

**Broadening the Definition of the Tragedy of the Commons:
Encompassing the Tragedy of Mountain Top Removal Coal Mining in Appalachia**

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Introduction

A "common-pool resource" or an "open-access resource" as defined by Garret Hardin's seminal 1968 essay, "Tragedy of the Commons" is an unmanaged resource open to all, but finite in nature. In his description of a pasture commons, Hardin explains,

[...] The rational herdsman concludes that the only sensible course for him to pursue is to add another animal to his herd. And another; and another.. .But this is the conclusion reached by each and every rational herdsman sharing a commons. Therein is the tragedy. Each man is locked into a system that compels him to increase his herd without limit—in a world that is limited.

As others have described it, it is a situation in which "private interest undermines society's best interest. [...] The town pasture, the city water reserves, the regional atmosphere all might be unmanaged commons" (Bayden and Noonan xiv).

Prevalent among discussion involving common-pool or open-access resources is the topic of fisheries. In much of public policy literature, care is taken to define a "resource unit." In this instance of fisheries, a resource unit may be defined as a "catch" or simply, "fish." The taking of one resource unit, in the case of the open access situation, depletes that resource for another user. For example, one fisherman's catch subtracts from another fisherman's ability to make a catch. Thus the "tragedy" is applicable to fisheries.

Not all natural resource units can be defined so simply. Imagine, for sake of argument, how difficult it might be to define such issues if rather than dealing with a market for fresh fish and the taking of a catch, we were required to consider a market for forested mountains and the taking of a mountain. A mountain, potentially defined as a "resource unit," is incredibly complex in comparison to a fishery. It is composed of many resource "sub-units," per say. Forest products like timber, ginseng, and mushrooms as well as minerals

beneath the surface like coal are part of its components or sub-units. Likewise, a mountain's many ecosystem services such as clean water, clean air, and drought and flood protection (Boyd and Banzhaf 16) could also be considered natural resource sub-units. Moreover, in regard to resource valuation and policy analysis, aesthetic provision appears to have gained equal footing with natural services and products and could therefore be considered yet another resource sub-unit.

In the simpler case of a fishery, property rights (or lack thereof) are relatively more clearly defined. For instance, far enough from most coast lines, fishermen enter the "open ocean" or open-access waters where, according to Ferguson's definition of the term, "no defined group of users exists such that individuals have a privilege but not a right of use" (297). Thus, property rights begin only when the catch or resource unit is brought aboard the fishing vessel, and are clearly non-existent in the open-access waters.

With much greater complexity, we consider the property regimes involved with the mountain resource unit. Certainly, at least within the United States, a mountain, as with any "piece of land," can be owned privately or publicly. Ferguson defines private ownership as "individually controlled" where "use or access is determined by the individual for socially acceptable ends" (297). Consider a "privately-owned" mountain as defined by the law. In consideration of the mountain's resource sub-units, is it completely and wholly privately owned? Certainly many products of the mountain such as timber rights and mineral rights are traded in markets as private goods. Even some ecosystem services such as woodland carbon sinks are now being traded as private goods defined as carbon credits through greenhouse-gas reduction and trading systems. However, some mountain resource sub-units such as clean water or clean air are distinct as common-pool or open-access resources that cannot be "individually controlled," owned, sold, or traded.

The following paper seeks to consider a broadened definition of Hardin's "tragedy" associated with these resource sub-units in light of the relatively recent Appalachian coal mining practice of mountain top removal (MTR), and its influence on the common-pool resource of mountain landscape scenery. We first consider the obvious physical effects that MTR has on the landscape of Appalachia. Secondly, in recognition of landscape as a common-pool resource, we consider the tragedy of the loss of the Appalachian visual commons. Finally, this paper considers the consequences of this loss and the potential policy solutions. Yes, there is real market for mountains, today—a market that captures private land in the Appalachian Mountain chain for the extraction of coal and its use in providing cheap electricity to the United States. And yet, there is also a market, of sorts, for the unadulterated view of this same mountain.

MTR: The Process and its Effects on the Landscape of Appalachia

For many, the struggles in the coalfields of Appalachia are a quaint memory of a rural landscape and cultural history. Yet few realize that the cheap electricity that burns the lights, computers, televisions, and appliances of the average American home maintains a new struggle in the Appalachian coalfields. In fact, "although underground as well as traditional contour and area mining continued, in the 1980s and 1990s increasing numbers of operators in eastern Kentucky and southern West Virginia extracted coal by lopping off whole mountain tops" (Montriel 97) in the process of Mountain Top Removal Coal Mining.

In a pivotal essay published in *Orion*, Erik Reece describes the process of MTR:

Coal companies have turned from excavation to simply blasting away the tops of the mountains. To achieve this, they use the same mixture of ammonium nitrate and diesel fuel that Timothy McVeigh employed to level the Murrow Building in Oklahoma City—except each detonation is

ten times as powerful, and thousands of blasts go off each day across central Appalachia. Hundreds of feet of forest, topsoil, and sandstone—the coal industry calls all of this "overburden"—are unearthed so bulldozers and front-end loaders can more easily extract the thin seams of rich, bituminous coal that stretch in horizontal layers throughout these mountains. Almost everything that isn't coal is pushed down into the valleys below. As a result, 6,700 "valley fills" were approved in central Appalachia between 1985 and 2001.

Consequently, as Reece describes, a mountain *and* a valley disappear in this process. The Environmental Protection Agency reports that "The impact of mountaintop removal on nearby communities is devastating," as the process removes "500 feet or more of the summit to get at buried seams of coal" (Mountain Removal/Valley Fill). The Ohio Valley Environmental Coalition reports that a federal study finds "that between 1992 and 2002, 380,000 acres of mountain tops were destroyed. This is over four times the land in West Virginia State Parks. By 2005, the estimate is 500,000 acres." Moreover, the Coalition reports that "Over 1000 miles of streams have been permitted to be buried in Valley Fills. This is longer than the Ohio River" (Julian Martin).

The effects to the landscape from this process are extreme in an area that is often associated with aesthetic beauty. In a recent book, *EcoTourism in Appalachia: Marketing the Mountains*, authors Al Fritsch and Kristin Johannsen report that in regard to tourism, "the most important feature of the region is obviously the mountains." In a profound emphasis of the importance of the landscape, they describe the mountains: "They have a more smooth and worn look, they are covered with temperate forests, graced with verdant valleys and swift clear-running streams. The Appalachian Mountains are at the heart of the eastern United States" (Fritsch and Johannsen, 31).

Ironically, these "most important features" are being destroyed for tourists and residents alike in the process of MTR. In his documentary, *Kilowatt Ours*, Jeff Barie films Larry Gibson, the only permanent resident on Kayford Mountain, just 35 miles from Charleston, West Virginia. For 19 years, Gibson has held on to his fifty acres - that which remains of his ancestral home. Surrounding Gibson's property are massive mountaintop removal sites. Barie asks Gibson if he has a picture of the way things used to look. "Lordy-mercy," Gibson replies. "Why'd I take a picture of a mountain? It'll be there forever... at least I thought" (*Kilowatt Ours*).

Appalachian Landscape as a Common-Pool Resource

In his essay, "The Tragedy of the Scenic Commons," economist Randal O'Toole describes the ex-urbanization of rural landscapes in Montana, in which retirees or wealthy Californians are quickly building homes in the scenic Gallatin River Valley near Bozeman. He describes a "valuable resource threatened by ex-urbanization—the scenic value of an area."

Scenery is clearly a common-property resource, since the cost each new home or development imposes on the scenery is shared by everyone who enjoys the scenery, not just those who will live in the new homes. Indeed, an urbanite who moves to or builds a second home in rural area is likely to enjoy huge scenic gains, while the scenic costs are imposed solely on others.

By similar reasoning, Appalachian scenery must also be considered a common-property resource. The cost each mountain top removal site imposes on the scenery is shared by everyone who enjoys the scenery, residents and tourists alike. To further extend O'Toole's

argument, big coal companies who purchase the land enjoy huge economic gains by extracting the coal in a process that imposes scenic costs on others.

Admittedly, within this argument lies the need for an extension of Hardin's and, subsequently, O'Toole's arguments. The typical definition for the tragedy of the commons can be summarized: *Use of Resource X by one subtracts from Resource X for another, in an unmanaged commons.* In the case of the fishery, use or utility from a catch subtracts from the catch of another. In the case of O'Toole's ex-urbanization, utility of the scenic landscape for a new home subtracts from utility of the scenic landscape for others' homes.

However, this concept or definition in terms of the mountain resource unit subjected to MTR must be slightly broadened. Rather than Resource X subtracting from Resource X, we are presented with the case in which, *within a resource unit (the mountain), Resource sub-unit X (coal) subtracts from Resource sub-unit Y (scenery).* Because the two sub-units, coal and scenery) happen to be integrally connected within the Appalachian Mountains, the broadened definition is only a matter of logistical recognition and does not effect the heart of the concept of the tragedy of the commons.

Supporting evidence that landscape or scenery is characteristic of common-pool resources is found in the literature of tourism research. Robert Healy asserts that "tourism landscapes [...] are subject to two of the classic problems encountered in the management of common pool resources" (597). The "overuse problem" and the "investment incentive problem" apply to mountain resource units subject to MTR.

The "overuse problem," according to Healy, encompasses "rivalry" which "sets in as the number of users, or the intensity of their use, rises" (598). The author provides numerous examples of "overuse" from Spain to Indonesia where, regardless of the type or form of use, by resident and tourist alike, the scenic integrity of the landscape deteriorates. By extension,

MTR use of the mountain resource unit, which is effectively the highest intensive use of the unit, rivals the scenic utility of the resource. Thus, the rivalry associated with the commons is clearly at play in the process of MTR.

Moreover, the "investment incentive problem" associated with tourism landscapes is implicated in the process of MTR. Healy provides an example of the problem from California's scenic coastline where Sea Ranch Development of luxury second homes provided "sweeping views of the rocky coastline from adjoining California State Highway 1" (601). Thousands of trees were planted along the interior of the property effectively blocking the view from the road. Healy describes the "investment incentive problem" in that "Only if the developer could have shared in the utility obtained by coastal motorists would he/she have had an economic interest in positive management of the coastal viewshed" (601). By extension, we observe a lack of incentive on the part of the coal companies ("developers") to manage the scenic integrity of the Appalachia Mountains associated with MTR because they do not share in the scenic utility obtained by tourists and residents, but "bask" in the economic benefits of coal production.

Consequences of the Tragedy and Potential Policy Solutions

The consequences of a "tragedy of the commons" do not need much explanation—the results are inherent in the language. It means the demise of the resource in question. As Hardin expressed, "Freedom in a commons brings ruin to all." This point is particularly evident for such a clearly finite resource as the Appalachian Mountains. Certainly it could be argued that Hardin's common pasture, ruined in the tragedy, could be cared for and supplemented and could potentially be healed. The same hopeful conclusion does not seem

possible for the destruction of mountain chain that formed through millennia absent of mankind.

In light of this "doom of the commons" for the mountain landscape of Appalachia, public policy must offer some solutions. In general, policy literature has offered three major solutions or management options for the commons. H. Scott Gordon asserted in a 1954 publication of the *Journal of Political Economy* that efficient management of the commons "can be accomplished only by methods which make them private property or public (government) property, in either case, subject to a unified directing power" (141). Elinor Ostrom has extensively researched a third option for community cooperative control of the commons.

In consideration of privatization, Hardin wrote, "The tragedy of the commons as a food basket is averted by private property, or something formally like it." And yet, Ferguson describes a "deep difficulty" in the "exclusive emphasis on private property: if owners believe that they have a virtually unlimited right in the property unmitigated by environmental concerns, they may choose the destruction of the resource over the preservation of it on economically rational grounds" (302). Obviously, Ferguson's concerns are apparent in the current mix of property rights influencing MTR. The mountains are privately owned, and their destruction appears to be economically rational to the coal companies.

Beyond this, is it feasible to consider privatization of the resource sub-unit of mountain scenery separate from private rights to the mountain? O'Toole describes a specific solution for saving the scenic commons through land trusts. He explains, "hundreds of land trusts rely entirely on voluntary [i.e., private] transactions scenic and other open space values in various parts of the country. Some of these buy land outright, but many more buy or

negotiate the transfer of development rights or 'conservation easements'" (185). However, because such an agreement is voluntary, the return from an easement would have to be greater than the return from the coal in order for industry to have any incentive to participate—here again is the investment incentive problem. Coal companies persistence to attain Larry Gibson's coal-rich land suggests their likely rejection of conservation easements: "Forty seams of coal lie beneath his 50 acres. Gibson could be a millionaire many times over, but because he refuses to sell, he has been shot at and run off his own road" (Reece).

Another solution offered by O'Toole involves a bit more coercion than the voluntary nature of conservation easements: land-use planning and zoning. A possible solution could disallow the practice of MTR in Appalachia, and thus entice coal companies to utilize other practices of extraction in this region. Even so, there are impediments to such policy. O'Toole explains that there is no guarantee that these tools can protect scenic view sheds mainly because there is no solid valuation of scenery, and so scenic optimization cannot be secured. Moreover, any impediments to development require the support of major political players. In the case of MTR, that is a problem, as according to Goodell, "the story of coal's emergence as the default fuel of choice is inextricably tied up with corruption, politics and war," with big coal in the pockets of major political players throughout Appalachia (xvii).

In the fashion of Ostram's community cooperatives, O'Toole argues for the creation of government sanctioned neighborhood associations in rural viewsheds (186). In the context of "ex-urbanization" in Montana, the plan to establish collective property rights to control matters affecting viewshed might work. O'Toole suggests that associations could be controlled by a board of trustees and have the right to collect real estate transfer taxes that encompass the scenic values contained in land prices. But could this concept be transferred to the inequitable balance of power between small private landowners and big

coal companies in Appalachia? Wouldn't the political influence of the industry impact this consideration as it would for zoning's impediments to development?

And so we come to Gordon's second solution: government as a unified directing power in the management of the commons. Goodell asserts that "barriers to change" are political. Industry is not interested in maintaining the visual commons, but "in maximizing the return on their investment. They will change only when we—or the politicians we have elected to speak for us—tell them they must [...]" (251). Certainly, an example is the inclusion of ecosystem services in GDP, as proposed by Boyd and Banzhaf. If the real costs of MTR were apparent in broad-based assessments of governmental performance, then government might act to impede destructive processes that no longer appear to be relatively beneficial to the economy.

Conclusion

Goodell asserts that industry claims of economic collapse due to restriction on MTR are "nothing less than economic blackmail." Even so, he recalls writer Ian Frazier's observation that "'Lincoln's greatest moment was saying 'I don't care if it's destructive [to the economy to ban it]. Slavery is wrong'" (254). Is the tragedy of the visual commons wrong? Not inherently—it is a somewhat natural process associated with the characteristics of the commons and the rational, albeit selfish nature of man. Is it wrong, however, to avoid acting to manage these commons, however intangible they may seem? Perhaps; and so this paper concludes by reiterating that there is ample evidence that a landscape viewshed is a common property resource, and thus, the visual landscape in Appalachia is experiencing a tragedy of the commons through the destruction of the mountains by MTR—a tragedy deserving attention and action.

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