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From environmental liability to community asset: mined land reclamation

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Abstract

The reclamation of large-scale sites with immediate community connections can be an opportunity for broad engagement. The AMD&ART project, completed in 2005, addressed the former site of the Vinton Colliery, once the central focus of the community of Vintondale, defining the pace of life in the community. When the project started in 1995, the site had been minimally reclaimed by spreading waste coal across the landscape to make it flat and safe, but the reclamation also flattened the history of this community. Engaging the community through both the arts and the sciences, and doing so with close, almost daily, connections with as many in the community as possible, resulted in an award-winning project. This paper is the story of that project by its founder and director.

1 Introduction

To understand the reality of impoverished American mining communities and the challenges they face in creating a better future, you have to know their history. The century of heavy industrial development in the US, roughly 1850 to 1950, was fuelled by coal, and that coal came from Appalachia – from a chain of states stretching from Pennsylvania to Alabama. Before coal, these mountainous regions were thinly populated, isolated and easy pickings for coal-company buyers seeking mineral rights at minimum cost. Once mining started, company-built coal camps spread across these vast reaches, each its own world, connected only by company railroads, company news (if any) and occasional letters from home countries spread across the globe.

While the cultural history of this region encompasses a common 'company-town-mindset' and certainly a coal-country and a central/southern Appalachian culture, not to mention an apparent national policy of hands-off neglect, there is also the deeper reality of local history – the particular coal company and its practices, the particular mix of peoples imported to work the mines, the particular geologic structure of the coal beds – and the environmental and social consequences of this heady brew. Working anywhere in coal country to address these 'problems of history' – the environmental, cultural, social, even spiritual consequences of unregulated mining and all it brought with it; the later abandonment and then the ensuing persistent poverty – demands good history as well as good reclamation.

Today the Appalachian Coal Country – hundreds of counties spread across a dozen states east of the Mississippi River – is one of mainstream America's forgotten places and perhaps its largest forgotten ecosystem. Most often described and photographed as a land of overwhelming environmental and human desolation, this region stretches from northeastern and western Pennsylvania south down the Appalachian Mountains through Maryland, Ohio, West Virginia, southwest Virginia, eastern Kentucky and Tennessee and into central Alabama. Interior coal fields in parts of Oklahoma, Iowa, Indiana and Illinois reflect a similar history and culture, a place where levels of hope match levels of income, where more than 3 million people live with one mile of an abandoned mine land site and where environmental devastation can overwhelm human aspirations for a better, fuller life.

Dead orange-coated streams and vast black piles of waste rock called 'bony', 'culm banks' or 'gob piles' have come to symbolise this historic Coal Country. The broken remnants of company towns – what were thought to be temporary settlements called 'patch towns' or 'coal camps', still scattered by the scores throughout these mountains – contain people caught in the free fall of globalisation, mechanisation,

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industrial decline and a lingering company-town mindset that can seem passive in its acceptance. Beyond the oceans of waste coal left behind and the small coal camps spread across these mountains, the eternal legacy of past, unregulated coal mining is acid mine drainage (AMD), an unstable aqueous solution that seeps or gushes from abandoned coal mines. Everywhere in the region, unceasing discharges line streambeds with orange sediment, kill the bottom of the food chain and leave streams dead. But AMD is more than just a water problem; it is deeply emblematic of the economic and environmental abandonment throughout Appalachian Coal Country. Not since the Second World War and its still-remembered spike in production, employment and human purpose has there been much good news here.

Effective solutions to these Coal Country problems are not easy and they are not simple. Thankfully, within the last 30 years sustainable, environmentally rational approaches to treating AMD have been developed. Termed 'passive treatment', these systems learned from nature, employ native plants and limestone to neutralise the acid, drop out the metals and release both clean water and new hope. These early passive treatment systems, built with significant public funds, saw virtually no public involvement and no real commitment to public presentation; in fact, they were often surrounded by evergreens to hide them from public view. If fixing this legacy of AMD, this 'problem of history', was ever going to succeed, the region needed a way to address AMD that was more than just good science. It needed to enhance civic engagement and create opportunities for constituent advocacy. And it was clear that from a historical perspective, any effort that sought to fix the problem – from a heritage and an environmental standpoint – simply could not fail. Failure had happened too often in this region already.

It may be both a personal commitment and a piece of deductive reasoning, but within the conflicted history and ravaged landscapes of Appalachian Coal Country are the seeds of hope, improvement, sustainability and healing. The Appalachian Coal Country presents the nation with an opportunity to rescue a vast ecosystem that spreads across its eastern core from Pennsylvania to Alabama, region by region, watershed by watershed, even person by person. Within this complex process, it is crucial to establish critical, civic roles for scientists, public historians, artists and designers – for all of us – who engage in the twenty-first century civic healing that must follow the disregard for environmental concerns and its consequences that pervaded American culture for much of the nineteenth and twentieth centuries. The historical parallels between what the US did to industrialise on a coal base and what much of the developing world is trying to do today should not be lost. The challenge of reclamation in Appalachia has the potential to create models for reclamation that can be applied widely, but it will take the perspective of history and the complexities of multi-disciplinary approaches to work effectively.

2 Environmental liability

Anyone who works for very long on environmental issues, particularly reclamation of previously mined lands, begins to realise that environmental 'problems' are created and defined not by science but by our culture. We as a society decide what we care – and do not care – about at any given time. We define 'problems' as those issues we now care about, and we immediately set about measuring the problem and the potential of its fix, somehow leaping from a culturally defined problem to a scientifically defined fix. We inherit the sum total of all the previous cultural decisions made about this landscape, and we address those we choose to address. We have a habit of demonising the other side – labour versus management, environmentalists versus miners, one ethnic group or class against another. But from any historical perspective, the enemy is us, all of us as a nation, and the values we held at the time we created these problems. Fortunately, since 'we' did it, 'we' can also fix it – an assumption embedded particularly deep in the American character.

While problems within the Appalachian Coal Country are many and vast, acid mine drainage is acknowledged by the US Environmental Protection Agency as the largest environmental problem. One writer aptly described AMD as the 'gangrenous puss of deep earth wounds' (Haag, 1998). Some watersheds may have one AMD discharge for every square mile, a daunting prospect. Although AMD is generally recognised as Appalachia's worst environmental problem, there is surprisingly little public awareness of its negative impact. The difficulty is that AMD is not at the top of the list of public concerns, local or national.

Locals have lived with orange streams for so long that they are seldom noticed, while nationally, few – including policy makers – even know what AMD is, let alone what might be done about it. AMD and its dangers must be made a public issue, a legacy of national policy that must be addressed. Too often, these affected streams are readily accepted as a part of the legacy of old coal and the area's everyday life and landscape; too often, scientific discussions of the problem leave the voting public out of the loop; too often, the cultural legacy of passive acceptance rather than confrontation leads to governmental neglect.

In spite of this seemingly overwhelming legacy of past despoliation, neglect and public indifference, today there are small groups of determined citizens working – almost always as volunteers – to bring real change to Coal Country. State by state, watershed by watershed, partnership by partnership, these groups of volunteers are building on a deep tradition of hard work and close ties to community, to their land and to a place – a watershed – that they call home. They fight daily to create a better world for their kids and a better downstream environment for us all. They are the new stewards of America's most ravaged environmental frontier, a huge ecosystem of people, land and water waiting to be reclaimed and returned to environmental, economic and civic health. Their approach is grass roots, and their work reverberates deep in the local culture as well as the regional ecosystem. With help from a few state and federal government programs, private sector firms and local businesses, they are quietly destabilising the negative expectations of Coal Country culture, creating patterns of community success and innovation, organising constituents into effective, hard-working advocates for their watersheds and working to eliminate AMD.

The partnerships they have built extend across major US government offices, throughout every state system that administers federal funds (and other state funds) and deep into the private sector. Local groups, often all-volunteer, collect the data and the local support to engage private foundations and/or state or federal agencies and build what become mutual assistance pacts around projects they want to see completed. In the example described here, the US Environmental Protection Agency, the Vira I. Heinz Endowment, the Pennsylvania Department of Transportation, the Rockefeller Foundation and the US Department of the Interior's Office of Surface Mining were among the private and governmental sources of funding engaged by the project. And there were many others. That these partnerships are successful is a measure of the effectiveness of these few government programs in working with citizens, the interest of corporations in being a part of the solution and the creativity of these citizen groups in assembling many partners. The range and the capacity of the agencies and individuals that are willing to come to the table and co-operate in environmental reclamation are promising, particularly when the problem is seen in a larger public context that allows more-diverse constituents to engage.

As these watershed groups make clear, some of the citizens of the eastern coal region are no longer willing to accept the old stereotypes, no longer willing to be the impoverished and despoiled core of our nation's eastern mountain region. Slowly and tenaciously, watershed groups are working to create a community narrative based on history, but also one that is environmentally rational and developmentally sustainable in a region where 'man' created the mess and where men and women are now working hard to fix it. Encouraged in part by a few government initiatives, in part by a newer generation of Coal Country leaders less wed to a tradition of acceptance, in part by both government and philanthropic foundation recognition that poverty in Appalachia is inexorably linked to its environment and that both must be addressed and perhaps by a recognition that local pride in an industrial past is insufficient to assure a post-industrial future, Coal Country is coming back.

One of the first and more ambitious of these community pioneers has been AMD&ART, a purposeful effort to link AMD remediation with the arts (Figure 1). It was a single, place-based experiment in engaging a small community with a long and visible coal history with good science in AMD remediation and good design and interpretation in the development of a 35 acre site. While AMD&ART was started by an employee of a regional economic development office, it quickly became a three-pronged effort in which local citizens and the young students who worked with them, a small design team responsible for listening to community aspirations and giving those aspirations good form (not writing their own prescriptions) and a network of supportive agencies, individuals and foundation funders all came together. AMD&ART's approach to AMD and its related environmental and cultural issues is necessarily and avowedly inter- and

multi-disciplinary. It has sought to bring attention to the problem of AMD by designing and building artful public places that incorporate passive AMD treatment systems, to honour the history and contributions of coal towns, to restore wildlife habitat and to provide opportunities for recreation and community gatherings.

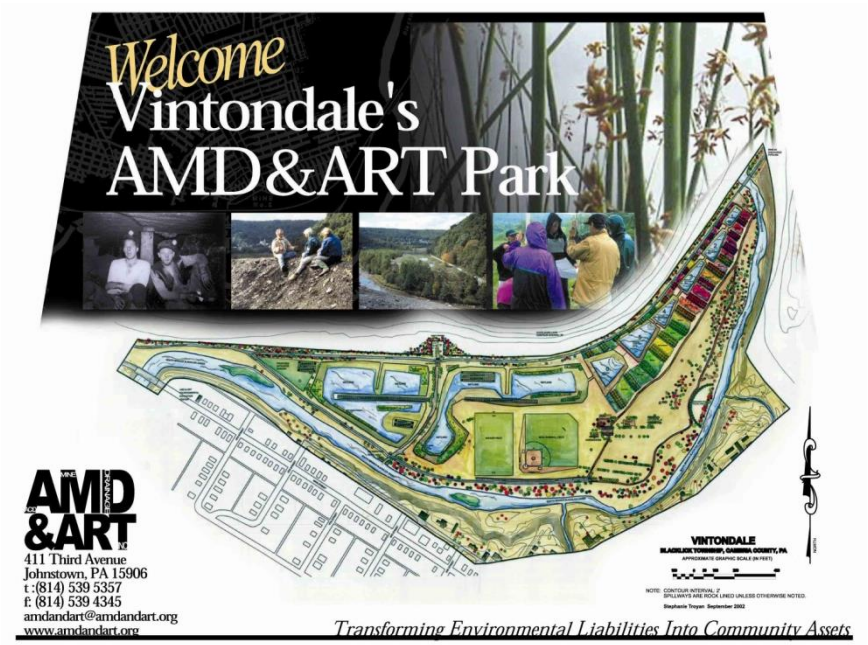

Figure 1 Poster for Vintondale AMD&ART Park

3 Transformation to place-based community asset

The Borough of Vintondale, Pennsylvania, is a small coal patch town in Cambria County, some 15 miles northeast of Johnstown, nestled deep in the Blacklick Creek Valley. Created by the Vinton Coal Company in the early twentieth century, Vintondale is a community whose history was defined by underground mining and the large coal processing structures at the centre of town, yet even the last tangible reminders of this once-proud past are rapidly fading away. In the 1950s the last deep mine in Vintondale closed forever, and the company salvaged its own buildings. As the procession of miners across the footbridge to the coal complex ceased, so did the sounds of the tipple, the smoke from the railroad and the night-time glow of the coke ovens. As more and more residents moved away, other buildings and structures began to crumble, and bricks and cut stone were taken to build walls and repair houses in the community. By the 1980s, the Vinton Colliery site was the town dump, and the borough's hope for its own future dwindled.

The Vintondale AMD&ART site is situated on 35 acres of now-reclaimed mine land that once hosted the heart of this small mining town – the Vinton Colliery plant with its half-dozen major buildings as well as the Pennsylvania Railroad line that connected Vintondale with the outside world. The northern edge of the site is the old railroad right-of-way, today known as the Ghost Town Rail Trail because it connects several now-demolished coal camps, which attracts approximately 75,000 users annually. The South Branch of Blacklick Creek, a river severely impacted by AMD, carves out the eastern and southern boundaries of the park and separates it from the town (Figure 2).

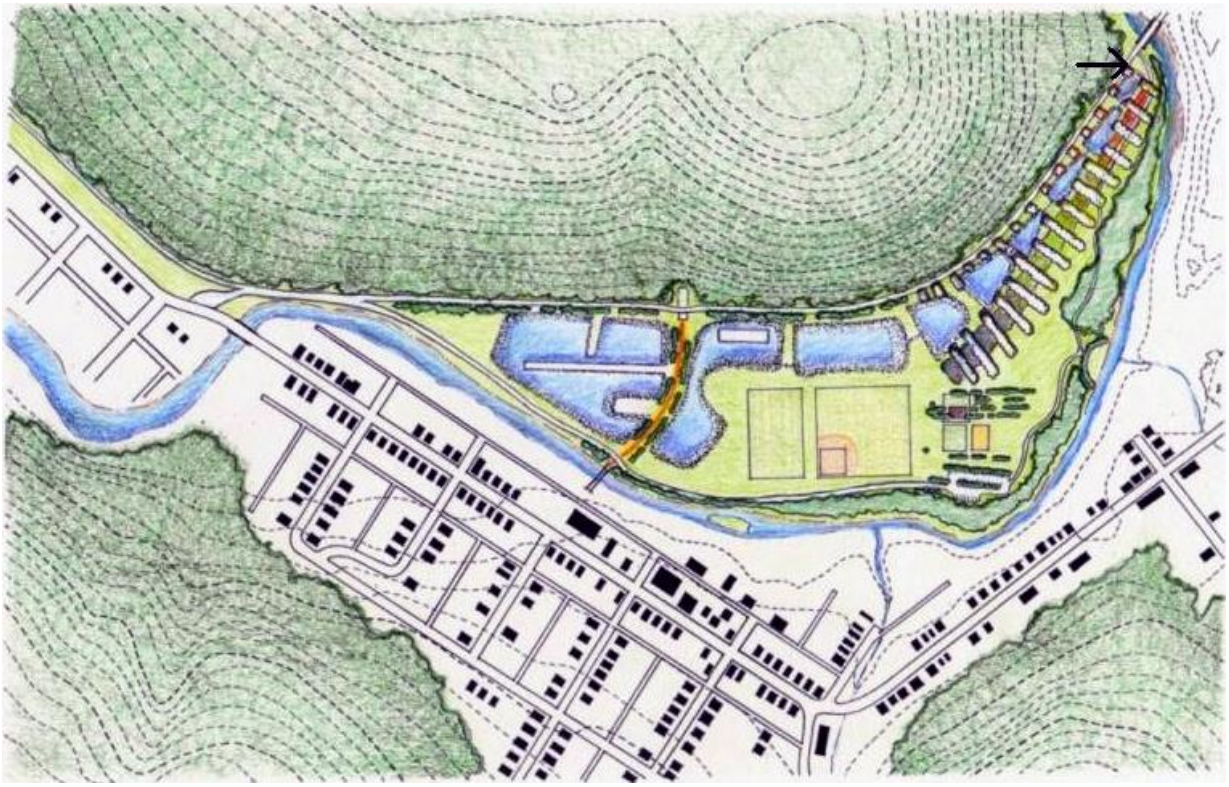

Figure 2 AMD&ART site plan

Community involvement and support was an integral component of the AMD&ART process from the beginning and has allowed the park to become a reality, as the AMD&ART team could move no faster than the community was willing to move. And here a small bit of history is necessary. This was a town purposely populated by different language groups, largely to make organising more difficult. There were more than 26 languages spoken in Vintondale at its peak, when the population may have been as high as 2,000. In addition, Vinton Coal ran everything and decided everything – residents had no experience in governance. When the company sold off all its houses in the 1950s and left the town on its own, the 'community' that remained was populated by people selected to discourage organising and with no experience in self-governance. Some coal camps overcame that legacy and moved on, while others remain mired in their own historical past.

Part of the job of the Southwest Pennsylvania Heritage Preservation Commission was to find ways to enhance economic growth around heritage themes: the devastating loss of coal jobs in the 1950s and after that a region filled with orange streams, abandoned structures and declining communities. Finding some way to address AMD remediation that was more public, more likely to actually attract positive attention, was critical, and some small funding from a state arts group enabled a small group to assemble a workshop to explore possibilities. Out of that workshop, which included every knowledgeable local able to attend, came the Vintondale site and a small design team consisting of a historian, a hydrogeologist, a sculptor and a landscape designer, as well as a full-time local college graduate who worked directly with the local community to keep everyone informed and engaged. After a year of one-on-one work in the community, more than 60 residents – 10% of the population – turned out for two public design meetings to write down their ideas on site maps and to talk with design team members about their town, their concerns and their hopes. The resulting design proposal – and ultimately the finished site – incorporated ideas from everyone who contributed. The Vinton Colliery, once a swath of desolate land, was to become a place for recreation, historical reflection and AMD remediation.

At the eastern end of the park, a sequence of wetland treatment cells shaped to fit the topography and reduce excavation costs mark the beginning of the treatment system. The AMD discharge flows through this series of settling ponds and a vertical flow pond until it reaches the new wetlands, where it is cleansed

of its metallic pollutants and neutralised to a healthy pH. Planted bands of native trees echo the increasing health of the water through the transition of their fall colours from deep red to orange to yellow to silver-green, and they line the system in a Litmus Garden that creates the perfect backdrop for a fall festival to celebrate the garden's peak colour and Vintondale's recovery.

At the western end, where black boney or waste coal once barely supported scrubby grasses and stunted trees, a new marsh environment attracts a variety of birds and wildlife. These are History and Mitigation Wetlands, created in partnership with the Pennsylvania Department of Transportation, designed with assistance from the national Wildlife Habitat Council and built with the aid of the US Army Corps of Engineers, who created artificial soil for the entire seven acres. The proceeds from the sale of the soil has made possible the creation of a trust fund at the local community foundation for perpetual operation and maintenance of the treatment system and wetlands. As a lasting reminder, the foundation footprints of the Vinton Colliery structures can be seen within the wetlands, their forms outlined by red maples that will eventually assume the approximate scale of the once-massive structures.

At the centre of the park, the AMD&ART team and the community have built an active recreation area, a place filled with a baseball diamond, a sandbox for horseshoes, a volleyball court, picnic tables, grassy places and more. At the site of the Mine #6 portal, the heavy timber frame of the mine opening has been reconstructed full-scale and filled with a black granite slab upon which are etched life-size images of miners taken from 1930s film footage of Mine #6. Just across the Ghost Town trail from the portal is a 15 × 25 foot mosaic map of the entire site that gives visitors a better understanding of the mine and its community (Figure 3). Finally, looming over the entire site is a massive pile of boney that provides an excellent vantage point to overlook the park and think a bit about the resilience, the determination and the grit of nature, about the people who started the coal era and about their children who finished it.

Figure 3 Mosaic map of AMD&ART Park

Visitors to the park walk on interpretive trails that draw together historical information and the science behind passive AMD treatment and the newly healed ecosystem that thrives in the wake of remediation. The physical presence of this energised place symbolises the success of community residents in healing these waters, not only by finishing a job left unfinished by past generations but also by creating a new asset for their own families and the future. The Vintondale site, once the bustling centre of life in this company town, was finished in 2005 and is once again a vital part of community life and a source of civic pride. Notably, the project won the Pennsylvania Environmental Council Green Design Award and the first

national Phoenix Award from the US Environmental Protection Agency's Brownfields Program for community impact on mine-scarred lands.

4 Conclusion: AMD&ART as place and as idea

AMD&ART brought together scientists, public historians and artists, most of them local, along with heavy participation from the local community. It maintains that reclamation is celebration, a chance to artfully redeem a legacy now identified with mountains of boney, rust-coated streams and economic depression. Through AMD&ART, treatment systems become Litmus Gardens, wetlands become educational opportunities, industrial site remnants become historical reminders and once-passive community members become advocates. When it took on this challenge, AMD&ART's cultural approach to AMD remediation was revolutionary – insisting that science and the arts were both necessary but neither was sufficient, refusing to allow disciplines to compromise but insisting that all disciplines must accommodate others.

Today, AMD&ART is a national model for place-based environmental and cultural recovery, working with many partners to effectively and strategically treat AMD and coal communities. As a project, AMD&ART was successful because it was both art and people. It gathered individuals, organisations and funding agencies with diverse interests together as partners, creating new energy and comprehensive solutions to AMD remediation in Appalachia. By bringing the perspectives of public history to mix with the disciplines of science, the healing accessibility and delight of innovative design and the energy of community engagement, AMD&ART created a productive pathway for action, a pathway that may help to alleviate the problems that challenge people of the entire Appalachian coal region.

AMD&ART demonstrated that environmental reclamation, creatively designed, has the potential to re-instill a sense of place and pride in communities, allowing them to forge new connections to their local environment and history. Beyond its practical success as a place-based project both funded and finished, the AMD&ART website (www.amdandart.info) may be even more important as a catalogue or 'shop' for useful ideas and approaches to AMD and other Coal Country legacies. To be sure, doing something real that actually worked as a project was critical to credibility and thus to the sustainability of the idea, but it was the project commitment to sharing the idea – including all the funding applications – that actually made building the idea possible, that made the project a larger success. Significantly, the entire project was accomplished without paid formal staff or a large support infrastructure – AMD&ART worked only with AmeriCorps and VISTA (recent college graduates serving a Peace-Corps-like year of service) and lots of community volunteers.

AMD&ART has become a source of inspiration to other communities across Coal Country and as far away in the US as the Oregon coast. Internationally, it is hard to track the use of the concept or the website, but the site is frequently visited for more than half an hour, and there has been lots of international correspondence, a few Master's thesis projects and some professional papers. 'AMD&ART' is now both the name of a park in Vintondale and the name of an idea, a commitment to interdisciplinary work in the service of community aspirations to address environmental challenges. It is a lasting antidote to the complex problems of Coal Country that is, and in fact must be, cultural and environmental; only a place-based multi-disciplinary solution that starts with good history has the power to both clean the water and heal surrounding communities in such a way that prompts the public to demand environmental improvement and a better quality of life. To re-conceptualise AMD treatment in this way is to create a paradigm shift, a transformation from environmental liability to community asset through the support of community members – voters – who care and participate. While AMD&ART cannot claim to have transformed Vintondale, there are places across Coal Country that picked up the idea, applied it to their own local resources and needs and succeeded.

Good design is more than a nice plan. It is an opportunity for public engagement. Similarly, good history opens opportunities for better understanding of the origins of the contamination we seek to remediate, for greater reflection on the values and achievements of our predecessors and for acknowledging our contemporary role in the continuum of history and environmental commitment. There are no 'bad guys' in

this story, only different generations with different values. If we honestly engage that understanding in interpreting each of our attempts to address the environmental consequences of some of those past values, we create opportunities for support and engagement that might otherwise not be available. If we design to engage the public, if we interpret these sites in ways that allow understanding, if we admit that good science is always necessary but sometimes not sufficient, if we use public history to inform the future, we create the opportunity for much broader public participation in reclamation issues. We may even do some small thing to help rekindle a reason for pride in Coal Country.

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