

PROJECT D.I.R.T.: A LANDSCAPE ARCHITECT'S EXCAVATION¹

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Abstract: To a landscape architect interested in the creative manipulation of the land, mineral extraction presents a massive load for design exploration. The primary goal of Project D.I.R.T., Design Investigations Reclaiming Terrain, was to unearth the possibilities for renewing the perception of mining as creatively integral with the cultural and natural evolution of the landscape. The potential collaboration and planning inherent in the multi-disciplinary task of reclamation became evident on a journey to document selected mining sites around the country. Various coal, gold, copper, and taconite operations visited represent a diversity of regional landscapes with specific mining and reclamation practices. Both active and abandoned mined sites serve as case studies presented from a landscape architect's perspective. Examining the legal, social, and economic factors uncovered the frustrations with the legislation governing reclamation and the financial and ethical dilemmas of future land use for dependent communities. Reviewing the technical and ecological aspects revealed the innovations and progress of reclamation technology, but also limited application of ecological principles. These current practices of mining and reclamation illustrate a need to revise the legislation and coordinate an interdisciplinary effort to form truly productive and sustainable landscapes. Moreover, from this landscape architect's point of view, a synthetic approach guided by a broader vision of mining must lead to the creation of meaningful places that objectively reveal and celebrate the industrial heritage of the landscape. Mined lands can be an expression of a reciprocal connection between communities and individuals with the land one cultivates and all nurture. These monumental landscapes may come to represent a dynamic relationship between culture and nature for the next century.

Introduction to Project D.I.R.T.

The rapid development of mining and reclamation practices points towards an optimistic view of extracting important resources while constructing new viable landscapes. Although there are many shortcomings of the legislation and difficulties with the technology, mined lands are being restored to support wildlife and human activity. Yet these efforts rarely acknowledge the meaning inherent in transforming these modern industrialized landscapes.

"This brings us to the possibilities for the present and the future....we must stand at the moment in which humans may learn to be present to the Earth in a mutually enhancing manner" (Berry 1992). To reconcile and even embrace landscapes of production such as mineral extraction, our culture must learn to see itself as a part of nature. This emerging perception of interdependence between nature and culture (Gablik 1992) will guide our actions beyond "fixing" mined lands toward a visionary practice of constructing meaningful places for the present and next century.

With this vision for a renewed perception of the industrial landscape, Project D.I.R.T. was initiated. Focusing on mined lands, the goal of the study was to provide some insight into the limitations and possibilities observed in current practices of reclamation. This investigation attempts to combine practical considerations with idealistic projections for these landscapes of the future.

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A Landscape Architect's Perspective

The fundamental aspects of mining as massive landscape change represent a forum for all the concerns of a landscape architect. The cultural and ecological components of reclaiming land speak to the interdisciplinary nature of landscape architecture. The exploration of Project D.I.R.T. incorporated various viewpoints through interaction with individuals that affect, and are affected by, mining.

The perspective of a designer situates the activity of mining and resultant places into a history of landscape traditions. While addressing the complex realities of implementing significant changes in the landscape, a landscape architect strives to envision all the cultural and ecological implications. A designer synthesizes those realities and gives form to an overall vision for this new landscape. Project D.I.R.T. marks an initial effort to speculate how the evolving practices of reclamation and misconceptions of mining could be converted to a progressive means of building beautiful and inspiring landscapes.

The issues common to both landscape architecture and reclamation form a basis for the observations presented here. First, the legal, economic, and social factors include frustrations with mining and reclamation legislation, financial pressures of reclamation costs and the burdens of the bond, and conflicts with communities. Second, the technical and ecological practices comprise some progress and innovations, but reveal the need for revised regulations to allow for more appropriate and creative solutions. Finally, the potential cultural expression of these mined lands lies dormant, ripe for new interpretations.

Journey to Unearth the Issues

The primary component of Project D.I.R.T. was a series of site visits to mined land in several regions of the United States. Locations included the Iron Ranges of Minnesota, South Dakota, Wyoming, Utah, Arizona, Virginia, Kentucky, Indiana, and Illinois. Sites were selected for representation of different mining operations (coal, gold, copper, and taconite) in particular cultural and ecological contexts. Varying perspectives were presented by the individuals ranging from personnel of mining companies and government agencies to citizens and professionals involved with community groups and university research.

Rather than presenting a chronological documentation of the site visits, this paper draws from the key examples to illustrate my observations. This exploration of the issues is not intended to judge the practices of mining and reclamation witnessed. Rather, the inquiry raises questions of how the collective effort of reclaiming land may progress and how the renewed perception of mining resources might unfold.

Legal, social, and economic factors of the mining industry were felt most acutely in the southeastern area of Appalachia. The mountain top removal activities of companies like Martiki Coal Corp. in Lovely, KY had obvious implications for the economics of the communities with planning of secondary land uses. The successful farming operations demonstrated on the Martiki mine site were impressive and admirable. Questions came to mind though of the development capacity of the region. It is difficult to speculate if a community dependent on the mining industry for many decades could embrace a new livelihood. Land uses in this case cannot simply be applied, but need to emerge from some keen understanding of the economic and social constructs of the associated community. Assessing a genuine need (Zipper^a et.al. 1989) would enable members of a community to both understand and support activities like those witnessed at the Martiki mine.

A visit with a member of the Kentuckians for the Commonwealth revealed a lack of understanding and/or communication between the industry and the community. Adamant about protecting his home of many family generations, surrounded by the beauty of the "holler" of his native landscape, this gentleman was perplexed by politics that allowed for exploitative mining practices. Meeting this concerned citizen painfully pointed to the need for cooperative interaction between the industry, government agencies, and the community.

A great example for the common ground established for all those involved in and affected by mining was seen at the Powell River Project in Wise County, VA. Here the research on the technology of coal mining and reclamation is conducted and the results are disseminated. The mining industry and government agencies have a forum to evaluate regulations. Most importantly, the community is educated about mining as a resource for the future of their homeland (Zipper et.al. 1992).

Research at the Powell River Project also addressed another common dilemma of the limitations of the legislation, in this case the Surface Mining and Reclamation Control Act. A proposed and tested alternative to returning land to the “approximate original contour” (AOC) has proved to have both economic and environmental benefits (Zipper^b et.al. 1989). Many other instances such as erosion problems on AOC slopes illustrate shortcomings of the regulations. These Federal laws mandate the creation of uniform and generic “natural” landscapes that are often dysfunctional land with green veneers. The regulations seem to discourage the advancement and application of the technology that could produce ecologically rich landscapes.

Technical and ecological issues of the quality of the reconstructed mined land were illustrated by the many efforts to revegetate and recontour. The predominant feeling from several site visits was the pressure to stabilize slopes and make them “green.” The regulations for a minimum percent of vegetative cover seems to favor quantity versus quality.

Reclaimed fields at a gold mine in Lead, SD that were a rich mixture of native species were not considered by company officials as lush and acceptable as fields of ephemeral crops such as alfalfa. Test plots and reclaimed tailing ponds in northern Minnesota were planted with non-native species that could invade surrounding disturbed or developed land. These invasive species also do not allow for processes of succession and colonization to establish fields of diverse plant habitats (Winterhalder 1993). Regulations often prevent the sculpting of habitats which create unique micro climates for multiple, and sometimes rare, species (Wade and Thompson 1993). This skin-deep, quick-cover approach ignores the flesh and blood of the landscape. Lack of creative consideration for landform structure and water systems seems to result from the limited ecological bases of the regulations. Often pressure from a company unwilling to challenge the rules prevented any exploration of the integration of ecological principles with reclamation practices. A reclamation ecologist at AMAX Coal Co. in Gillette, WY expressed her frustration at the inability to incorporate landforms and water bodies that would enrich the ecosystem of the reclaimed land. Even though scoria outcrops and playas are indigenous characteristics of that natural landscape, the regulations and fear of prolonged bond release erased the hope for any shaping of a site specific, ecologically rich reconstruction. Mining and reclamation must not be practiced and viewed solely as extracting valuable resources, but also as constructing integrated or new ecosystems (Wade 1988).

Mining as a Creative Process

The act of mining must be regarded as a resource. Laws must allow flexibility for testing new technologies with ecological bases while also holding mining companies accountable for the quality of the reclaimed land. The understanding of specific landscape structures must allow building upon or contributing to existing systems. Mining processes unique to each location must be allowed to enter the equation.

Often the dynamic forms produced by mining are sacrificed to regulations that mandate uniformity. Federal legislation is directly counter to the idea of the “genius of the place.” Despite the fact that mining produces extremely dramatic forms, the reclaimed result is often a generic, romanticized notion of the “natural” landscape. “The boldness of the operation, the ruggedness of the rock formation, the interplay of water, rock, and land are sterilized by the fear and image of mining and by the regulations designed to ‘protect’ the environment. The art, that is to say, the texture, form, pattern, contrast, focal point, accent, and uniqueness of a place is buried by the ‘rules’.” (Bauer 1993).

In many cases, when the mined landscape does not exhibit any structural, environmental, nor safety hazards, consciously and responsibly choosing to not reclaim the land could be a viable alternative. Revised regulations may someday acknowledge where forms created by mining provide wholly new landforms or add to the diversity and economy of a region. On some unreclaimed coal fields of Indiana, housing developments are benefiting from the new water bodies and rock formations of endcuts and highwalls. Combined with the natural lakes of the Iron Ranges of northern Minnesota, numerous pit lakes provide recreation areas and wildlife habitat. Development of these unique mined landforms must be allowed to contribute to the cultural heritage of their contexts.

Mining as Cultural Expression

The opportunity to explore mined lands as expressive representations of our culture remains barely unearthed. The Project D.I.R.T. site visits along with studies of natural, historical, and contemporary landscapes lead to some speculation of how we can proactively engage with monumental landscapes and realistically and progressively redefine our relationship with Nature.

Drawing analogies to monuments of the natural world reframes the way we may perceive the dramatic processes of mining. The mine pits and lakes of northern Minnesota can appear as powerful as places like Canyon de Chelly in the Southwestern United States. The terraced stone formations of Monument Valley strike a strong silhouette similar to waste rock piles of taconite mines.

Many ancient precedents inform a new perception of mined lands. Analogous because they embody the ambitious and willful human act of land shaping, prehistoric iron age hillforts in Great Britain bear an uncanny resemblance to the lifts and benches of tailings impoundments. As evidenced by an excavated stone amphitheater dating to about 500 BC, the Etruscans were practicing “progressive reclamation” when they mined the tufa for their building while carving an important civic gathering place. Seen in this light, cannot the Berkeley Pit be seen as the heart, not the hole, of Butte, MT? These historical precedents are revered as emblems of their time and beg the question whether mined landscapes can also be considered mystical landmarks of our culture.

Contemporary experiments with reclaimed land represent a range of design responses. Many artists have attempted to address the complex issues of mining and proposed alternatives for building monuments of the industrial landscape. Some of their work has revealed the difficulties and dilemmas of reclamation.

Michael Heizer sculpted Effigy Mounds on abandoned coal spoils at Buffalo Rock State Park in Ottawa, IL. Although conceptually compelling, the giant earthforms are now disintegrating from poor reclamation techniques. It is also questionable how these insect-shaped mounds, visible primarily from the air, contribute to the community’s park experience and the understanding of the vision of this new type of landscape.

In a symposium on land reclamation as sculpture, Robert Morris issued a powerful warning that reclamation can often amount to a clean up service wiping out “technological guilt” (Morris 1979). His executed piece portrays both the destructive results and the creative forms of a mined pit, a juxtaposition that is a powerful reminder of the dual forces at work in the act of excavation.

Before his early death, the sculptor Robert Smithson was posing the most prophetic questions about the relationship of nature and culture. Delving into the geological and industrial underpinnings of mineral extraction, Smithson postulated that industrial landscapes were the place where “remote pasts meet remote futures” (Smithson 1979). His proposals for the Bingham Copper Pit in Utah and tailing ponds in Colorado re-presented these landscapes as monuments of our time and culture.

Current projects dealing with industrial landscapes are reconsidering these places as an integral part of the public realm. In this context they can act as forums of community education and interaction. Seen as civic monuments, these places can embody the celebration of our industrial heritage. An architecture critic, speaking of a recently built example, wrote: “If we’re willing to troop up to the American Museum of Natural History to look at the shattered pots of ancient civilizations, why should we profess revulsion at the sight of our own archeology in the making? At a time when people recognize the critical need to establish more harmonious relations with the earth, why shouldn’t there be a place we can go to see how that goal might be attained?” (Muschamp 1993).

New Practices, New Perception

The issues of reclamation are difficult and complicated. The perception of mining continues to be misguided. Yet these factors should not discourage the pursuit of an interdisciplinary effort toward a progressive practice and renewed vision of mining. Mining companies need incentives to do more than just stabilize lands with green veneer. Reclamation laws must allow for flexibility to build ecologically rich new landscapes. Interaction with the community must allow for an understanding of how the landscape change can positively reshape their lives and the lives of the next generation. All efforts must build toward visionary landscapes that represent a reciprocal relationship of nature and culture.

There are many years ahead of reclaiming thousands of acres of abandoned mines. Lessons from reckless mining practices are restructuring processes that incorporate precautions to protect the environment while harvesting resources. We should not be ashamed of mining as a landscape of production, which can be viewed as similar to the necessary and beloved activity of farming. If the practice of reclamation is associated with cleaning up after irresponsible mining processes, I look forward to the day when we can retire the term reclamation. Instead, we O hope we will see a time when the word mining will evoke images in everyone's mind of productive and beautiful landscapes. The pride in the act of mining can unearth new possibilities for how we shape our landscapes of the future.

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