

Waste, Industry, Ecology: Urban Design Futures for Sauget, Illinois

ABSTRACT

Decaying post-industrial towns on the outskirts of shrinking cities have become a prototypical American urban form, rightly characterized as magnets for pollution and undesired land-uses. In these landscapes where traditional commercial demand is low and regional population is shrinking, the challenges of remediation, development, and urban design are great.

Sauget, Illinois, an industrial suburb of St. Louis, is one such site. Founded by the industrial giant Monsanto, the town has always served St. Louis as a manufacturing center, recycling station, and dump. Now, as industry leaves behind manufacturing shells, Superfund sites, and other uses rejected by neighboring municipalities, Sauget must imagine a new future. Participants of the spring 2012 Shrinking Cities Studio, a graduate urban design studio, examined a former oil refinery site in Sauget and envisioned new potential for the site and the larger region. Two proposals are presented here. Transfer Station transforms the abundance of the local scrap metal ecology into raw material, increasing public appreciation of waste ecosystems. Remediation Landforms layers remediation techniques with new public uses to create a flexible landforming process that embodies the shifts and uncertainties of the region's future.

INTRODUCTION TO THE SITE

Sauget, Illinois, is both an extreme urban phenomenon and a prototypical American city. Located across the Mississippi River from St. Louis, MO, it was incorporated in 1926 by the agricultural giant Monsanto. For decades, it supported St. Louis's industrial economy, serving as its manufacturing center, recycling station, and dump. Its plentiful industrial and railroad jobs helped populate the region, including cities like East St. Louis, Illinois.

At the turn of the century, St. Louis was the fourth largest city in the United States. Today, it has lost more than 50 percent of its population since its high in 1950. East St. Louis has a devastating unemployment rate of around 20 percent, and 30 percent of its residents live below the poverty rate.

However, while its neighbors have shrunk in size and wealth, Sauget has prospered. Although its population hovers at 159 citizens, Sauget's

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police and fire force outperform East St. Louis's and its tax base is high. Sauget has succeeded in part because of its willingness to accept land uses unwanted by other cities in the region, such as chemical manufacturing plants and other noisy, toxic industrial functions; an abundance of strip clubs; and large live-music destinations. Similarly, Sauget has avoided most of the violence and scandal that has plagued the East St. Louis region. The mayor of nearby Washington Park was shot dead in 2010 while coming home from his second job at the sanitation district. The mayor of Alorton was indicted this year for trying to sell drugs confiscated from one of his citizens.

While Sauget itself has largely dodged such scandal, it has its own idiosyncrasies: the city is so named after the family dynasty that has governed it since its incorporation. The Sauget family also owns many local establishments ranging from a 24/7-hour nightclub to an eponymous landfill.

The regional landscape is similarly precarious. As with many port cities, the river system, itself an industrial corridor, has been deeply engineered to support human settlement. Situated within a large floodplain, the American Bottom, the East St. Louis region has protected settlement through a system of levees, with varying degrees of success. The regional flooding and soil conditions also enable contaminants from heavy industry to flow easily into the river. Pollutants are a defining feature of the American Bottom: Sauget alone is home to two Superfund sites and many more brownfields.

While this environment may seem extreme, in many ways it is the prototypical 'free market' ex-urban condition—Sauget allows, even welcomes, unwanted uses. Sauget has come to define a certain type of American urban form: the industrial suburb in transition. Once seen as a necessity for urban economic growth, these shells of a past era of American prosperity have become regional dumping grounds for undesired uses and for waste itself. The need to create new design visions for this prevalent urban condition is imperative.

This was the context for a spring 2012 graduate urban design studio that focused on a decommissioned oil refinery within Sauget, IL.

DESIGN PRECEDENTS: GEOGRAPHIES OF WASTE

In the last two decades, the design community has hosted an escalating dialogue about the impact of waste and manufacturing on the built environment. American cities with a long history of heavy industry such as St. Louis have dealt with the shock of vacancy as those industries shut down or moved overseas, leaving behind empty and wasted landscapes. These vacant factories, warehouses, and fields have resisted redevelopment not only because of their host cities' depressed economies, but also because of the extensive contamination so often left behind in their soils and groundwater. Simultaneously, increasing global awareness of the economies of waste, captured in images of ship-breaking yards in Bangladesh and circuit board dismantling in China, have dovetailed with the sustainability movement in encouraging designers to transform the way we see waste ecosystems.

As a part of this holistic perspective on waste, the design profession is



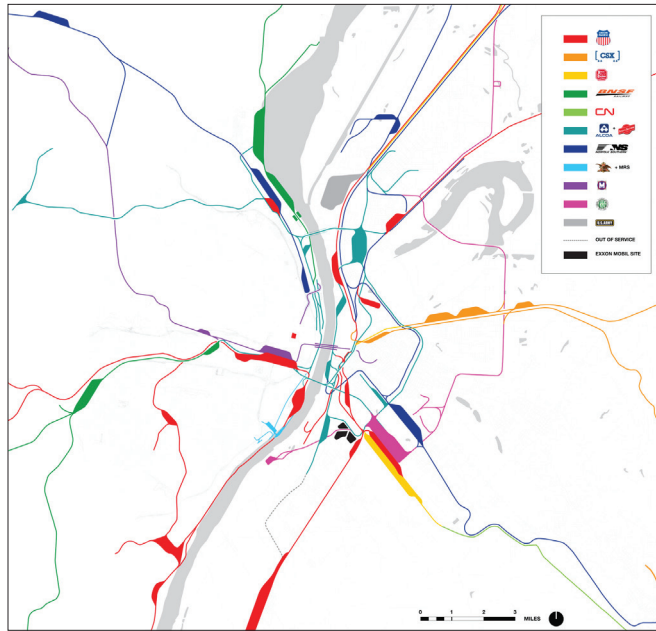
increasingly interested in urbanism as infrastructure, ecology, and territory, bringing an even larger scale to bear on the realities of waste flows and industry. A recent survey of seminal architecture and urbanism books published illustrates this zeitgeist: *Landform Building: Architecture's New Terrain* (Allen and McQuade); *Drosscape: Wasting Land in Urban America* (Berger); *Ecological Urbanism* (Mostafavi and Doherty); the Harvard Graduate School of Design's journal *New Geographies*; *Landscape Infrastructure* (Hung et al); *Territory: Architecture Beyond Environment* (Gissen). Architects are hypothesizing deltas, dams, ecological systems, landfills, and waste streams. Across architectural education, a preoccupation with geography and territory has largely superseded the previous decade's focus on sustainability.

Several key design projects highlight this trend of designing for large scale waste ecologies, landscape as urbanism, and landform building. In his recent project, *AMF*, Bjarke Ingels Group (BIG) playfully combines recreational and industrial programs to create a waste-to-energy plant that also doubles as a downhill ski resort. By creating a spectacular experience through the productive use of waste, formerly opaque material processes and energy systems are made public.

The Panasonic Eco Technology Center (PETEC) exposes how private industry uses innovative recycling/up-cycling methods to create environmentally and economically sustainable practices. By designing their products with their eventual disposal and disassembly in mind, the actual use of the product by a consumer is reconceived as just one part of the material lifecycle. This concept of reuse can be applied at the scale of the built environment, with designers playing an important role in facilitating the transformation of waste into raw material.

Figure 1: Aerial photo of Sauget, Illinois, as seen from the St. Louis side of the Mississippi River. The studio's site is highlighted.

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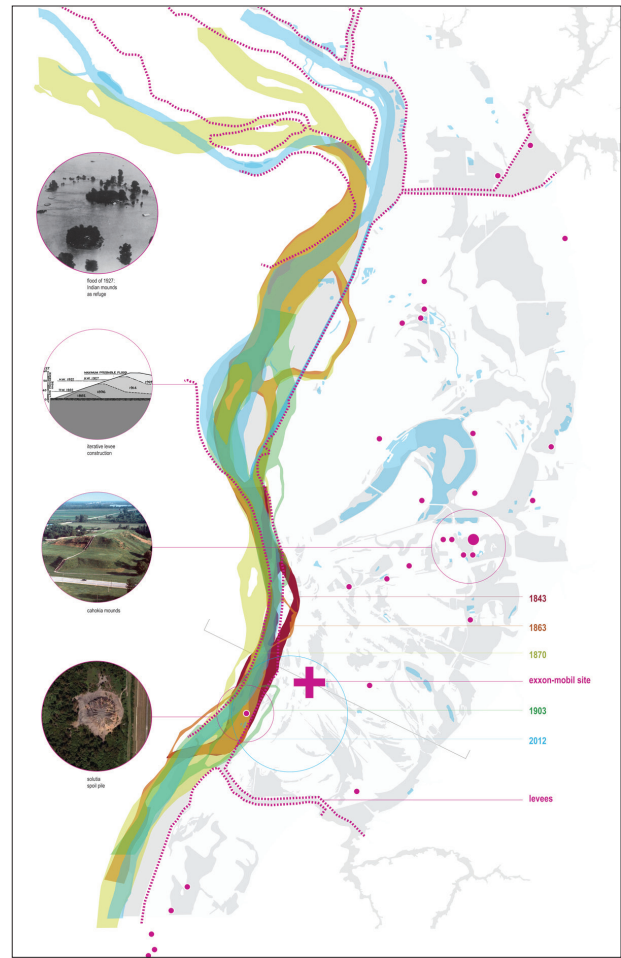


Figure 2: St. Louis regional rail infrastructure

Figure 3: A catalog of flooding, river shifts, and landform building in the American Bottom

In addition to built works, precedents from the field of landscape architecture brought multi-scalar thinking to the studio's explorations. Two projects by the German landscape architect Peter Latz were of particular relevance to the Sauget site—the Landschaftspark Duisburg-Nord in the post-industrial Ruhr Valley in Germany (1991), and his proposal to convert the Hiriya landfill mountain outside Tel Aviv into a functional and methane-capturing public park (2004). The Duisburg-Nord site is a well-known reclamation of a former factory into a park space, turning fallow industrial structures into opportunities for public interaction and collective memory.

Latz's Hiriya proposal inserted multiple layers of public use into what was previously a mountain-sized conglomeration of trash. Not only did Latz design a cap for the landfill that now serves as park space for the city, but he also proposed capturing the methane released in the waste biodegradation and reusing its energy to power the park lights and other services. Latz's layering of functions, with an eye toward public use and energy production, reframes wastelands as places with the most potential for meaningful public interaction in their urban contexts.

East London's Northala Fields Park by FoRM Associates, also produces public uses from debris and waste. Conical landforms were generated from the construction debris of London projects such as Heathrow Terminal 5 and Wembley Stadium, and then capped with greenery and reinterpreted as park space. Though the landscape design is a simple and innovative way to monumentalize the form of banal waste piles, perhaps more relevant for Sauget's industrial economy is the project's economic structure: the park was paid for through disposal fees, successfully creating an entirely public space without any funding from taxpayers.

Finally, though it is an often-cited project, the impact of Field Operations' park proposal for the Fresh Kills Landfill on Staten Island in this discourse cannot be overstated. Like Hiriya, the project embodies theoretical ideas about the potential of these previously discarded or unwanted lands to be reinvented for new public uses. The social integration of landfills into open space—a literal translation of this idea—in one of the densest cities in the United States is symbolic of how thoroughly urban conceptions of waste have shifted.

THE STUDIO PROCESS

A former oil refinery and transfer station decommissioned in the early 1990s was the subject of the Shrinking Cities: Sauget, IL studio, a joint urban design and architecture graduate studio. Over the last two decades, ecological processes have reclaimed portions of the Sauget site, shrouding it in a second-growth forest of medium-sized trees. This year, demolitions began on the last remaining structures on the refinery's east tank farm as the owner prepares to sell the site.

The studio was charged with envisioning possible futures of this site, with the added challenge of abstaining from residential programs for reasons of long-term health and safety. The resulting proposals evolved through research and design iteration. During the process, we developed a fascination with this American urban condition. We have great optimism for the future of this site—and the many others like it—to embody new ideals in industry, waste and recycling, and ecology.

The studio conducted extensive research on the East St. Louis region, unearthing historical, geographical, and infrastructural phenomena. The floodplain conditions of the American Bottom formed the basis for our thinking about the susceptibility of the site to pollution, flooding, and other environmental perils. Another dominating feature of this region is its loss of physical infrastructure and population. We also noted the importance of the industrial legacy of the site, including an incredible rail network and a density of industrial polluters. Finally, challenging social realities characterize the region, including stark racial segregation and political disinvestment.

TWO RESPONSES

After the initial period of research, synthesis, and brainstorming, the studio presented seven proposals to the client at the end of the semester, two of which are described in this paper.



PROJECT A: TRANSFER STATION

"We were basically incorporated to be a sewer," said Sauget Mayor Rich Sauget when asked to describe his city.¹

What can we make of this? Seen through one lens, our site is yet another dirty, vacant industrial parcel on the periphery of a shrinking city. But being a region's sewer can also be an opportunity. The Sauget site is part of a grand narrative, a product of the global shift in the way things are manufactured and recycled: in 2010, waste metal and paper was the number one export to China and India. In fact, Mississippi River barge traffic is one of the primary routes scrap metal, paper, and e-waste takes from North America to newly industrializing countries like China and India, who transform this refuse into commodities we then import.

This is a market failure as well as a failure of imagination.

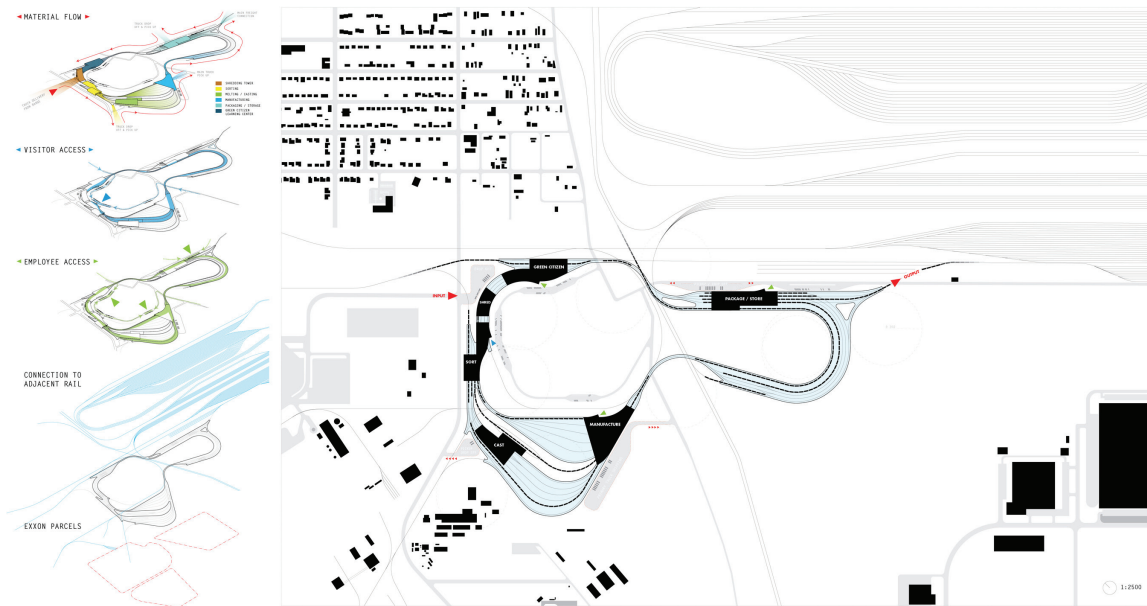
Transfer Station intervenes in this supply chain, closing the loop on global waste systems. It amplifies and leverages the conditions that make Sauget what it is by increasing the flow of waste to the site. *Transfer Station* proposes a new regional recycling hub, designed to absorb waste from the landscape while changing values around waste ecologies.

Inspired by the plentiful rail network that marks the East St. Louis region, *Transfer Station* takes a recycling process normally stacked or coiled and stretches it horizontally. Scrap materials are delivered from river barges and enter the site from the main northeast road and begin to move by rail car around the perimeter of the site. Heavier industrial processes and logistic activities are housed in hangers along the way (Figure 04).

Recycling cars specializing in the breakdown of different materials populate the site according to market needs, allowing for great flexibility. For example, the system is equipped to recycle copper tubing in one period, and break down e-waste the next. By strategically locating the inflow and outflow of materials to the site parallel to existing road and rail networks, *Transfer Station* functions as a recycling hub, logistics center, and conveyance system which reintroduces valuable raw material back into the domestic market through existing national freight routes. Six out of the seven Class I Railroads run through East St. Louis and Sauget, which makes this site extremely attractive for national and international raw-material distribution.

Transfer Station also modernizes attitudes about waste. As material is transformed along the circuit, the public mirrors this process in their own 'parklette' cars. Formally, *Transfer Station* takes cues from the industrial vernacular elements that populate Sauget's flat landscape (rail terminals, logistic warehouses, and factory towers) and exaggerates their scale and shape to accommodate material flows and unique visitor experiences. The entire region shares this visual access through the sorting and shredding tower, a monumental answer to St. Louis' Gateway Arch (Figure 04).

Making this process public is intentional. We believe that recycling facilities have a pedagogical purpose. Kevin Lynch wrote of the educational value of waste:



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Figure 4: Transfer Station: Top, aerial render. Bottom left, material & visitor flows. Bottom right, site plan.

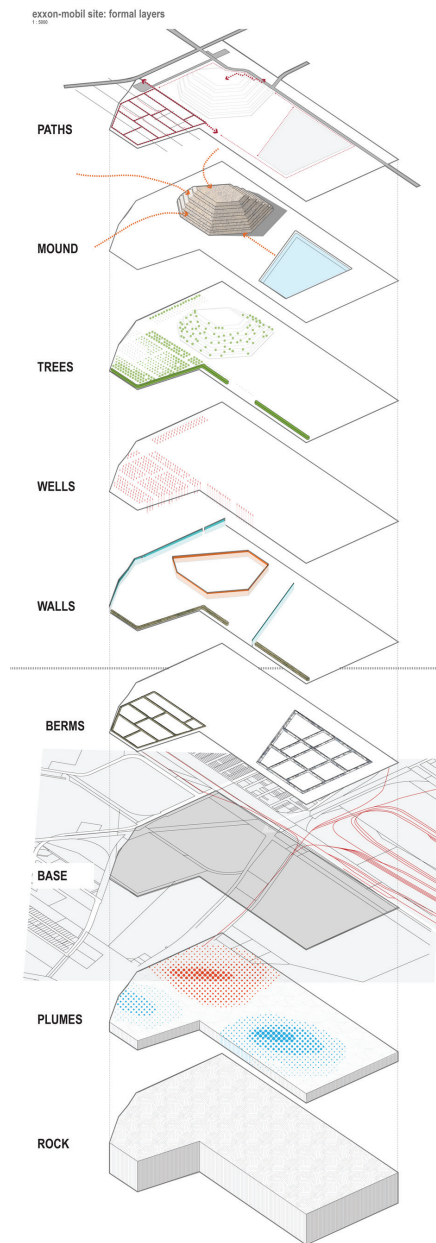


Figure 5a: Remediation Landforms:
The layering of present and proposed
landforms on the site.

Wherever possible, we look for ways of making wasting a positive experience. We can begin with those pleasures that wasting already affords: the strong sensations of destruction, of soiling and cleaning, of shabbiness and backsides, of moving on and using up, of reusing old material and seeing new patterns in it, of appreciating historic depth, age, maturity, and decay. Wasting things could be as valued and interesting as making and consuming them.²

Transfer Station closes the loop in our global waste flow to capture the value of waste, creating a new economic engine desperately needed by the region. By embracing and amplifying the ‘sewer’ of Sauget, it provides a template for how struggling industrial suburbs can harness the powerful supply chain of waste—something that Sauget’s local political fiefdom would certainly embrace. By treating the recycling process as an educational resource for the public, we propose that design can encourage a more holistic vision of waste that celebrates domestic manufacturing and recycling. Sauget, a city that welcomes both spectacular recreation and large-scale industrial facilities, serves as an excellent host and testing ground for this hybrid infrastructure.

PROJECT B: REMEDIATION LANDFORMS

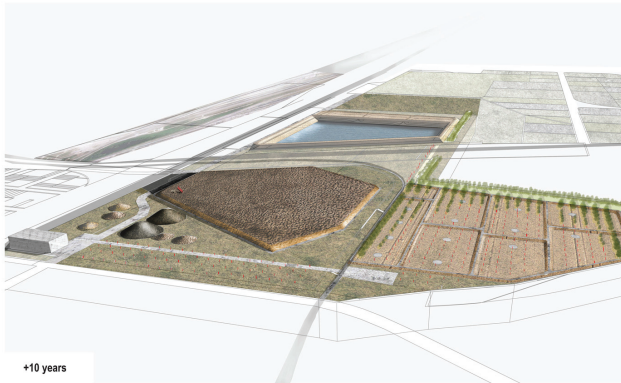
Ecology may initially seem irrelevant in the industrial context of Sauget. Common ideas about the systems that underlay our built environment conceive of ‘nature’ as something incompatible with intensive human uses like heavy industry. However, in removing the possibility of ecological function from these sites, we preclude any true long-term visioning.

The act of remediation is not only a practical litigious concern, but also a broader conceptual framework for restoring and reclaiming the landscape for its many possible futures. By remediating the Sauget site, the owners acknowledge responsibility for their past, but implicitly acknowledge optimism for better, more responsible future uses.

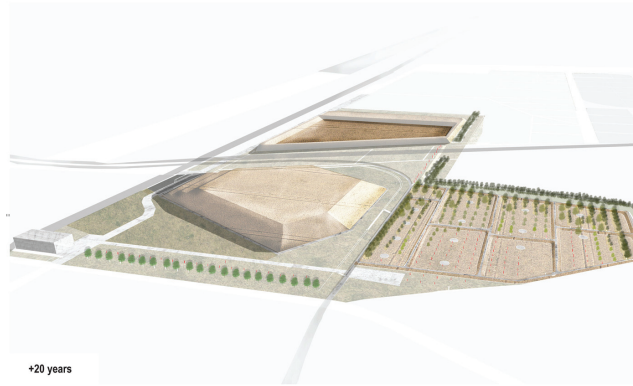
The environmental and psychological proximity of the Mississippi River holds particular relevance for our site. The American Bottom is pocketed with remnant ponds from previous river shifts, shielded from future flooding by an intensive earthen levee system that has historically failed in catastrophic fashion. The twentieth century has been marked by an increasing insistence on keeping the river stationary, channelized, and controlled, necessities for this important industrial corridor. This control is tenuous, though, and should not be taken for granted when envisioning long-term futures for our site.

The American Bottom region is also dotted with manmade topography, both the monumental and the banal. Though the tallest is a mere 100’ above grade, the dozens of Cahokia Mounds—remnant earthworks from the largest known pre-Columbian city in the U.S.—seem even more impressive in contrast to the flat floodplain. Images of Mississippi Valley people taking refuge on such earthworks in the 1927 flood add speculation that these landforms were used not just as ceremonial gathering points, but perhaps as a particularly savvy response to the surrounding landscape’s precarity. In sharp

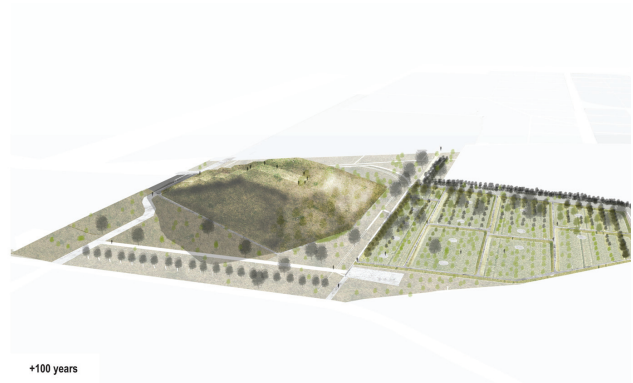
site processes, iterative



+10 years



+20 years



+100 years


05b

contrast to the Cahokia Mounds, Sauget's contemporary industrial landforms largely consist of such exurban familiars as industrial spoil piles and landfills, as well as the strictly-functional earthen levees bounding the river.

The act of remediating the contaminated soil below our site necessitates a certain amount of earthwork. Current remediation techniques are reliant on both the levels of contamination and the future use of the site. But what if future uses were likewise influenced by the current methods for remediation? In a site with little current market such land may lay fallow for years or decades above the slowly biodegrading hydrocarbon plumes; monitoring wells could be replaced by a distinctly spaced and systematically evolving forest. The forest then becomes a way of registering the underground processes of reclamation above grade. The slowly increasing public access to the site mirrors its overall recovery. Such land could also become a larger dumping ground for other excavated industrial soils in the heavily contaminated region. Once capped and planted, these new mounds consolidate much toxic land into a monumental public space. In this way, the proposal brings the two eras of American Bottom landform building back into dialogue.

Rather than a fixed formal park, the project becomes a proposal for a flexible landforming process with time as its variable. A palette of formal remnants of an industrial cleanup thus becomes both signage for the progress

Figure 5b: A possible permutation across the next 100 years, as the site is slowly reclaimed by the larger ecosystem.



of the site's integration back into the larger ecosystem, and, in the long term, a curious series of monuments awaiting future social and public meanings.

CONCLUSIONS/PROJECTIONS

Though extreme, the Sauget site is not unique. Pollution and abandonment in industrial suburbs is a widespread American condition, especially as cities in the so-called Rust Belt and elsewhere continue to lose jobs and population. The potential to intervene in similar transitional sites is an exciting challenge for designers.

Former industrial sites like Sauget have the potential to change public perception around often-maligned functions such as recycling, waste management, and remediation. Embedding educational experiences within these sites speaks to the growing public interest in transparent and open-source processes, and could engender a greater understanding and appreciation of how formerly industrial land is repurposed, cleansed, and put back to work.

These decaying industrial sites represent a new urban frontier. While their constraints are many, they lack the physical obstructions that often dictate urban design outcomes in dense metropolitan settings. The freedom to design in an urban context within a large vacant parcel is a great opportunity for both formal and programmatic experimentation. As developed countries like the United States become increasingly urbanized and its economies more service oriented, landscapes like Sauget, where waste and industry are the dominant features, represent a new type of urban landscape. The fact that Sauget flourishes not in spite of, but *because of*, these characteristics, is something that designers would be wise to take note of.

Sites representing industries of the past are ideal places to locate industries of the future. Innovative evolutions of traditional industries such as manufacturing, recycling, waste management, and environmental remediation have incredible power to mark sites like Sauget not as post-industrial wastelands, but instead as new opportunistic frontiers of innovation. We can work with waste instead of against it. For better or for worse, this may be the new urban frontier. ♦

ENDNOTES

- 1 Spain, William. "Tiny Sauget, Illinois, Likes Business Misfits." *Pittsburgh Post-Gazette* via *The Wall Street Journal*.
- 2 Lynch, Kevin. 1991. *Wasting Away—An Exploration of Waste: What It Is, How It Happens, Why We Fear It, How To Do It Well*. Ed. Michael Southworth. Random House.