Society requires artifice to survive in a region where nature might reasonably have asked a few more eons to finish a work of creation that was incomplete.


For 27 days in January 1937, rain drenched the northeastern United States. The unusually warm, wet weather thawed the frozen ground and sent torrents of water sheeting into the Ohio River. The effect was dramatic: towns throughout the region reported water levels quickly approaching, then passing, flood level. In some areas the water crested as high as 20 to 28 feet above flood stage. With national reports tallying the displaced at over one million people, the event confirmed the growing national fear that the great rivers that had contributed to the nation’s success might also threaten its future. [1]
The country had already endured what was supposed to be the last of the "Great Floods," only ten years earlier, when the lower Mississippi River Basin suffered the most destructive inundation in U.S. history. In the aftermath of what then Secretary of Commerce Herbert Hoover called "the greatest peace-time calamity in the history of the country," Congress passed the Flood Control Act of 1928. [2] This sweeping legislation called for the immediate implementation of a plan to control the waters of the mighty Mississippi. It was as if the nation had declared war against the river: In the next decade, the Army Corps of Engineers built 29 dams and locks, hundreds of runoff channels, and over a thousand miles of new, higher levees. [3] It appeared that efforts to prevent another Great Flood would be successful.

But as in so many battles, the combatants misread the enemy. The 1928 plan focused on single targets, presuming that the "menace to national welfare" [4] was the Mississippi River itself; the Corps of Engineers failed to see the river as part of a system of interconnected, aggregating threats. When several rivers in the Northeast flooded in the winter of 1936 (in particular the Connecticut, Allegheny and Monongahela), displacing hundreds of thousands of people in Massachusetts, Pennsylvania and New York, and even reaching far enough to evacuate the National Headquarters of the American Red Cross in Washington D.C., the public felt double-crossed. [5] A New York Times editorial called for a more comprehensive approach: "If the floods have taught us anything, it is the need for something more than a dam here and a storage reservoir there. ... We need a kind of protection which considers something more than the exigencies of Johnstown, Pittsburgh and Hartford — considers the social and economic future of a nation and a continent." [6]

Congress obliged the new national consciousness with the Flood Control Act of 1936, which declared flood control a "legitimate federal responsibility" and provided a substantial increase in federal funding for a comprehensive network of levees, dams, reservoirs and dikes. [7] Significantly, it handed complete responsibility for flood control to the Army Corps of Engineers, a division of the War Department (later the Department of Defense), and mandated that the economic benefits of construction outweigh the costs. In essence, the act was driven by commerce but framed as national defense.
As construction began on control structures throughout the Mississippi River Basin, and as floodwaters rushed into the Ohio River Valley in January 1937, a district engineer in Memphis, Tennessee, Major Eugene Reybold, raised concerns about this approach. Although the scope of flood control had expanded beyond the Mississippi, the work was limited by current field research methods; engineers found it difficult to track what was being done at various points along the river and thus impossible to predict how isolated "solutions" might affect one other. To understand the Mississippi River Basin as a dynamic system of interconnected waterways, the Corps needed new, more sophisticated scientific tools.

Reybold came up with a radical idea: a large-scale hydraulic model that would enable engineers to observe the interactive effects of weather and proposed control measures over time and "develop plans for the coordination of flood-control problems throughout the Mississippi River Basin." [8] Only a physical model of all lands affected by the Mississippi River and its tributaries could meet the three major goals of the Army Corps:

... to determine methods of coordinating the operation of reservoirs to accomplish the maximum flood protection under various combinations of flood flow; to determine
undesirable conditions that might result from non-coordinated use of any part of the reservoir system, particularly the untimely release of impounded water; and to determine what general flood control works were necessary (levees, reservoirs, floodways) and what improvements might be desirable at existing flood control works. [9]

Reybold understood that such a project would require a paradigm shift in the Army Corps of Engineers. His colleague John Freeman ran a small hydraulics laboratory, the Waterways Experiment Station, in Vicksburg, Mississippi, but had been denied funding for more comprehensive research. "Field experience," said Secretary of War Dwight Davis, "is undoubtedly of much greater value than laboratory experiments could possibly be." [10] Nevertheless, Freeman’s laboratory drew the attention of young, ambitious engineers who could see the benefit of fluid mechanics modeling. Reybold worked with the Experiment Station to construct a small section of the exceptionally steep Kanawha River as a pilot model. He knew that if he could simulate historic flood events and produce accurate flood hydrographs of the Kanawha, he could build support for a model of the entire Mississippi River Basin. Reybold’s plan worked; in 1943 the Corps of Engineers approved his proposal to build a comprehensive model.
The Mississippi River Basin Model, looking upstream on the Ohio River from Evansville, Indiana. [Courtesy of the U.S. Army Corps of Engineers]

**Designing Device-Space**

This effigy of Old Man River is expected to make him behave better.

— *Popular Science*, 1948

What Reybold needed next was a site and a workforce. World War II had commandeered the Army’s stateside labor force and depleted its funding for civilian hiring. So as Reybold surveyed the area near Vicksburg for suitable topography on which to build the basin model, he also negotiated for the transfer of prisoners of war to a new internment camp. He settled on a large area of undeveloped land in Clinton, Mississippi, and under his supervision 3,000 German and Italian POWs began construction on a 200-acre working hydraulic model. The ambitious model would replicate the Mississippi River and its major tributaries — the Tennessee, Arkansas and Missouri Rivers — encompassing 41 percent of the land area of the United States and 15,000 miles of river. [11] It would reflect existing topography and river courses throughout the Mississippi Basin, using the best data drawn from hydrographic
and topographic maps, aerial photographs and valley cross-sections.

The prisoners cleared the site of a million cubic yards of dirt and rough-graded the land to match the contours of the Mississippi River Basin. To ensure that topographic shifts would be apparent, the model was built using an exaggerated vertical scale of 1:100 and a much larger horizontal scale of 1:2000. While the existing topography offered a close approximation of the actual Mississippi Basin, some areas required significant earthmoving; the Appalachian Mountains were raised 20 feet above the Gulf of Mexico, the Rockies 50 feet. An existing stream running east-to-west provided the model’s water supply. The streambed was molded to take on the shape and form of the upper reaches of the Mississippi, and a complex system of pipes and pumps distributed water throughout the model; it was regulated by a large sump and control house sited near what would become Chicago, Illinois. To simulate flood events, Reybold needed to introduce large volumes of water over short periods of time, so he designed a collection basin and 500,000-gallon storage tower system at the model’s edge. Small outflow pipes at anticipated data collection points channeled excess water to 16 miles of storm drains. [12]

A 20-acre section in the center of the 200-acre site would be subject to high-intensity tests. Here the engineers installed a "fixed-bed model" that enabled greater precision and control, modeling the river channels and overbank flood areas in concrete. This section represented the areas of the central and lower basin perceived to be most vulnerable to catastrophic floods: the Mississippi River from Hannibal, Missouri, to Baton Rouge, Louisiana; the Atchafalaya River from its confluence with the Mississippi to the Gulf of Mexico; and the lower reaches of key tributaries, the Missouri, Ohio, Cumberland, Tennessee, Arkansas and Ouachita Rivers. [13] Large concrete panels, flat on the underside and uniquely molded on top to reflect particular topographic shifts, were installed over the pipes and held in place with a secondary structural system. Although the fixed-bed model accounted for only 10 percent of the site, it represented a large enough area that the curvature of the earth played a significant role in the design and construction of the concrete panels. Engineers overlaid the traditional grid system with the conical Bonne Projection, skewing the surface of each panel to respond to the topographies of both the model site and the basin itself.
Concrete landforms, metal screens and brass plugs at the basin model in 2010.

The panel surfaces were enhanced with concrete riverbeds, sheer cliffs, flat plains, tributaries and oxbow lakes, as well as railroads, bridges, levees and highways. The engineers faced the significant challenge of achieving an accurate degree of "roughness," the measure of frictional resistance experienced by water as it passes over a particular
surface. Because the concrete created an impermeable (fixed) ground, they installed 3/8" metal plugs of varying length, called "parallelepipeds," to create drag in the water flow and simulate scouring. These brass plugs were used in conjunction with brushed and scored concrete and periodic concrete ridges to model channel roughness. To add further surface detail to "overbank phenomena" such as the vegetation observed in aerial photographs, an accordion-folded metal screen was cut to scale and placed (unfixed) at appropriate locations.

"Let the Robots Run It"

The Mississippi Basin Model quickly became the most complicated, expensive and time-consuming research project ever undertaken by the Corps. Early reports predicted that the model would be completed by 1948; later reports implied a delay of five to ten years. [14] As early as 1949, upper sections were opened for testing, but by 1959 the model had been completed only as far south as Memphis, Tennessee. [15] The seemingly straightforward design-and-build phase had been complicated by postwar transition and inefficient bureaucracy.

When Reybold sourced his original labor force, he handpicked POWs with knowledge of engineering and construction, specifically German engineers, whose home country had already embraced the benefits of hydraulics modeling. Repatriated after the war, the prisoners were surprisingly hard to replace. At the time, all river management works were funded by the districts that profited most directly from their development. Thus all funding (design, construction, future operation) for a model projected to visualize 41 percent of the United Stated as a single landscape had to be equitably divided among 15 districts in proportion to their river frontage. It wasn't until 1957 that direct congressional appropriations for the project were approved. With the new funding, construction moved at a more even pace, and the model was completed in 1966.

Because the budget had fluctuated greatly before Congress assumed fiscal responsibility, Reybold pushed the Corps of Engineers to re-think the model's operation. [16] Administrators had assumed the model would be tested just as real rivers had been tested for years. Field engineers would take manually operated devices to key river bends and, operating largely independent of each other, collect data that could be relayed back to a
second team who specialized in data processing. It was time-consuming, tedious and required expertise at each level of analysis — precisely the kind of inefficiency Reybold hoped to eliminate. To run full-capacity manual tests, the Corps would need an experienced staff of 600 engineers trained in field measurements all working at the same time; but if the data collection could be automated, staffing could be limited to control houses, where just a few dozen engineers could turn the model on and off and simultaneously process data.

Top Left: Eugene Reybold. Top Right: The model under construction. Bottom: Inflow,
After slowly convincing individual districts that automation could cut operation costs in half, Reybold’s team awarded contracts in 1948 to two companies charged with designing instrumentation specifically for the basin model. [17] They developed 76 inflow and outflow instruments and 160 stage instruments to simulate normative weather and flood events, all tied to a single timing unit capable of synchronizing the various sections of the model to a virtual calendar indicating the day, month and year in "model time." [18] Thick bundles of data transmission lines connected the timing unit, inflow and outflow devices, and stage instruments to six small sheds on the periphery that served as control houses. Each control house was located near one of the major tributaries and contained a switch capable of activating that particular section of the model. The river system could be operated in full or in parts, or be turned off entirely. [19]

When the Fake Clarifies the Real

On April 1, 1952, George Stutts, a Missouri River engineer, conducted his regular field surveys of the levees in Nebraska and reported that northwest Missouri was in "no immediate danger of flooding." [20] Only seven days later, a new survey indicated signs of imminent and severe floods. The mayors of Omaha and Council Bluffs contacted the Army Corps District Office to propose using the basin model to predict flood stages, and the model was called into active duty for the first time.

On April 18, as the Omaha World Herald rolled out the headline "Missouri River Near Crest Here; Anxious Eyes On Soggy Levees," the basin model was halfway through 16 days of continuous 24-hour tests. Engineers issued prototype conditions to the newly installed instruments, generating simulations that forecasted likely events over the next month — crest stages, discharges, levee failure and more. As water poured through the Missouri River section of the model, the resulting data were relayed directly to aid workers in Omaha and Council Bluffs, who were able to respond with brigades of civilians and sandbags to points where levees needed to be raised only slightly; areas predicted to flood dramatically were evacuated. In total the Mississippi River Basin Model prevented an estimated $65 million in damages. [21]
With this impressive victory against the river, Reybold’s project was vindicated. The model had allowed the Mississippi River Basin to become, for the purposes of study, an object, a manageable site. Here engineers, community leaders and civilians could gather to discuss the potential ramifications of particular flood control measures and forecast likely scenarios. Each gallon of water passing through the model was the equivalent of 1.5 million gallons per minute in the real river, meaning one day could be simulated in about five minutes. This allowed for a tremendous capacity to collect data, to use the model as an active tool for communication, and to distribute information about the river as a system. With mayors from cities up and down the river gathering in the observation tower to watch the Mississippi cycle through an entire flood season, it became possible to find edges, limits and centers, to see how and where the river might strike next. The model imbued the river with a reassuring degree of certainty. Policymakers began to adjust to a new scale of thinking.

In the 1960s, the basin model received 5000 visitors annually. [Vintage postcard via World of Decay]

Most important, the basin model acknowledged the river and its tributaries as the defining features of the landscape. Settlements, highways and railroads were all secondary to the force of moving water. Reybold demonstrated that the Mississippi River system acted
continuously on many points in concert, creating a series of interconnected reactions more expansive and powerful than anyone had previously understood. He sparked an ideological shift among his fellow engineers, who had once believed that the river could be pressed into submission in order to maximize available land for human purposes. The basin model underscored the idea that not all landscapes could be transformed for development, an idea which had been lost during the frenzied period of levee building in the early 1900s. By acknowledging the true complexity of the river system, engineers could move beyond the localized approaches that had hindered flood control efforts in the 1920s and ‘30s. One person could take in the entire breadth of the Mississippi Basin in one panoramic view, and what emerged was the understanding that the river is a system, a network of continuous forces that creates unique but interconnected conditions. Each specific condition must be considered in the context of the whole.

For two decades, Reybold’s model was the tool used to extend this line of thinking throughout the Mississippi River Basin, determining flood control strategies from Montana to Louisiana. From 1949 to 1971, engineers completed 79 simulation packages at the basin model, with most requiring a minimum of two weeks and some as long as eight weeks. The tests ranged from altering the course of the river to spot-raising levee heights in vulnerable locations. The Basin Model Testing Record reads like a battle transcript. In February 1962, a series of hypothetical floods was introduced to the Ohio River. In 1967, the effects of roadway construction on the flow of the Mississippi River were tested in Lake County, Tennessee. In 1969, various channel alignments were examined in Baton Rouge, Louisiana, and basin-wide tests were conducted to verify the holding capacities of floodways and reservoirs throughout the lower basin. [22]

But in 1971, operations came to an abrupt halt. The model received a congressional appropriation of $150,000 to conduct a two-year "Computer Application Study," a cautionary response to work emerging from the recently established Army Corps Hydrologic Engineering Center. By 1970, the HEC, like the Waterways Experiment Station before it, had become an outpost for young engineers interested in pushing the current practice of hydrologic research toward computational scripting and planning analysis technologies. As a direct challenge to the validity of the Mississippi Basin Model, the HEC had developed a river hydraulics software package called HEC-2, and the 1971 study set out to compare results of
the two competing methodologies.

That was the last scheduled test at the basin model. Although the model continued to be used sporadically over the next decade, it was gradually upstaged by a mainframe computer in Sacramento, California. And then, in the early 1990s, the Army Corps walked away.

![Image](https://example.com/image1.jpg)

Engineers revived the model briefly during the 1973 Mississippi River Flood. [Courtesy of the U.S. Army Corps of Engineers]

**The Model Today**

Actually a model is nothing but a calculating machine. You don’t get anything out of it unless you put in something to start with.

— Hans Einstein, at an Army Corps of Engineers Consultants Conference, 1952

I live near the Old River Control Center, north of Baton Rouge, an environmental battlefield where the Army Corps has requisitioned $270 million (to date) and deployed 4,000 linear
feet of concrete in a decades-long campaign to prevent the Mississippi River from diverting its course westward to the Atchafalaya River. [23] In the spring of 1973, when massive flooding nearly overwhelmed the Control Center, engineers at the Mississippi River Basin Model made the decision to push forward with further structural reinforcements. It was one of the last major policy decisions based on simulations at the basin model and one that has committed southern Louisiana to a protracted strategy of actively attempting to "reverse Mother Nature." [24] As the warm spring weather of 2010 swelled the Mississippi once again, I wanted to see for myself how a concrete control structure could be modeled in a miniature concrete landscape.

My first Google search for "mississippi river basin model" turned up only a few valid hits, one of which led to an aerial image on a blog called Google Sightseeing: Why Bother Seeing The World For Real? I, in fact, did want to see the world’s largest scaled model for real, but the internet was not providing helpful instructions. Was there a visitor’s center? Would they (and who might they be?) allow me to take photographs?

Flying over Clinton, Mississippi, via Google Earth revealed that the model is surrounded by Butts Park, a public park just south of Interstate 20. Its key features include a remote control airplane landing strip, a remote control car racetrack, and children’s soccer fields — a host of miniature spaces appropriate to the site’s lineage. At least now I had an address. I drove to Clinton and pulled into a life-size parking space, my car facing east toward Jackson, Mississippi, in the real world, and north toward the river’s headwaters at Lake Itasca, Minnesota, in the model world. But I couldn’t see the model anywhere.

Butts Park gives no immediate sign that 200 of its 260 acres is (or was) a miniature landscape. The POW barracks, the Army Corps offices, the once-imposing guard gate — they’re all gone. What remains, concealed by invasive vegetative overgrowth, is the model. And it is surprisingly intact and fairly evenly weathered after two decades of abandonment. The overgrowth has created a protective barrier of holly and poison ivy, making it nearly impossible to see from the park and protecting it from misuse. In the brush just off the mowing path of the park maintenance crew, I found a four-foot-high hurricane fence mostly intact. I jumped the fence and trudged through plastic water bottles and long-emptied bags of Doritos until my foot found an edge. As I crossed the threshold into model-space, my feet
landing on rough concrete and the surrounding park immediately receded. I was standing on a two-foot-wide finger of concrete and wire mesh, a weak but steady tributary that eventually worked its way to the Cumberland River, then to the Mississippi.
Even after long neglect, the model was impressive. As I stood at its center, it consumed my view. To the left, hills along the Tennessee River gradually rose toward the Appalachian Mountains. Beyond a stand of Chinese tallow and cottonwoods, I saw a mess of metal and plastic: 14 PVC pipes of varying diameters, a metal walkway three feet above the surface, and the much less pronounced topography of the river and its tributaries converging on St. Louis. This was obviously a machine — I had to watch out for the abundant pumps, gauges and pipes as I walked — but after the rhythm of the space became familiar, the machine-ness faded into something more akin to a landscape. I walked the length of the fixed-bed portion of the model from Hannibal, Missouri, to Baton Rouge, Louisiana, in minutes. Labels for cities and towns had long since scattered, but using landforms as a guide, I could identify familiar places. Standing astride the river, with one foot on the plains of Vidalia, Louisiana, and the other on the bluffs of Natchez, Mississippi, my mind was tricked into believing that this could have been a playground and not a complex hydraulic model, an operable toy replete with countless options to alter a small, contained (and fake) universe.

When the Fake Replaces the Real
This is why mapping is never neutral, passive or without consequence; on the contrary, mapping is perhaps the most formative and creative act of any design process, first disclosing and then staging the conditions for the emergence of new realities.

Within minutes of arrival my perspective had shifted. I became consumed with the immediacy of the experience, with the model as a series of spaces that I could occupy. I set aside my questions about its purpose and effect and engrossed myself in the challenge of parsing through the rich layers of space and the abstract simplicity of materials, dissecting it as place, not as representation. The operability of the landscape was absorbing. I passed hours testing the gates and chutes, and attempting to make a golf ball I had found in the brush wash down the river from Cairo, Illinois, to Memphis, without getting hung up in the tight meanders. (I was thwarted by an unforgivably constricted bend at New Madrid.)

Despite knowing I was looking at, standing on and manipulating an object that was no more
or less than a point of reference, a miniaturization of the real thing, the size and scope of
the simulation sucked me in. I couldn't hold the model in my hand or separate it from the
environment surrounding it, and so it became a place in and of itself. I was lost in its depths
and found it difficult to understand as merely a representation of a very real river system 30
miles to the west. I'm not suggesting the Army Corps of Engineers confused their workplace
with an adult sandbox. But I am struck by the disconnect that can occur when a model
becomes the substitute for the "real thing," when the copy, which can never replicate the
complexity of its source, becomes the fulcrum around which decisions are made. Beyond
the achievement of constructing such a model, what effect has this fake river had on our
relationship with the real river it seeks to mimic? In puzzling over this question, three
lessons seemed to emerge.

Contoured surfaces.

**Lesson #1: Materials Matter**

At an average thickness of six to eight inches, the constructed ground of the model hardly
simulates the complexity and depth of the actual sedimentary profile. The perfectly folded
metal screens do not speak to the diverse array of ecosystems and habitats that weave into the river fabric. The basin model endorses (which is to say that it cannot function without) a dangerous abstraction of real material (not the least of which is human occupation) and an unrealistic ability to contain and isolate variables in an infinitely complex natural system. In the real world, river systems cannot be reduced to the dialectic of water-or-land; they are materially ambiguous. To remove slurry from an alluvial landscape, as the model does, is to negate wetlands, to deny the exigencies of an entire ecosystem that thrives on particulate matter caught in-between states. It doesn’t matter how much territory the model covers if it relies on the amputation of inconvenient complexities to be manageable. The simulation becomes thin.

And over the years the model repeatedly expressed its limitations to the engineers. Maintenance costs became increasingly exorbitant. Water poured across the impervious concrete, but inevitably found its way to more susceptible materials, seeping through expansion joints, rusting the metal substructure of the panels and washing out packed clay around the pilings. Panels had to be realigned, rejoined and rebraced every month. Vines crept into the folded metal screens, grass pushed through small seams in the concrete. Because the model was situated in a real open-air environment and exposed to real weather, real material change became just as powerful as the on/off switch in the control house.

**Lesson #2: Scale Matters**

The basin model was envisioned not only as a highly efficient, technologically advanced machine, but also as a platform for communication. This is truly remarkable: a space designed to visualize environmental change, long before Rhino and 3-D Studio Max were rendering virtual fly-throughs of code-driven spatial simulations. For decades the model was the site of major conversations about the American built and natural environments. Governors, mayors, tourists and engineers gathered to see the river in motion, to discuss possible solutions, likely ramifications and the division of responsibility.

But the officials who stood here were presented with a distorted narrative. In order to build the model at manageable size without sacrificing accuracy in stage-discharge calculations, engineers decoupled the horizontal and vertical scales, exaggerating the elevation by 20
times. Reybold’s team was trained to isolate the x- and y- axes and read values instead of space, so they could separate the data from the physical impression of the model in their calculations. But it’s not likely that the model’s 5,000 annual visitors were able to manage this mind leap. The spaces they encountered were so real and so seemingly certified by sheer size that it would have been impossible to separate the experience of being in the space from what it represented. How many policy decisions were shaped by politicians who misunderstood the lessons of the basin model because of the height of its hills and cliffs?

The lower basin from Baton Rouge to the Gulf of Mexico was never modeled. [Courtesy of the U.S. Army Corps of Engineers]

**Lesson #3: Scope Matters**

But what’s at work here is more than just the reduction of material complexities: more than just the substitution of concrete for mud and grass, or one inch of elevation for one hundred. The basin model was flawed even in its conception, from the initial design decision that seems easiest (on paper) to justify: how far it should extend. In 1942 the Corps of Engineers decided to fund only a partial simulation:
The proposed model would reproduce all streams in the Mississippi River watershed on which reservoirs for flood control are located or contemplated, together with all dams, levees, dikes, floodwalls and other pertinent works. ... (and) only initially as far as the mouth of Old River (just north of Baton Rouge) for the reason that no inflow takes place below that point. [25]

Thus a supposedly comprehensive model of the Mississippi River Basin stopped at Baton Rouge, Louisiana, excluding the mouth of the Mississippi River and its delta.

On my first visit, I attempted to do what we all do when faced with a map: to locate myself, my home, within the field of abstraction. I wanted to see how Reybold had designed the transition from the temperate northern states into the fragile marsh and swamp ecosystems of South Louisiana, how the hard lines of concrete in Missouri and Illinois could be softened to accept the landscapes I have known since childhood. I wanted to see the Birdfoot Delta and New Orleans (would the Lower Ninth Ward be modeled?). I wanted to see my family's home on Bayou Lafourche (once the east fork of the Mississippi River) and the Gulf of Mexico. Alas, standing ankle-deep in False River, an oxbow lake north of Baton Rouge, I found that I had reached the model's end, and it took the rather unceremonious form of a leaf-and-twigs-clogged drainage ditch.

While the decision to exclude the river system below Baton Rouge was driven by the difficulties involved in financing a $17 million project that challenged existing research practices, the fact that all of the Army Corps of Engineers' experiments at the basin model produced data without New Orleans and the Gulf of Mexico inevitably colors the validity of the results and raises questions about how much the model is to blame for the rapidly disintegrating Gulf coastline. Despite best efforts to faithfully build a systems-based approach to flood control, the system was fundamentally incomplete. The 1942 report noted that "provision would be made, however, for adding the remainder of the Mississippi River Basin at any time this might become desirable," but the Army Corps went on to make 25 years of decisions about flood control here, and modeling the outflow of the Mississippi River never "became desirable." [26]
Realness Beyond the Model

Although the Mississippi River Basin Model was never truly comprehensive — never fully systemic — it was nevertheless an incredible feat of design thinking. Ultimately, the model reflects an optimistic moment in our relationship with the greatest and most storied river on the continent. It embodies the ideal of balance and the goal of security. It acknowledges the necessity of human inhabitation and the unpredictable power of a natural system. Though incomplete and unsuccessful, the model helped to shape a larger narrative of two powerful
colliding and often incompatible forces: a burgeoning, prosperous and settlement-building nation, and a mighty river, more than 2,000 miles long, with its endlessly complex geomorphology, its watershed encompassing almost half the country. The model was a tool as valuable to specialists as to citizens, demonstrating the power of visualizations to shape policy through design.

Today the basin model endures as a relic of that earlier era, long forgotten, subject to weathering and erosion, like the river system it was designed to control. As I left the model at the end of a long, hot day, it began to rain. In seconds, the river filled with water, small bits of leaves and dirt washing down toward Cape Girardeau, Missouri. The water pooled in places, spinning into eddies when the tributaries reached the main channel. I lifted the gate at what might have been St. Louis, sending a wash of muddy water toward Memphis. I could see the water rising as it moved south, small sticks and gum wrappers kicked up over the edges as the river began twisting toward Louisiana. The straits of Baton Rouge sent the water rushing out with such force that it seemed to leap out of its container and over the concrete banks and into the poison-ivy wilderness.

Using the levees as a footpath, I walked upriver toward my car, stepping out of Hannibal, Missouri, and back into Clinton, Mississippi. And just as quickly as my perspective had shifted earlier when I entered the model, it now refocused on a group of nine-year-olds gathered under a sycamore tree, waiting for the rain to pass. It seemed odd the rain would overwhelm the park, much less the model. This was, after all, a site once dedicated to the management of water. But when I reached the parking lot, I found that the corner where I’d parked had washed out on the eastern edge of the fake Mississippi River. The waters were rising, and I rolled up my pants and waded to the car and drove home.

Notes

3. Arnold, 91.
5. Arnold, 63.
13. Foster, 10.
15. Foster, 26.
16. The lowest reported funding, in 1944, was $262,000; the highest, in 1947, $1.16 million. Foster, Appendix, Table 6.
18. Foster, 19.
19. Model construction specifications can be found in the Army Corps work logs, *Mississippi Basin Model Report 1-6*.
21. Foster, 27.
22. Foster, Appendix, Table 1.
25. Foster, 6.
26. Foster, 6.