

The Evolution of Ivanpah Solar

Introduction

By Anne Wilkes Tucker

In recent years, Jamey Stillings' career as a commercial photographer has shifted emphasis from briefer engagements to long-term personal projects. Since 2009, his primary undertakings feature the construction of massive structures: the Mike O'Callaghan-Pat Tillman Memorial Bridge, a 581 meter (1905 foot) bridge soaring over the Colorado River downstream from Hoover Dam, and Ivanpah Solar, the 392-megawatt concentrated solar power plant that now stretches over more than fourteen square kilometers (about five square miles) of the Mojave Desert. His analytical mind was fascinated and challenged by the skills and systems required to realize these ventures, but the artist in him loved their brut physical glory and complicated visual and physical relationships to the environments that they came to dominate.

His goal was to document each project to its completion. To track their progress required adjusting his schedule to cover each stage, mastering new technical skills, and most critically, preconceiving pictures that would graphically convey his impressions of the projects and the sites. The pictures are detailed, but mere description was not his aim. For instance, the dramatic sight of a half-built bridge ending in midair over a chasm seems more remarkable and unnerving when seen at night. Sunlight solidifies the stone and steel forms that were conversely less substantial in the gloaming. The site's lights at night add a touch of wonderland.

To document Ivanpah, Stillings shot aerial images, first of the contractor's rings etched into the earth, and then of the placement of thousands of heliostats (mirrors) along the etched lines until they nearly obscure the land. The three giant towers, each placed at the center of a solar field to catch the mirrors' reflected rays of light, compete in scale with the surrounding mountains. One journalist described the towers as a "clean-tech version of *The Lord of the Rings*."¹ However clever, this "tinged with evil" implication opposes Stillings' belief in the importance of the project. Although he is well informed about aspects that can be deservedly criticized, such as the dangers to birds² and disruption of the natural landscape, he is convinced that the public gain outweighs objections, and his works embody that optimism.

Stillings' title for the series, *Changing Perspectives*, of which *The Evolution of Ivanpah Solar* is the first chapter, has a double meaning. First, it works on a descriptive level: he traced the changes at the site from before construction commenced through completion. "On one hand," he wrote, "I am looking from the air at a specific landscape in the Mojave that has changed radically over three years with construction, time of year, and the specifics of each day. Every visit required me to look freshly (and quickly) at the land, then work intuitively to interpret what I saw."³ For instance, he had only fifteen to thirty minutes each morning to work with the optimal oblique light of the sun, and he needed early-morning or late-afternoon light for the long shadows that helped delineate the mirrors from the ground, as well as the natural erosion lines in the earth. The title's other level of meaning is aspirational, conveying his hope that beyond their aesthetic appeal, the pictures will lead to questions and interests that transform viewers' understanding about the nature of solar energy and its potential to encourage "more careful choices about use of the Earth's land and resources."

When asked about his photographic influences, Stillings has cited *Life* magazine's Margaret Bourke-White for her sense of composition and use of abstraction, and Lewis Hine for his powerful photographic series on the building of the Empire State Building.⁴ Both of these photographers worked in the first-half

The Evolution of Ivanpah Solar

of the twentieth century and shared Stillings' belief in photography's potential to influence thought; they also shared a celebratory approach to industrial progress, although previously Hine had campaigned against industry's uncontrolled abuses of child labor. Bourke-White was a pioneer of industrial photography who worked first for *Fortune* magazine, and then secured the cover story for the inaugural issue of *Life* magazine (1936) with a dramatic image of Fort Peck Dam in Montana. In classic Bourke-White style, she found the structure's rhythm in a receding view of its towers. Lewis Hine was 56 years old when he received a commission to photograph the construction of the Empire State Building. Hine photographed the site from the time of its excavation in January 1930 to the building's topping in April 1931, working from increasing heights as the structure grew to 103 stories. In the process, he took many of the same risks as the workers, who were his central focus. More like Bourke-White than Hine, Stillings includes the workers, but they serve as reminders that these are man-built structures that dwarf their makers. Hine's laborers appear skilled, heroic, and at times, endearingly human. The biggest shift represented in Stillings' work from the optimistic industrial pictures of the 1920s and 1930s is the creation of energy from renewable sources, and the process's dependency on digital technology for the operation of each mirror's position relative to the sun and the towers. Despite their scale, these solar installations have a delicacy, whereas the generation of power in the 1920s was conveyed through views such as those of molten steel pouring from giant vats or of black smoke pouring from smoke stacks, which, in the Depression of the 1930s, was a sign of employment, not pollution.

The thread that binds the "Bridge" and "Ivanpah" projects is Stillings' utilization of patterns and geometric relationships that are both inherent in mechanical designs and heightened by his various approaches. For instance, some repeated configurations exist on the simplest level in two different pictures of the "Bridge" project. In one image, the bridge's arch is mirrored by its shadow; in another, the semicircular lip of the dam is echoed by the bridge's supporting arch. However, in the "Ivanpah" work, the patterns are more complex and massive in scale. At the earliest stages, the floor plan of the project methodically slices across the Mojave's undulating and crisscrossing ridges. Eventually, these etched lines are obscured by the seemingly endless circles of 347,000 mirrors that are each about the size of a garage door.⁵ Stillings has described the project as Wagnerian in scale—a scale at which abstraction moves toward metaphor. Picture-by-picture the desert's transformation is preserved; also recorded is his shifting between descriptive documentation of mechanisms, men, process, and context to lyrical abstraction on a majestic scale. Both approaches, Stillings has said, lead viewers to ponder "our individual and collective relationship to the world."⁶

Our regard for machines and their relevance to our future is intimately tied to photography's history. Machines and tools have been popular subjects since the mid-19th century for reasons as simple as the pleasure in formal elegance derived from their metal surfaces and clean designs, and as complex as their embodiment of our desires or fears for the future, either as symbols of power and progress, or as unwelcome invasions. The solar fields of Ivanpah are a next step in the evolution that includes reactions ranging from fascination to horror. The Eiffel tower, assembly lines, speeding trains, planes, and rockets are samplings of historic inventions that became symbols of their eras, but not without resistance from detractors. Spectacular photographs have preserved this march to modernity and beyond. Ivanpah Solar is a historic marker of our era, bringing major technologies and cultural changes, and preserved in Stillings' timely, graphic, and memorable photographs.

The Evolution of Ivanpah Solar

NOTES

1. Diane Cardwell and Matthew L Wald, "A Huge Solar Plant Opens, Facing Doubts about Its Future," *New York Times*, February 14, 2014
2. According to Stillings, more birds are killed by cats and by hitting buildings and homes or coal power installations than from hitting solar- or wind-generating energy plants.
3. Email to author February 1, 2014.
4. Ibid
5. Stillings' views of the man-marked land visually reference ancient land art that is large-scale and mysterious because of its unknown origins or purpose, and can only be perceived fully from above, which was not possible when they were created. Stillings became aware of such ancient sites while in graduate school at the Rochester Institute of Technology (1979–1981) with Marilyn Bridges, whose first major photographic series was aerial recordings of the two-thousand-year-old Nazca Lines in Peru.
6. Email to the author July 14, 2014.