty,” in *On Liberty and Other Essays*, ed. John Gray (New York: Oxford University Press, 1991): 5–128, esp. 17.

⁵ This limit is specified by Mill's harm principle, which serves to demarcate the borders of personal space and to justify state coercion on individual liberty. According to Mill, “the sole end for which mankind are warranted, individually or collectively, in interfering with the liberty of action of any of their number, is self-protection. That the only purpose for which power can be rightfully exercised over any member of a civilized community, against his will, is to prevent harm to others.

His own good, either physical or moral, is not a sufficient warrant." In support of this view, John Skorupski takes this spatial conception to be central to Mill's political thought, casting the classic liberal conception of autonomy upon which Mill relies as "the freedom to do as one wishes within one's private domain," where the "private space" of liberty is distinct from the "public space" of justice. See Skorupski, *John Stuart Mill* (London: Routledge, 1989), 364–65.

⁶Some critics blame liberal commitments to individual autonomy for enabling rampant ecological exploitation and undermining the basis of effective state regulation, sometimes even going so far as to recommend authoritarian forms of government to restrict individual choices. While I don't wish to endorse such views here, I take the prevailing view within green politics to hold that completely unrestricted individual consumer freedom cannot be sustainable on a planet with seven billion human inhabitants, and that at least some restrictions on that freedom are essential to bringing about a sustainable society and planet. The form and content of such restrictions, however, remain a key controversy among those sympathetic to both liberal autonomy and environmental sustainability.

⁷In describing demand for ecological goods and services in spatial terms, I follow Tim Hayward, who credits Nicholas Georgescu-Roegen for originating the concept. See Hayward, "Thomas Pogge's Global Resources Dividend: A Critique and an Alternative," *Journal of Moral Philosophy* 2, no. 3 (2005): 317–32, and Georgescu-Roegen, *Energy and Economic Myths* (New York: Pergamon Press, 1976).

⁸Mill, "On Liberty," 95.

⁹*Ibid.*, 14.

¹⁰Aldo Leopold, *A Sand County Almanac* (New York: Oxford University Press, 1949), 210.

¹¹Henry Shue, *Basic Rights* (Princeton, NJ: Princeton University Press, 1980), 18–19.

¹²See Mathis Wackernagel and William Rees, *Our Ecological Footprint: Reducing Human Impact on the Earth* (Gabriola Island, BC: New Society Publishers, 1996).

¹³*Ibid.*, 97.

¹⁴U.S. Census Bureau, online at <http://www.census.gov/ipc/www/popclockworld.html> (accessed August 15, 2008).

¹⁵Steve Vanderheiden, "Two Conceptions of Sustainability," *Political Studies* 56, no. 2 (June 2008): 435–55.

¹⁶I use the term "distributive justice" in the most general sense here, to refer to normatively defensible allocations of goods, rather than in reference to any particular family of principles of justice. Whether or not liberal egalitarian theories of justice are appropriate bases for allocating ecological space, such allocations surely must be based in some sort of principle if they are to involve justifiable exercises of power and claims on resources.

¹⁷For an assessment of this line of harm-based argument, see Steve Vanderheiden, "Assessing the Case Against the SUV," *Environmental Politics* 15, no. 1 (February 2006): 23–40.

¹⁸See Vanderheiden, "Assessing the Case," and Keith Bradsher, *High and Mighty: The Dangerous Rise of the SUV* (Public Affairs, 2004). Large trucks and sport utility vehicles typically have bumpers that are higher than those on passenger cars that, in combination with the weight differential between the two types of vehicles, significantly raise the probability that passengers in the lower and lighter vehicle will be killed in a collision between the two. In this sense, driving the former creates a consumption externality for owners of the latter, raising risks for other motorists.

¹⁹Mill, "On Liberty," 91.

²⁰John Locke, *Second Treatise of Government*, ed. C. B. MacPherson (Indianapolis, IN: Hackett, 1980), 21.

²¹The "Enclosure movement" refers to a process by which common land was appropriated for private use, starting in the 15th century. By the time of Locke's *Second Treatise*, the English commons had been largely appropriated.

²²See, for example, G. A. Cohen, *Self-Ownership, Freedom, and Equality* (New York: Cambridge University Press, 1995), chaps. 9–10, Michael P. Zuckert, *Natural Rights and the New*

- Republicanism* (Princeton, NJ: Princeton University Press, 1998), 255–56, and Clark Wolf, “Contemporary Property Rights, Lockean Provisos, and the Interests of Future Generations,” *Ethics* 105, no. 4 (July 1995): 791–818.
- ²³ Ronald Dworkin, *Sovereign Virtue: The Theory and Practice of Equality* (Cambridge, MA: Harvard University Press, 2000), esp. chaps. 1–2.
- ²⁴ Dworkin, “What is Equality?” 288.
- ²⁵ As rational maximizers, islanders would presumably be motivated by the free rider incentive to create value for themselves while imposing externality costs on others. Because the degradation of ecological space held in common presumably affects all rather than exclusively the person causing it, a tragedy of the commons occurs in Dworkin’s scheme, benefitting the worst environmental offenders at the expense of all. See Garrett Hardin, “The Tragedy of the Commons,” *Science* 162 (1968): 1243–48.
- ²⁶ Charles R. Beitz, “Justice and International Relations,” *Philosophy and Public Affairs* 4, no. 4 (Summer 1975): 360–89.
- ²⁷ Thomas W. Pogge, “A Global Resources Dividend,” in *Ethics of Consumption: The Good Life, Justice, and Global Stewardship*, ed. David A. Crocker and Toby Linden (New York: Rowman & Littlefield, 1998): 501–36.
- ²⁸ Hayward (“Thomas Pogge’s Global Resources”) criticizes Pogge’s global resources dividend for this reason, arguing that cosmopolitan obligations can more accurately be charted through the use of ecological space as a metric for egalitarian justice.
- ²⁹ This is not entirely accurate—carbon sinks like forests comprise part of the planet’s capacity to absorb greenhouse gases, and such sinks do exist within national territories. For this reason, nations with substantial forest cover have advocated credits for these carbon sinks within Kyoto protocol climate obligations. But most of this capacity resides outside of national borders, and that which does not is subject to the argument advanced by Beitz (“Justice and International Relations”) against awarding valuable goods to parties based solely upon the morally arbitrary natural allocation of ecological wealth.
- ³⁰ For more on how the allocation of greenhouse gas emissions points the way toward a view of cosmopolitan justice capable of overriding national sovereignty or property-based objections, see Steve Vanderheiden, *Atmospheric Justice: A Political Theory of Climate Change* (New York: Oxford University Press, 2008), esp. chap. 3.
- ³¹ Andrew Dobson, “Thick Cosmopolitanism,” *Political Studies* 54, no. 1 (2006): 165–84, 177.
- ³² According to the Intergovernmental Panel on Climate Change (IPCC), “There are sharp differences across regions and those in the weakest economic position are often the most vulnerable to climate change and are frequently the most susceptible to climate-related damages, especially when they face multiple stresses.” Intergovernmental Panel on Climate Change, *Climate Change 2007: Synthesis Report, Contribution of Working Groups I, II and III to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change*, ed. R. K. Pachauri, A. Reisinger, and The Core Writing Team (Geneva: IPCC, 2007), 65. Online at: <http://www.ipcc.ch/ipccreports/ar4-syr.htm> (accessed April 2, 2009).
- ³³ See Vanderheiden, *Atmospheric Justice*, chaps. 5–6.
- ³⁴ Rawls, for example, seeks an entirely different basis for intergenerational obligations than he uses to ground his justice theory, arguing unpersuasively in *A Theory of Justice* that the idea of just savings can adequately capture our obligations to futurity. Likewise, Dworkin’s equality of resources view has trouble establishing the normative bases for intergenerational justice, except to say that whatever resources exist at the end of one generation must be fairly allocated among members of the next one.
- ³⁵ See, for example, Herman E. Daly, “Sustainable Growth: An Impossibility Theorem,” in *Valuing the Earth*, ed. Daly and K. N. Townsend (Cambridge, MA: The MIT Press, 1993), 267–74.
- ³⁶ See, for example, Tom Athanasiou and Paul Baer, *Dead Heat: Global Justice and Global Warming* (New York: Seven Stories Press, 2002), and Vanderheiden, *Atmospheric Justice*. Both limit calls for “contraction and convergence” (i.e., reductions on greenhouse gas emissions from industrial-

ized nations until national per capita emissions can converge around some roughly equal level that is closer to what developing countries now produce) to the distribution of carbon emissions, which is at least hypothetically compatible with continued growth in consumption at the top of the world's economic hierarchy, rather than calling for a leveling down on the distribution of all economic goods.

³⁷ Juliet Schor advocates such a redefinition of social norms through what she calls the "downshifting" of consumption expectations, arguing that this normative transformation can result in lower consumption with increased happiness. See Schor, *The Overspent American* (New York: Harper Collins, 1999).