Erich Mendelsohn at War
Author(s): Enrique Ramirez
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ERICH MENDELSOHN AT WAR[1]

Enrique Ramirez

But in order to reeducate the people at large, beautiful per se, *to that beautiful end, to rebuild their towns and dwellings—the visible expression, the broad acre of their social and civic consciousness—the people themselves must first experience the fight for existence, experience personal danger and common sacrifice, the turmoil of mechanized battles, the mental preparedness for being blotted out at a second's notice.*
Erich Mendelsohn, April 22, 1942

Lecture Circuits

April 1942. A noticeable, foggy chill still envelops the campus at the University of California at Berkeley. Smallish clumps of midday Pacific layer fog are caught in the campus's vast greenery. Students, in various stages of scholarship, travel back and forth among the paved walkways. Undergraduates decked in thin, tropical wool sweaters, necks bundled in merino swaths (or, if women, in thigh-length A-line skirts), protect themselves against the late afternoon chill. Some are even wearing military uniforms. All types of ranks, branches of service are represented in the collegiate walk. Naval ensigns wear white, wide-flared pants and cartoonish sailor's caps rakishly tilted toward the back of their heads. While NCOs and lower-ranked officers wear their well-known tropical khaki, their Army and Marine counterparts flaunt their chocolate-brown field tunics.

Very little here, on this day, hides the fact that this has been indeed a difficult year for the American war effort. In the Pacific, the navy's surprising victory at Midway has provided something to keep American minds off what has been a series of setbacks: the army's surrender to Japanese forces in the Philippines, the near loss of the Aleutian islands of Attu and Kiska to the Imperial Japanese Navy. The staggering, Herculean task of mobilizing for the European theater of operations is just beginning. Rumors abound. Will there be a European invasion? A North African offensive? Yet the mood here is cheerful. There is a sense of excitement as people fill in the auditorium at the School of Architecture.

This evening, Erich Mendelsohn will deliver the last of his "Lectures on Architecture." The architect, by now famous for his various projects in Germany and England, has generated a remarkable following in the United States. The lectures coincide with an exhibition of Mendelsohn's projects at the San Francisco Museum of Art. There, for the first time, audiences were able to see a comprehensive portfolio of the architect's work: the organic, sweeping, winglike forms of the Einsteinturm at Potsdam; the graceful, curved facade of the Schocken Department Store at Chemnitz; the staid, white planar surfaces of the De La Warr Pavilion at Bexhill-on-Sea, England (a difficult project borne from a difficult relationship with Serge Chermayeff); the monumental white *brises-soleil* and geometrical solids of his Palestine projects, such as the Hebrew University Medical Center at Mt. Scopus in Jerusalem, as well as the Government Hospital at Haifa. There were even photographs of Mendelsohn's Leningrad textile factory.

The retrospective was a living document, a testament to Erich Mendelsohn's worldview. The photographs show many of the architect's guises: beguiling expressionist, dedicated socialist, scientific positivist, and devout Jew. When mapped out, the photographs explain Mendelsohn's own personal geographies and travel itineraries. Yet these gelatin prints can only suggest the personal, professional, and political struggles which the architect had to endure. Suggest, for Mendelsohn completed many of these works when he was a refugee. And "refugee" is a loaded term, an idea whose complexity is exemplified by Mendelsohn's work and travel during this period—not only was he an artistic iconoclast (his work was not featured in the 1927 *Weissenhofsiedlung* at Stuttgart) but also a political and religious outcast on the run from the burgeoning Nazi regime.

The three Berkeley lectures mirror the latest episode in Mendelsohn's travels. The first two lectures, titled "Architecture in a World Crisis" and "Architecture Today," feature a distinct emphasis on European works. Both begin with thoughtful exegeses on the Gallery of Machines at the Paris Exhibition of 1889. The building, a canopy of networked steel and glass, is, for Mendelsohn, emblematic of a "first true realization of the structural revolution,"[2] as well as a testament to construction as a "*creative* achievement" and "visionary formative capacity."[3] Yet in his third lecture, "Architecture in a Rebuilt

World," he discredits recent architecture and planning projects as "mere intellectual exercises," opting instead for a highly rational, technical, scientific approach. Mendelsohn continues, providing the audience with a vision of the architectural profession in the foreseeable postwar climate. He states:

> We see the town plan itself as a symphonic composition *conducted* by an impulsive force—a powerful shock absorber—by a man entirely devoted to *our* age, to a spirited and ever-renewed organic world. We see this symphonic composition *performed* by a team of idealists, each highly trained and shrewd in his craft, each directing his part of the plan and watching with authority the work to be done.[4]

Mendelsohn sees examples of this in a variety of instances. Interspersed with images of war materiel and implements of long-distance travel—artillery shells, battleships, seaplanes—Mendelsohn focuses on images of infrastructural projects and residential developments throughout the United States. These are evidence not only of a fascination with America, but something greater. Concentrating on an image of the Grand Canyon, Mendelsohn states:

> Indeed, the complex world of contemporary architecture and town planning…is the primal sign of a society again on unity of mind and matter. Building has transcended its special field to a common conception of scientific facts—world control—and of technological scale—world order—a conception on which, ultimately, the future society will have to function, on which it must work and shape its existence.[5]

This moment is poignant for several reasons. First, it affirms architectural modernism's rationalist imprimatur. It also links this rationalism with a decidedly scientific slant. It confirms the idea of the architect as a type of specialist or consultant, not just a promulgator of aesthetic viewpoints.

Yet the moment is important for another more important reason. At this moment, in the Berkeley lecture hall, the sum total of Mendelsohn's travels reaches an apotheosis. From his battlefield sketches on the Russian front in 1918, to travels by train and steamship to various points in Central and Eastern Europe, to more travel to England and Palestine, as well as passage by airplane and train in the western United States, here, in the hallowed halls of American academia, Mendelsohn finally finds a place where he can let his architectural thinking unfurl to its greatest potential.

Travels and Voyages

Travel has long been a paradigm for architectural education and practice. For the architect, travel did have certain romantic associations. One immediately thinks of no less than John Soane or Karl Friedrich Schinkel, with respective sketchbooks in hand, traveling to various ports of call and destinations in Europe. It is classic ur-*flânerie:* the wandering architect indeed a kaleidoscope equipped with vision, taking stock of architectural inventories throughout the world. Following this wholly Benjaminian itinerary, then, the traveling architect is a type of collector as well. Put another way, architecture's objects were objects of connoisseurship. Thus, for example, in March of 1818, Jeffrey Wyatt, an English architect whose main client was King George IV, collected a vast array of architectural fragments lifted from Leptis Magna, an archaeological excavation site on the Libyan coast of North Africa. Wyatt reassembled the pieces, consisting of "22 granite columns, 15 marble columns, 10 capitals, 25 pedestals, 7 loose slabs, 10 pieces of cornice, 5 inscribed slabs, and various fragments of sculptured figures," at Windsor Great Park in 1826.[6]

The architectural voyage thus implied dual discoveries. Not only did travel afford the novice architect an education, but it also provided a way for new knowledge to be disseminated. The architect was the vessel for this knowledge, a propagator of new forms and curator of ancient heritage. This type of model certainly persists to this day.

For Erich Mendelsohn, however, travel implied much more than just the passage between two ports of call. It was an intellectual trajectory. In 1924, the architect made his first voyage to America on board the *Deutschland.* Fritz Lang, the famous film director, was his companion for this voyage, an experience that would prove formative for both of them. Aboard the *Deutschland's* deck, Fritz Lang would have seen a massing of medium-height buildings crowning the very spit of land forming Manhattan's own prow, with the Brooklyn Bridge's iron tendrils reaching across the gray waters for nearby land. Lang's first visit to New York resulted in a series of photographs that inspired those dystopian urban visions forever associated with *Metropolis* (1927). In one of these, a night scene on Broadway, lighted Coca-Cola and Dairylea billboards leave incandescent traces across the celluloid. It is as if Lang were momentarily disoriented, moving too rapidly, avoiding the onslaught of artificial light while keeping the camera aperture open. This light inscribes everything as a double image, anticipating the scene in *Metropolis* when the technocrat Joh Fredersen stares outside his own office at the frenzied city lights flickering faster and faster: a vision of a city in disrepair.

Lang's photograph would eventually make its way onto the pages of Erich Mendelsohn's *Amerika: Bilderbuch eines Architekten* (1926). Mendelsohn, who was not only a fellow passenger aboard the *Deutschland* but also toured New York with Lang, processed his own ideas about the American metropolis differently. Whereas Lang found inspiration in this trip for his upcoming films, Mendelsohn was overtly caustic in his appraisals. He did admire much of the industrial architecture he saw during his travels in the United States, but was nevertheless struck by the abject moral bankruptcy that such buildings represented.

The text accompanying the photographs in *Amerika* is pithy and biting. Indeed, in the very opening chapter to the book, called "Typical American Traits,"[7] a picture of Manhattan from the sea inspired Mendelsohn to describe the city as the "Port of the world. Announcer of the new country, of liberty and the unmeasurable wealth behind it."[8] Such ire is tempered with cautious optimism in Mendelsohn's caption for Lang's nighttime photograph of Broadway:

> Uncanny. The contours of the building are erased. But in one's consciousness they still rise, chase one another, trample one another.

This is the foil for the flaming scripts, the rocket fire of moving illuminating ads, emerging and submerging, disappearing and breaking out again over the thousands of autos and the maelstrom of pleasure-seeking people.

Still disordered, because exaggerated, but all the same full of imaginative beauty, which will one day be complete.[9]

This first visit to the United States had a powerful impact on Mendelsohn's subsequent work. The photographs of skyscrapers, industrial structures, and city streets gracing the pages of *Amerika* are portentous. If, for Le Corbusier, the aerial view is totalizing in its ability to indict urbanism's own failures, then for Mendelsohn the Sheeler-like views from below opt for something else. In the preface to *Amerika,* the architect declares that "America demands nothing of our love, but wants to be treated by us as unemotionally as we are treated by her. In architecture this country supplies everything: the worst of Europe's refuse, deformed offspring of civilization, but she also gives hope of a new world."[10]

Mendelsohn's own captions reinforce this totalizing conception of architecture, its ability to encapsulate *everything.* In the introduction to *Amerika,* Mendelsohn noted, "For what we generally characterize today as 'typically American' is a caricature of the European mother countries of Americans."[11] Yet Mendelsohn finessed the idea of typicality by suggesting that a single American city was a synecdoche for a larger swath of European cities. Describing New York to his wife, Louise, in a 1924 letter, Mendelsohn declares that the towering spires of the Woolworth Building stand for something else, something greater: "That is not a city in the European sense, that is the whole world, in a pot."[12]

Eighteen years later, with several retrospectives and travels completed, Mendelsohn gave no indication that he had changed his views. Standing in front of a rapt audience at Berkeley in April 1942, an image of Moses King's futuristic New York hovering on the screen behind him, Mendelsohn declared, "In 1889, the year, you will remember, of the Gallery of Machines in Paris, the dream of New York's Piranesi—and I take New York as being for us the nearest example of metropolitan centers all over the world—simply accepted the then-prevailing town planning and traffic dilettantism as the cherished idol of things to come."[13] Fortunately, the current war provided plenty of opportunities to rid the world of such architectural pretension. War necessitated travel of a different sort.

Wars of Information

The Second World War featured various types of conflict. There is, of course, the obvious type—modern, mechanized war. This type of war is known through its various implements and devices. In modern war, tanks move like ironclad crustaceans across bombed-out landscapes. Columns of weary soldiers march along country roads, their destination marked by lightning flashes of artillery rounds in the far distance. The drumlike report of machine-gun fire echoes in city streets. Gray-hulled armadas plow whitecaps, patrolling for enemy submarines lurking in the icy depths. Dive bombers swoop in hell-bound angles, engines screaming as their target becomes larger and larger in a pilot's fixed bombsight. The thunderous, earth-moving concussions grind granite to cinders as waves of bombers unleash their deadly freight on cities, miles below.

War also involved a certain type of mischief. Battlefield commanders and intelligence officers initiated operations designed to fool or distract their opponents. *Partizan* units in Nazi-occupied countries would complete small missions. Snipping telegraph wires, stealing gasoline, adjusting the gauge of railroad tracks—such small diversions could, in the aggregate, seriously interrupt enemy operations. Such operations undoubtedly relied on accurate, consistent intelligence. Reprisals would certainly result—whole villages would be decimated, conspirators garroted and hung from lampposts—a testament to the deadly business of information exchange.

Information was the war's greatest commodity, the "only real medium of exchange."[14] Information was also a distributed medium, its parcels proliferating through a vast network of subtle and invisible conduits. Indeed, this is the world of Graham Greene and Eric Ambler's novels, as well as of Carroll Reed's films. These artists' works reincarnate the informational infrastructures undergirding the landscape of military operations during the Second World War. In this shadowy world, the nodes of information exchange are familiar. Cities become the stage set for this *pas de deux* of intelligence and counterintelligence. In the penumbras of Liverpool Street Station, darkened alleyways of various Parisian arrondissements, or in the wolfram mines outside Lisbon, unknown wars of information were waged.

Here, then, was travel of a different sort. Whether affiliated with MI6, OSS, OVRA,[15] Gestapo, whatever one's shade of insurgency and counterinsurgency, espionage necessitated travel. There were, of course, technological advances that allowed operatives to listen to their enemies far away from the warring fronts. Yet the bulk of intelligence operations relied on the familiar implements of transportation networks: night trains, steamships, passenger airplanes, military transport, cars, trucks, horses, mules. Each destination contained information, and it was the operative's task to gather such information. The operative's métier was reading cities and landscapes. Of course, some information's value was directly proportional to the amount of deceit needed to propagate it, or to the number of lives lost to obtain it. Other forms of information were everywhere, in furtive glances, casual conversations, even in books and newspapers. The operative's role was to decode such information, to unravel the spin and report the facts.

Architectures of Intelligence

A bustling metropolis of thirty souls, Clover was the largest settlement in Tooele County, Utah, during the opening moments of World War II. The meteorologist and folklorist Ronald L. Ives even acknowledged that everyone else in the United States viewed Tooele County as the "center of depopulation."[16] Not to be excluded from this group was Secretary of War Henry Stimson, who urged President Franklin Roosevelt to consider parts of Tooele County as a potential site for wartime testing. At this time, the Chemical Warfare Service (CWS), a branch of the United States Army involved in

13.	April 1, 1943	Foundations for German Structures completed.
14.	April 5, 1943	Brickwork for German Structures started.
15.	April 12, 1943	Final drawings issued.
16.	April 16, 1943	First truck of millwork arrived for Japanese Structures.
17.	May 11, 1943	Construction completed by contractor and accepted by architect-engineer.
18.	May 14, 1943	All test furnishings received.
19.	May 15, 1943	All mats received and installed. Structure inspected by U. S. District Engineer. Structure ready for tests.
20.	May 17, 1943	Penetration tests started.

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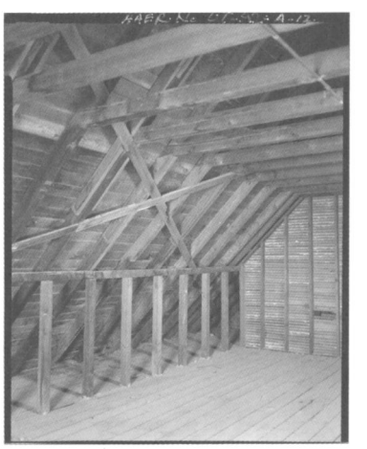
Office of Chief of Engineers	- Mr. O.F. Sieder & staff
Area Engineer	- Capt. J. R. Hamblen
CWS-Technical	- Lt. Col. W.G. Wilson
Contractor	- Ford J. Twaits Company
Sub-contractor	- Pemberton Lumber&Millwork Co.
Sub-contractor	- Union-National Co. Inc.
Sub-contractor	- Allen Industries
Consultant & Architect	- Antonin Raymond
Consultant	- Eric Mendelssohn
Consultant	- Dr. Wachsman
Consultant	- Dr. Paul Zucker
Consultant	- Mr. Hans Knoll
Consultant	- Mr. George Hartmueller
Consultant	- RKO Studios (Authenticity Division)
Consultant	- Mr. Phillip Sawyer
Consultant	- Mr. Alfred Gemperle

NFM)GS
WTK)BCS
HAR)

C O N F I D E N T I A L

Masthead from the 1943 Standard Oil Development Report to the Chemical Warfare Service Technical Division. This document lists the various persons working on the Dugway project, including Mendelsohn, Raymond, and "Doctor" Wachsmann. The list also includes Hans Knoll, who had started his furniture company in the United States in New York, and Paul Zucker, the art historian who would go on to moderate the symposium "New Architecture and City Planning," in 1944, and coauthor "The Human Scale in City Planning" with Josep Lluis Sert, also in 1944. From an untitled publication issued by the National Defense Research Committee.

First declassified image of the Dugway project. Although the article is about Antonin Raymond, note the image of Mendelsohn and Wachsmann's "German Village" at the top. *Architectural Forum* (January 1946).

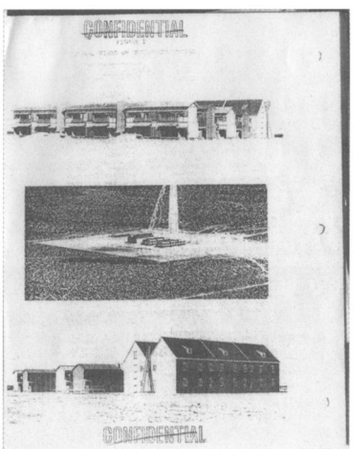


German Village, interior view of roof framing in attic, looking south. Courtesy Library of Congress, Historic American Engineering Record, Historic American Building Survey.

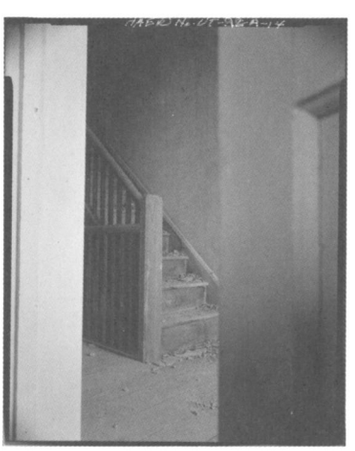
Elevations of German Village. Courtesy Library of Congress, Historic American Engineering Record, Historic American Building Survey.

View of southwest end of German Village looking northeast. Courtesy Library of Congress, Historic American Engineering Record, Historic American Building Survey.

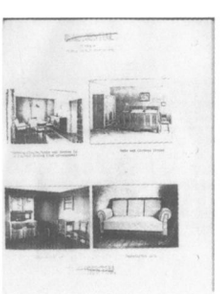
View of German Village. Courtesy Library of Congress, Historic American Engineering Record, Historic American Building Survey.



The uppermost image is used in the January 1946 *Architectural Forum* article. Also note the pristine condition of the test structures in the lowest image. From an untitled publication issued by the National Defense Research Committee.



German village, interior view of newel post at south stairwell, looking north. Courtesy Library of Congress, Historic American Engineering Record, Historic American Building Survey.



Examples of typical German furniture construction. From an untitled publication issued by the National Defense Research Committee.

chemical weapons testing, pressed the War Department for facilities to supplement the crammed and outdated facilities at Edgewood Technical Arsenal in Maryland and Eglin Field on the Florida panhandle. On February 6, 1942, President Roosevelt signed a bill to withdraw 126,720 acres of land from the public domain for use by the CWS. Named after the myriad wagon tracks—or "dugways"—carved into the open terrain, construction of Dugway Proving Ground began in earnest in March 1942. Unlike the Edgewood Technical Arsenal, whose proximity to major population centers made large-scale testing of biological and chemical weapons undesirable, Dugway Proving Ground was favored for its remoteness and lack of population. More importantly, a 1948 publication by former CWS officers and scientists identified the true allure of Dugway Proving Ground. The report stated that the cold, hot, and occasionally humid climate permitted laboratory and field-testing under variable combat conditions.

Under the command of Major John R. Burns, Dugway Proving Ground started as a group of portable structures occupied by army, navy, and National Defense Research Committee (NDRC) personnel. As American involvement increased in Europe and the Pacific, Dugway Proving Ground became the primary facility for the testing of countless toxic agents, flamethrowers, chemical spray systems, and biological warfare weapons.[17] Among the many physicists and chemists at Dugway Proving Ground were a handful of meteorologists who used wind and temperature data to measure the dispersal of phosgene, cyanogen chloride, and hydrogen cyanide bombs "ranging in size from 100 to 4000 pounds."[18] Ronald L. Ives was one of these meteorologists. Although the exact nature of his involvement in these testing programs is lost to history, he illustrates the dangerous and ominous nature of Dugway Proving Ground, reminiscing about an advertisement in *The Sandblast,* the weekly newsletter at the facility:

> THIS SUMMER
> SEND YOUR BOY TO DUGWAY
> HEALTHY, INSTRUCTIVE, DIFFERENT
> 4300 FEET ABOVE SEA LEVEL
> HIKING, MOTOR TRIPS, MANUAL TRAINING
> SELECTED CLIENTELE—HAS PRESIDENTIAL APPROVAL
> SPECIALLY TRAINED LEADERS, EXCELLENT HOSPITAL AND MORGUE FACILITIES
> Boys at Dugway are asked to do little tasks about the camp to prepare them for life. Military atmosphere. No idle moments. Applicants screened by Army Intelligence.
> Other camps under the same management at Kiska, Bizerte, and Guadacanal.[19]

Pictures of wartime structures at Dugway Proving Ground do not immediately inspire a similar sense of dread. In a 1943 photograph, Dog Area, the central CWS test installation at Dugway Proving Ground, looks almost ordinary, like a small town in the middle of a desert landscape. Low, squat wooden houses sit among laboratories with brick facades. Above-ground power and telephone lines weave an aerial grid mirroring the orthogonal arrangements of unpaved streets and sidewalks. Occasional smatterings of succulents dot the horizon, and far in the distance, scrub brush gathers across the flats reaching far to Granite Peak. An aerial photograph of Dog Area reveals the extent of the wooden and brick structures. From the air, more streets can be seen intersecting at right angles. Toward the bottom of the picture, a Boeing B-17 heavy bomber and an assortment of medium and dive bombers sit on the tarmac in front of a hangar at Michael Army Air Field, the only airstrip at Dugway Proving Ground. Other pictures of Dog Area begin to reveal networks of pipes and cold-storage facilities. Those pictures taken in 1944 give a sense of further developments at Dugway Proving Ground. In June of that year, a separate research station was constructed for testing biological weapons. Located 30 miles west of Dog Area, the Granite Peak Installation, or GPI-2, eventually became *the* center of biological weapons research during World War II.[20] Because of its isolation, the research station required its own utilities, living quarters, laboratories, and medical facilities, including a pump house and "underground igloo-storage building."[21]

Over forty years later, a map published by the United States Department of Interior hints at the extent of work completed at Dugway Proving Ground. An area once known for occasional silver mining, the map contains a series of cryptic titles. An "Aerial Spray Grid" sits next to a "Downwind Grid Array." Michael Army Air Field sits on Stark Road, in between Cedar Mountain Range and Camel Back Mountain. In the North, the "CDA Grid" rests by a dot labeled "CBR Gun Position." Further west, on Goodyear Road, far beyond Granite Peak and GPI-2, sits the "Radar Calibration course" and the mysterious "drop zone."

Starting at GPI-2, if one traces a finger east across the map of Dugway Proving Ground, he or she will inevitably run into another part of the facility called Peter Area. There, marked as a little square slightly south of Stark Road, sits "German Village," or Building 8100. From May 17, 1943, to September 1, 1943, Building 8100 and a series of adjacent "Japanese" villages were bombed again and again by aircraft taking off from Michael Army Air Field.[22] No idle moments indeed, for the building represents a forgotten moment in Erich Mendelsohn's career. Working out of offices in Croton-on-Hudson, New York, as well as out of War Department meetings, Mendelsohn provided the United States Army Air Force with some very important information—architecture intelligence, so to speak.

The Operation

In 1943, Dugway Proving Ground was a figurative hell on earth. A famous line from Canto III of Dante's *Inferno* even graced one wall of the military police gatehouse on Stark Road: "abandon hope, all ye who enter here."[23] Enlisted men working for the Chemical Warfare Service expressed no love for the temporary wooden houses and laboratories, often referring to the secret outpost in Tooele County as "Oblivion Junction" or "Limbo."[24] Their station was one of total, unquestioned devotion to the war effort. And in 1943, this meant testing the M69 incendiary on a series of "Experimental foreign villages… designed to make more 'good Nazis' and 'ancestors.'"[25]

On March 12, 1943, following the successful napalm tests at Harvard University and Edgewood Technical Arsenal, the CWS Technical Division sent "Request

SPCWT 161" to the board of directors of the Standard Oil Development Company. The U. S. Army not only hired this branch of Standard Oil for the development and testing of different types of plastics, synthetic oils, and fuels, but also as the sole manufacturer and processor of napalm. The contract thus requested the "research and design" and construction of facilities for the testing of incendiaries at Dugway Proving Ground. The CWS Technical Division and the Standard Oil Development Company officially entered into a contract for the creation of "Typical German and Japanese Test Structures" on March 18, 1943.[26] Documents reveal that the "structures" were really accurate replicas of German and Japanese housing, designed to test the effects of the M69 napalm bomb.[27]

Representatives of the CWS's Technical and Industrial Divisions, along with NDRC and Standard Oil Development Company staff, met in Elizabeth, New Jersey, on March 19, 1943, to finalize plans for the design and construction of the test structures. A May 1943 Standard Oil Development Company document, the official record of CWS "Request SPCWT 161," also notes that "several consultants" were present at this meeting.[28] Among these "consultants" were architects Erich Mendelsohn, Konrad Wachsmann, and Antonin Raymond.[29]

The term "consultant" is interesting for its contradictory associations. It is a confirmation of Mendelsohn's views that the architect is a type of specialist deploying highly rational and scientific tools at his disposal. However, the term rings of military intelligence. Indeed, these architects' charge was to provide the War Department with vital information about German and Japanese architecture. How these architectures were built or how they looked was not as important as how they burned. The scope of the Dugway project created a different spectrum for architectural practice—the erstwhile giver of form has suddenly become the destroyer of worlds. Mendelsohn, Wachsmann, and Raymond's full-scale models of German and Japanese housing depict the horrible shift from habitation to incineration.

The three architects attended the March 19, 1943, meeting with the CWS Technical Division, Standard Oil Development Company, and the NDRC to present findings on the state of housing in Germany and Japan. The findings would be used to evaluate the potential of German and Japanese cities as targets of incendiary bombing attacks. Each architect had a specific role in the project.[30] Mendelsohn provided the CWS and Standard Oil Development Company with information about the characteristics of German industrial structures.[31] More specifically, Mendelsohn provided specific data about the amount of roof coverage in Augsburg, Berlin and its surroundings, Breslau, Danzig, Dresden and its surroundings, Duisburg, Frankfurt am Main, Halle, Hannover and its surroundings, Königsberg, Leipzig and its surroundings, Magdeburg, Mannheim, Munich, Nürnberg, and Stuttgart.[32]

The CWS and Standard Oil Development Company authorized this specific type of survey because it was interested in the flammability of roofs in major German cities. The idea here was that in a typical air attack, M69 incendiary clusters would be dropped on the densest urban areas of Germany. Louis H. Fieser's tests at Harvard and Edgewood Technical Arsenal revealed that a wooden test house bombed with "raw gasoline was merely singed" while another bombed with napalm "burned to the ground."[33] These results were surely on the mind of CWS officers when they consulted with Mendelsohn to determine the extent of wooden roof construction in Germany.

The construction of German Village began on March 29, 1943. A local building contractor, the Ford J. Twaits Company, handled the site construction, with John F. Brandt as the project architect.[34] German Village actually consisted of six "typical" German dwellings, each built with two apartments, for a total of twelve residences. The structure was separated by 40-foot fire-breaks that allowed firefighters access and that prevented the total destruction of the structure. Six apartments, three on the first floor and three on the second, imitated Rhineland construction, while another six replicated Central German construction in the same pattern. A common party wall separated the Rhineland and Central German apartment blocks, reflecting how each block would actually have interfaced with its urban neighbors. Although Central German and Rhineland apartment blocks were never found in such close proximity as they were at Dugway Proving Ground, the structure was nevertheless accurate, as the test structure "closely adhered to the authentic German construction, including framing, outer masonry and inner firewall construction, flooring, mortise and tenon joinery, and roof sheathing."[35] The CWS and Standard Oil Development Company originally considered the construction of a third, eastern-German type of housing block, but determined that the Central German block could be used for this purpose as well. They also made efforts to carefully study the brick exterior and interior walls. In particular, they reasoned that the targeted German urban industrial housing, both stone and brick, contained a very high number of masonry fire divisions between blocks and rooms. Since the German test structure was erected to accommodate aerial bombing from as high as 20,000 feet, and since the German structures sat on the desert floor, Standard Oil added a broadly painted, vertical stripe on one end of the southern block for use as a high-altitude targeting indicator. Bombers had to drop a large number of small incendiaries so that individual rooms within apartment blocks were set ablaze through the attic floor, thus not allowing a fire to be contained by multiple firewalls. A reinforced concrete bunker, also referred to as a bomb shelter, was erected east of the test structure with the requirement that it be able to withstand the impact of a 500-pound incendiary dropped from 20,000 feet.[36]

"The Unchangeable Message of War and Revolution!"

Upon a first glance, German Village looks rather unremarkable. Nestled among unpaved access roads, the building is eerily devoid of context. The southwest brick facade is split into three equal sections, each representing a residential unit, each lacking detailing or ornamentation. Nine windows puncture the second (top) story. The bottom floor contains four windows, with three single doors and two double doors. A series of drainage pipes divides the roof into thirds, each containing a

prominent dormer window facing northwest. The northwest section of German Village tells more about the organization of the building. In fact, the previous structure is repeated, with the windows, dormers, and doors also facing southeast. The only difference between this part of German Village and the former is that this one features a tall, windowless roofed promontory jutting upward.

German Village is incomparable in the sense that it defies any type of serious scrutiny. Is it sham architecture? A distraction in an otherwise brilliant career? Although the building lacks the architect's signature expressionistic élan, it represents the end point of Mendelsohn's wartime travels.

Travels of this type are, to a certain extent, familiar. The first half of the twentieth century could very well be considered a type of design diaspora. Much has already been written about how architects and designers were displaced by authoritarian, nationalist, and antidemocratic regimes. We know about the Bauhaus exodus, for example. The United States became a fertile ground for the likes of Herbert Bayer, Mies van der Rohe, and Walter Gropius. The same could be said for England, where designers like Arthur Korn and Ernö Goldfinger became influential figures within expatriate design communities. Lesser-known artists, such as the Catalan anti-Franco graphic designer Josep Renau, are slowly becoming the subject of proper historical treatment. However tragic the individual stories may be, these designers' predicaments are known.

But we come to understand Mendelsohn's involvement in the Dugway project as something different. It is true that the exigent demands of global war required extraordinary commitments from everyone, including established designers. Hoyt C. Hottel, the MIT chemist responsible for bringing Mendelsohn to the CWS's attention, remarked in a 1984 lecture on the nature of the commitment required by the Dugway project. He writes, "Wartime research turns up more than a few participants whose actions show a strong self-interest, many participants who work diligently and selflessly with the sole motivation of winning the war quickly, and a very few whose consciences are troubled when they think of the consequences, in human suffering, of their effort."[37] Mendelsohn's Berkeley lectures exhibit all of these three aspects. But perhaps it is the last category, that of the wartime researcher who is so absorbed by the project that he shows little remorse for the consequences of an action, that holds our attention here.

In particular, we look to one example of the results achieved by the Dugway project. On the night of March 9, 1945, three hundred B-29 Superfortress bombers from the 73rd and 313th Bombardment Wings flew to Tokyo from bases in the Northern Mariana Islands in the Pacific. Stripped of radar equipment and armament, their bomb bays bloated with tons of M69 incendiary bombs, these aircraft started one of the largest fires in history. The fire engulfed 16 square miles of the densest part of Tokyo. Over 80,000 Japanese civilians died on that night. Not all were burned to ash. Some asphyxiated to death, as the conflagration literally sucked all the oxygen out of the air. This process caused typhoons of fire that traveled near the speed of sound. The destruction of Tokyo was not sudden. After watching their neighborhoods burn, some hapless victims decided to jump in rivers or to hide in makeshift bomb shelters. They literally boiled or cooked in those places in which they tried to avoid the destruction. Neither Mendelsohn, Wachsmann, nor Raymond acknowledged the human toll of their project. In processing the extent of this devastation, could we, even for a moment, consider it remarkable that it began with a series of voyages made by a German refugee?

This was a different type of architecture voyage, for the Dugway project demanded that architectural information be used for a new, terrifying purpose: the systematic razing of cities in Europe and Asia. The smoldering ruins of German and Japanese cities provided the necessary tabula rasa Mendelsohn envisioned for his vision of architecture practice in the postwar world, a vision he clearly defined in 1942, just as he was preparing for the Dugway project:

> The total earthquake of this revolution, the great fire of this war leaves us no time to hesitate or to postpone decisions. We must prepare now for what this country, the whole world, demands and expects of us: guidance on the road to a new era; it is the longing for life, when death is omnipresent; the devotion to truth, when truth is on trial; the courage of action, when values become stagnant, that remold the spirit and redirect the march of man.[38]

1 This paper is based on research completed at the Yale School of Architecture from 2005 to 2006, as well as on papers presented at the University of Virginia in September 2006 and Harvard University in February 2007. This paper was also inspired by my MED thesis, completed in May 2007, titled *Built to Destroy: Erich Mendelsohn's, Konrad Wachsmann's, and Antonin Raymond's "Typical German and Japanese Test Structures" at Dugway Proving Ground, Utah.*

2 Erich Mendelsohn, "Architecture in a World Crisis," in *Three Lectures on Architecture* (Berkeley: University of California Press, 1944), 7. This lecture was delivered on April 16, 1942.

3 Mendelsohn, "Architecture Today," in ibid., 22. This lecture was delivered on April 22, 1942.

4 Ibid., 41.

5 Ibid., 47.

6 Sophie Thomas, "Assembling History: Fragments and Ruins," *European Romantic Review* 14 (2003): 177–86.

7 "Das Typisch Amerikanische."

8 Erich Mendelsohn, "Hafen der Welt. Verkünder des neuen Landes, der Freiheit und des hinter ihr liegenden unermeßlichen Reichturms," in *Amerika: Bilderbuch eines Architekten* (Berlin: Rudolf Mosse Verlag, 1928), 12. Compare a more recent version of the book, where the same passage is translated as, "Port of the world. Announcer of the new country, of liberty and what lies behind it: measureless wealth, the most reckless exploitation, gold seekers and world domination." Stanley Appelbaum, trans., *Erich Mendelsohn's "Amerika": 82 Photographs* (New York: Dover Publications, 1993), 1.

9 Ibid., 52. The original caption reads:

Unheimlich. Die Konturen der Häuser sind aus gewischt. Aber in Bewußtsein steigen sie noch, laufen einander nach, überennen sich.

Das ist die Folie für die Flammenschriften, das Raketenfeuer der beweglichen Lichtreklame, auf- und untertauchend, verschwindend und ausbrechend über den Tausenden von Autos und dem Lustwirbel der Menschen.

Noch ungeordnet, weil übersteigert, aber doch schon voll von phantastischer Schönheit, die einmal vollendet sein wird.

Mendelsohn, *Amerika,* 130.

10 Louise Mendelsohn to Bruno Zevi, in Zevi, *Erich Mendelsohn: The Complete Works* (Boston: Birkhäuser Verlag, 1997), 80–81.

11 Appelbaum, trans., *Erich Mendelsohn's "America",* xi.

12 "Das ist keine Stadt im europäischen Sinn, das ist die Welt, ganz, in einem Topf." Erich Mendelsohn to Louise Mendelsohn, October 16, 1924, in Oskar Beyer, ed., *Erich Mendelsohn: Breife eines Architekten* (Munich: Prestel Verlag, 1961), 61.

13 Mendelsohn, "Architecture in a Rebuilt World," 35.

14 Thomas Pynchon, *Gravity's Rainbow* (New York: Viking, 1972), 258.

15 Organizzazione per la Vigilanza e la Repressione dell'Antifascismo, the Italian secret police under Victor Emmanuel III and Benito Mussolini's reigns.

16 Ronald L. Ives, "Dugway Tales," *Western Folklore* 6, no. 1 (January 1947): 53.

17 Historic American Engineering Record, National Park Service, Department of the Interior, "Dugway Proving Ground, Dugway, Tooele County, Utah: Written Historical and Descriptive Data," HAER No. UT-35 (1984), 15 (hereafter cited as HAER).

18 Chemical Corps Association, *The Chemical Warfare Service in World War II: A Report of Accomplishments* (New York: Reinhold, 1948), 36.

19 Ives, 58.

20 HAER, 24.

21 Ibid.

22 Ibid.

23 Ives, 53.

24 Ibid., 55.

25 Ibid. For more information about the design and development of the M69 incendiary bomb, see Louis F. Fieser, *The Scientific Method: A Personal Account of Unusual Projects in War and in Peace* (New York: Reinhold, 1964); Chemical Corps Association, *The Chemical Warfare Service in World War II: A Report of Accomplishments* (New York: Reinhold, 1948); and Charles Sterling Popple, *Standard Oil Company (New Jersey) in World War II* (New Jersey: Standard Oil Company of New Jersey, 1952). Materials regarding the results of the M69 trials at Dugway Proving Ground are located at the National Archives, ETF 550 E-2844, Military Intelligence Division, Great Britain, "Dropping Trials of Incendiary Bombs against Representative Structures at Dugway, USA, October 12, 1943," *Edgewood Arsenal Technical Files Relating to Foreign Chemical, Radiological, and Biological Warfare Retired to the Defense Intelligence Agency for Reference Purposes* (Entry 1-B), Records of the Defense Intelligence Agency (Record Group 373); and ETF 550 E-2844, Military Intelligence Division, Great Britain, IBTP/Report/128, "Comparison of the Japanese Targets and Test Results at the Building Research Station, Edgewood Arsenal and Dugway Proving Ground, H. M. Llewellyn, M. A. London," Report No. R3583-45, June 29, 1945, *Edgewood Arsenal Technical Files Relating to Foreign Chemical, Radiological, and Biological Warfare Retired to the Defense Intelligence Agency for Reference Purposes* (Entry 1-B), Records of the Defense Intelligence Agency (Record Group 373).

26 Standard Oil Development Company, "Design and Construction of Typical German and Japanese Structures at Dugway Proving Grounds, Utah," SOD Project 30601, SP-CWT 161 (May 27, 1943), 15.

27 See HAER, "Dugway Proving Ground, German-Japanese Village, German Village: Photographs, Written Historical and Descriptive Data, Reduced Copies of Measured Drawings," HAER UT-92-A, UT0568 (April 2, 2001).

28 Ibid.

29 Ibid.

30 Documents indicate that the Chemical Warfare Service had been interested in consulting with the "Gropius group at Harvard" for this project. Ibid., 3.

31 Ibid.

32 The exact methodology of this is unclear. Although the 2001 HAER report indicates that there is some dispute as to whether Mendelsohn actually authored this survey, the 1943 Standard Oil Development Company Report notes that the survey "was made by one of Germany's former leading architects." See Standard Oil Development Company, 3. Because the Chemical Warfare Service relied on Wachsmann's knowledge of wood construction for the project, the 1943 document suggests that Mendelsohn was the likely author of the survey.

33 Chemical Corps Association, 69.

34 Although Brandt's initials are on all the drawings, the exact nature of his involvement is unknown.

35 Ibid.

36 Ibid., 6.

37 Hoyt C. Hottel, "Simulation of Fire Research in the United States after 1940 (A Historical Account)," *Combustion Science and Technology* 39, no.1 (January 1984): 5.

38 Mendelsohn, "Architecture In a Rebuilt World," 48.