“The works of artists and the didactic demonstrations of scientists and engineers combine to do more than show the sights. They alter, each in a characteristic mode, the way in which individuals perceive both their past and future experiences, and they make people aware of aspects of their surroundings that they have either learned to ignore or never been shown how to see.”

- Frank Oppenheimer

Dedicated to the increase and diffusion of knowledge about how the nation’s lands are apportioned, utilized, and perceived.

THE CENTER ENGAGED IN A series of programs about New Mexico in 2009, including exhibitions, tours, and a new exhibit facility. These interconnected programs explored aspects of the landscape of the state, and its relevance and significance within the fabric of America.

From the birth of the manmade sun in Los Alamos to the optimistic bunkers of its doomsday cultures, New Mexico, more than anywhere else, vibrates with the resonance between the starry plasma of the cosmos and the firmness of terrestrial terra firma. High technology, using the invisible spectrum (radar ranges, radio observatories, x-rays, radioactivity), stretches to see, to detect, and to compel. These efforts are fused with the visible and physical surface of the land, and manifest the ancillary actions of attraction, impact, containment, and entombment.

To explore these themes, the Center established the New Mexico Exhibit Unit. The Unit, a customized mobile office structure, was installed at a special location, at the end of a road south of Albuquerque, to be both a destination and a point of embarkation on a journey into this most remarkable state.

The Unit was both the end and the beginning of a treasure hunt, woven through layers of physical and electronic space. One could begin on the web, and find out about the Unit as part of an exhibition at 516 Arts’ storefront gallery in downtown Albuquerque (and later as part of an exhibit at the Center for Contemporary Arts in Santa Fe). Among the components of the display set up by the CLUI in these “second site” spaces was a map/image showing the location of the CLUI New Mexico Exhibit Unit, and a sheet with directions to it, listing the hours it was open to visitation.

With this information in hand, potential visitors began a journey south of most of Albuquerque, through a gauntlet of scrapyards, and up a long, dead-end road, past waste transfer stations, shooting ranges, OHV mounds, and other curious byproducts of urban

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THE LANDSCAPE OF OIL IN THE USA touches every state in one way or another. Los Angeles is unique, as in addition to being notorious as a city that grew up with and for cars, it continues to be an active oil field. The CLUI focused on this subject for the third installment of a trilogy of oil exhibits in 2009. continued on page 21

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A SECOND LANDSCAPE OF LOS ANGELES is exposed when seen from above: the geometric terrain of helipads. This staggered plateau of rooftop space has arisen as if buildings push the land they displace skyward. The CLUI generated an exhibit about this landscape, Elevated Descent: The Helipads of Downtown Los Angeles, which was shown at the Center’s Los Angeles space in May, 2009.

No American city comes close to matching the number of helipads that are found in downtown Los Angeles. There are more than 75, and that’s just in downtown, not including the rest of the city. This is because of unique local building codes that require new buildings higher than 75 feet to have provisions for emergency landing by helicopter. (80 feet is the general limit of fire truck ladders.) The establishment of this code in 1974 has had a dramatic effect on the look of the city: there are no Postmodern pyramid-topped buildings, no neo-Gothic or Moderne spires, topped by an antenna mast. All major buildings in LA built after 1974 have flat tops, to accommodate the required 50 x 50 foot touchdown pad, surrounded by an obstruction-free Peripheral Area of 25 feet. It’s a local idiosyncrasy that no developer or architect has tried hard enough to challenge.

And its not like LA is some futuristic city where helicopters move VIPs around from place to place, high above the common man on the city streets. Most of the rooftop pads in the city are Emergency Helicopter Landing Facilities and are not intended to be used outside of emergency situations. Though there has been no case where lives have been saved by the existence of the helipads – yet.

Some of the rooftop helipads downtown are designed for both emergency and non-emergency use. They have different design and markings from the Emergency Helicopter Landing Facilities. This type is generally identifiable as having a square outline, inside of which is a triangle with the letter H or other lettering or logo, which indicates the preferred direction of approach. In some cases the word “private” or “PVT” is sometimes used, indicating that this helipad is not for everyone. But this is redundant, as all of the helipads in downtown Los Angeles are Prior Permission Required (PPR) helipads, requiring the permission of their owners or operators for their use. So park it elsewhere.

Scanning the helipads of the city, encountering a truly anomalous marking is usually an indication that it is a government pad atop a government building – county, state, or federal. Though the FAA has guidelines for the design of helipads and heliports, they do not enforce the implementation of the designs, and the government seems to do what they want. Heliports – airports for helicopters – are another matter, and have FAA guidelines that are enforced. There is only one such true heliport downtown, the LAPD’s main helicopter facility, the Jay Stephen Hooper Memorial Heliport. Located at the edge of downtown, next to Highway 101 and the LA River, the LAPD heliport can accommodate more than one helicopter at a time, and is active day and night. With the second largest civilian air force in the country, the LAPD is the lord of Los Angeles’ skies.

The exhibit at CLUI included projections, sound, text, and images of every helipad atop a downtown building, as seen from above, as well as the name and image of every downtown building with a helipad, taken from the ground looking up.

Elevated Descent was a presentation of the Center’s Air/Land Program, and was supported by a grant from the Los Angeles Department of Cultural Affairs.
The Center invited the artist Cynthia Hooper to present her work to the public at the CLUI in Los Angeles as part of the Center’s Independent Interpreter program. Seven of her videos depicting landscape processes were displayed continuously during open hours, visible on monitors and as projections.

At the opening of the exhibition, on January 22, 2010, Cynthia spoke to a packed house about her current work, related to trans-border water issues in the Mexicali Valley of Mexico and the Imperial Valley of Southern California. This was followed by a screening of her latest film on the subject, *Meximperial*.

The film is an observational documentary of this arid agricultural area, where accidental effects of American water infrastructure permeate the international boundary zone. It is about the plumbing of the terminus of the Colorado River, where the water is wrung out through a web of manmade structures, with dramatic unintended effects.

Cindy Hooper has been documenting and depicting landscape phenomena through video and painting for over ten years. Her work explores the components of large scale processes of anthropogenic decomposition, extraction, and conveyance. Her work is a form of active observation that allows us time to understand how features assemble, bit by bit, to create the whole.

The Center first encountered Cindy’s work ten years ago, when she came to the Wendover Residence Program with two others, Erling Sjovold and Jerry Smith. Together they would set up easels and do plein air paintings of the same view, each depicting what they saw through their similar, but slightly divergent perspectives and painting styles. These paintings resemble the videos that Cindy moved on to a few years later. They too are framed vistas, but by adding a time component, the objects in the frame, rather than paint, animate the scene. She engages in a kind of static kinetics, watching movement instead of creating it, clearly similar to the structuralist landscape gaze of filmmaker James Benning (who has also presented at the Center as an Independent Interpreter).

Hooper’s videos are portraits of the contrast between the balance, symmetry and stasis of infrastructure and the chaos of natural forms and movement. They convey a deep commitment to the things depicted, as well as a Freudian-esque fixation with plumbing. Her video *Cummings Road Landfill*, for example, shown as a projection in the exhibit, zeroes in on the minutia of a closed municipal dump, an earthen mound with bubbling fissures and bleating gas vents. Though static from a distance, the dump is actually a living seething mound, full of activity of a microbiotic sort. Similarly, *Bay Dredge* shows a tranquil Northern California beach that is abruptly transformed into a scene of scatological spewage when a static pipe becomes the outfall of a dredging operation, miles away.

Her work has migrated south of the border to Mexico for the last few videos, *CESPT*, *Lazaro Cardenas Electricizada*, *Basura Quemada*, and *La Morita Enamorada*. These explore the tentative and improvised ends of DIY infrastructure, contrasted with the large scale waterworks of sewage treatment plants and industrial agriculture canals.

This is the first of a series of presentations and exhibits dealing with the border that the CLUI is involved in over this coming year. Next in the Independent Interpreter Program we will have a presentation and exhibition of work by Sarah Cowles about Juarez/El Paso.

The Independent Interpreter program of the CLUI periodically invites people doing interesting innovative and creative work in and about the landscape to present their work to the public at the CLUI. This program is made possible by the support of the Andy Warhol Foundation for the Visual Arts.
On display in Exhibit Hall 1 is the work of Kristin Posehn, a resident in 2007 and 2008, who focused on the story of Metropolis, a remote Nevada city that never was.

THE CLUI WENDOVER RESIDENCE PROGRAM 2009 season started with Jan Estep and her dog, both from Minneapolis. Estep spent her time there researching, photographing, and writing about the Silver Island Mountains north of Wendover, which, as she writes, “rise up like an archipelago in the middle of the Great Salt Lake Desert, surrounded on all sides by salt and mud flats.” Estep produced an illustrated trail map of a 54 mile loop around the mountains, and an essay, written in five parts, that is buried along the trail. The essay is partly a commentary on the local rock graffiti along Interstate 80, and related conceptual land art of the 1970s. The sections of text were put back into the landscape in homage to Nancy Holt’s Buried Poems (1969-71) and John Baldessari’s California Map Project (1969). Estep’s map is available at the CLUI.

Over the season, CLUI director Matthew Coolidge led a number of trips around the Great Salt Lake for various groups. One trip in October involved getting a helicopter out to the Spiral Jetty, so visitors could see the Jetty as Smithson did. Compound heliographic spirals in the sunstroking miasma were enjoyed by all.

The annual CLUI Wendover Work Party was a bit later than usual this year, held in August, enabling an overlap with Speed Week (which had an impressive turn out too). Work party participants included Aurora Tang, Jed Lackritz, Philip Weil, Eric Potter, Ben Loescher, Julia Christensen, Lucy Raven, and John Brinton Ho-
The Center established the first in a nationwide series of bench mark overlooks near the edge of the CLUI Houston field office and logistics yard. Bench Mark overlooks have been selected to encourage the observation of geotransformative terrestrial activities. Each site in the series consists of a park bench, put in place by the CLUI, to encourage passers-by, or destination-seekers, to sit, for a spell, and to watch what is happening in front of them.

This first Bench Mark is on a newly paved walking trail that runs along the banks of the Buffalo Bayou, at a spot with a panoramic view of the Proler Southwest metal scrap operation laid out like a diorama on the opposite bank of the Bayou.

Sitting here, on the bench atop the bluff, is like having a front row balcony seat at a deconstructivist industrial ballet pulling apart the used up metal parts of the nation. Trucks, cranes, conveyors, loaders and grabbers move literal mountains of scrap metal around the site on a nearly continuous basis at this, one of the largest scrap-handling operations in the South, and a source for recycled metals that find their way back into products distributed all over the nation and the world.

Sparks fly dozens of feet into the air from torching operations, where really thick metals are cut down to size with industrial gas torches, producing HMS (heavy melting scrap). A prolerizer car shredder reduces vehicles to steel shred which is used as a feedstock for steel mills, often mixed with the chunkier HMS. Piles of compressed and cubed White Goods, composed of appliances such as washing machines, fridges, and air conditioners (so-called as they are often white enameled), are kept separate, though their fate is usually the same: ground up and fed into steel-producing mini-mills around the country.

Higher value non-ferrous metals are separated from the steel and iron and are sorted into piles based on specific type and texture. Though the vernacular varies regionally, terms for specific types of non-ferrous scrap are descriptive: zorba is an unsorted pile of aluminum and copper that comes out of the shredder; barley is heavy braided electrical wire used for electrical transmission; honey is copper mixed with brass; and candy is copper plumbing tubing. A meatball is a rare and highly prized copper wire clump of electric motor windings.

This buffet of flowing textures is visible from the Bench Mark, along with the symphony of sounds that handling these different materials makes, from low thumps of initial dumpings, to the shrieks of shredding, and the cascading glissando of steel plate tumbling into an empty barge.

This site, known as Proler Southwest, was started in the 1940s by the Proler family. Proler is a big name in American scrap, starting in Houston in the early 1920's, and growing to operate yards from coast to coast (the prolerizer, a machine for shredding cars, was developed here, and is in use all over the land). This (and many other Proler yards) was purchased recently by SIMS Metal Management, which has bought up just about all the mom and pop scrap companies across the nation, and is now the largest scrap metal company in the world, with over 230 locations, and 6,000 employees.

Loaded barges full of sorted scrap move up and down the inland waterways of the nation. From here, the barges head to steel mills around the south via the Intracoastal Waterway and rivers, or are off-loaded at port sites and reloaded onto larger vessels for the ocean crossing. Other CLUI Bench Marks to follow.
space, until they reached the CLUI site, marked with a sign at the end of the road, and manned by an attendant. After passing through a small reception area, with selected brochures and regional information, visitors reached a door that led into the exhibition space, a room with no exit, the dead-end space on a dead-end road. On the far wall was a rectangle of sunlight, filtered by a screen of sunshade material, that filled the room with light. The main exhibit inside the unit over this period was titled *Extra Terrestrial: Aspects of the Sky/Ground Interface in New Mexico*, and featured images and text about selected New Mexico places, following the theme of opposing actions of reaching and hunkering, sky and earth, up and down, there and back.

At Tremontina Base, in northeastern New Mexico, for example, the Church of Spiritual Technology operates an underground repository for the archived material of L. Ron Hubbard, the science fiction writer and founder of the Church of Scientology. Behind 6,000 pound vault doors are copies of his texts in titanium containers, inscribed on stainless steel tablets, and carved into recording discs that can be played on solar-powered turntables. The remote site has a landing strip and is marked with a large graphic symbol of the organization, two interlocked circles with diamonds, hewn into the ground, said to serve as a locator for craft coming from space, or elsewhere, in the future. These latter features are clearly visible from the open skies above the site and in the imagery on GoogleEarth.

Other sites in the CLUI exhibit included research ranges, bunkers, launch sites, proving grounds, and crash sites (such as the Mark 17 crash site, the Trinity Site, the RATSCAT Range, and the Starfire Range), as well as skyward-looking observatories and land art, like Lightning Field and the VLA.

Each image of each place was a print of a file downloaded from GoogleEarth’s web site. The images, unadjusted high-resolution TIFF files, represented croppings of the continuous digital space of the GoogleEarth globe, a publicly available, non-physical, electronic rendering of the physical space of the planet.

The images, printed on high-quality paper, matted and framed, suggest a new kind of “landscape photography,” produced without a photographer while being, without a doubt, aesthetically satisfying objects, and depicting places in great detail. Perhaps landscape photography, in the new world of electronic information and automation, has evolved to the point of nearly pure objectivity, where the art is in the selection, the curation, and the presentation, not in the medium.

If this is so, then the dead-end of the CLUI exhibit space thus becomes a pivot point between the floating eyes of space-based extraterrestrial assets, and the ground itself; between coming, with expectation, and going, with new ideas and information, out into the world again. The journey to the space, which started on the internet, then passed through physical space up the dead-end road, ending at a dead-end exhibit of immaterial internet imagery, made physical by printing, absorbed by the retina through the reflected light of the sun, and forming images again in the mind’s eye of viewers, viewers who can do no more than turn around, and head back the way they came. But you can never go back the same way you came, as going back is not to reverse, but to see things from the opposite side.

MONTHS WERE SPENT SEARCHING FOR just the right place to put the CLUI New Mexico Exhibit Unit. Once found, however, at the end of Los Picaros Road, in the crack in the land formed by the Tijeras, there was no doubt that it had to be exactly where it ended up.

To the north is the southern limit of the great sprawl of Albuquerque, perched on the mesa beyond the airport. The airport (or Sunport, as it is called) is shared with Kirtland Air Force Base, a major nuclear weapons and R&D base, and Sandia National Lab, whose principal testing grounds lie to the east. South of the site is Mesa del Sol, an empty mesa awaiting one of the largest master-planned developments in the West.

University Avenue, the new roadway connecting the Sunport to Mesa del Sol, flies over the valley and its only artery, Los Picaros Road, without a traffic interchange. The Tijeras is a forgotten eddy, and the CLUI exhibit unit is at the end of that eddy.

To get there from downtown, you have to get onto Broadway, and head south, until things break down. You pass the closest thing Albuquerque has to a refinery, the Western Refining Company’s terminal, which is connected to pipelines, and supplies much of the automotive fuel to the region. Then, suitably perhaps, come the junkyards. The southern end of Broadway has one of the largest concentrations of automotive scrapyards in the country. Before they play out on the fragmenting southern extreme of the city’s periphery, you turn east on Bobby Foster Road (named after a professional boxer from South Albuquerque, who later became a po-

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The dead-end road of LosPicaros can be considered as the trunk of a tree that branches off into many directions, each one another splintered dead end. Among the dirt road bifurcations are the gates to two shooting ranges, one for the police and one operated by a club, each finally spraying their bullets out like a leafy capillaric splay at the end of the branch. CLUI photo

liceman), and pass over Interstate 25, the great north/south artery of the West. Then a left turn puts you at the start of Los Picaros Road, and three miles from its other end.

A boat junk yard is the first place you pass, where dying high and dry fiberglass hulls crack in the desert sun, far from the nearest navigable body of water (at Elephant Butte reservoir, a hundred miles down the Rio Grande). The road then turns away from the Rio Grande Valley, and heads east, up this dry tributary, the Tijeras, whose periodic drainage floods make chaotic cliffs out of its unlined bed, like a miniature version of the larger canyon landscapes of the West. In and around the Arroyo are off-highway vehicle recreation areas, whose tracks and trails denude the hills and dales of vegetation. The road continues, with clean new pavement, provided, begrudgingly and after the fact, by the production company of the latest Terminator movie, which was shot here due to the limited traffic and post-natural futuristic look.

After passing under University Avenue, the inaccessible access road connecting Mesa del Sol to the rest of Albuquerque, the next intersection is a road that heads north up the mesa, to the back gate of Kirtland Air Force Base and its underground nuclear weapons depot near the airport runway. Before the guard station, a small turn-off eastward heads to a blasted fenced compound of old trailers and truck beds that was once a police farm (whatever that is).

Different government agencies have operated in the Arroyo over the years. Odd shaped cement pads are scattered throughout the scrub, remnants of former uses and long-gone buildings. A fenced lot with a large quonset hut is now used as a heavy equipment training center for a journeyman and engineer union. Nearby, a loosely fenced plot of land is a city-run off-leash dog exercise area, with cement tubes and other obstacles for canine play. Next to that is a Frisbee golf area, the Brent Baca Memorial Disc Golf Course, which incorporates concrete and wood debris into that human playground.

The land here at the end of the road is owned by the City of Albuquerque, and managed as Montessa Park, though it remains a land of many uses. Across from the Frisbee golf course is a large waste transfer station, and this is the reason for most of the traffic on the road. Next to that is the City of Albuquerque’s Bio-Disease Management Facility, a few metal sheds and offices hosting operations related to abating mosquito and rodent vectors, like West Nile, plague, tularemia, and hantavirus, including a pond for keeping mosquito larvae-eating fish, which are distributed for free to the public.

Across the way is the Mobilization Center, a parking lot with adjacent meeting rooms used as a staging area for emergencies involving sudden influxes of groups of people, such as wildfires and whatever else. This facility is part of the fenced compound that houses the offices of the City’s Open Space Division, which manages 28,000 acres of space around the edges of the city. In Albuquerque, which grew quickly and without much of a plan, there is no Central Park. Instead, there is a system of mostly undeveloped city land on the edges of the sprawl that serve as peripheral parks, managed by the Open Space Division. It is this department that has kindly allowed the CLUI Exhibit Unit to occupy a fenced area next to their gate, at the end of Los Picaros Road.

Beyond the Open Space Division compound (a former Forest Service headquarters), are a few shooting ranges, operated by the police department, and by the private Zia Rifle and Pistol Club. As usual, firing ranges represent the true end of the road. The Arroyo continues eastward, but the road does not. For beyond the ranges (which shoot southward into the edge of Mesa del Sol), is the fence for the edge of Kirtland Air Force Base and Sandia Base.

Kirtland and Sandia are the largest employers and economic entities in Albuquerque. Beyond its role as a nuclear-equipped Air Force Base, Kirtland is one of the principal high-tech R&D bases in the Air Force. Beyond the fence in the Arroyo are the bulk of the active munition storage facilities for the base, and a number of test facilities used to study the effects of electromagnetic radiation on military equipment such as aircraft, including two adjacent sites known as the Trestle, and ARES. Visible as an extension off the edge of the mesa above the Arroyo, the Trestle is built of wood to limit the interference that a metallic structure would produce, and is the largest such structure in the world. Over 10 million volts of electromagnetic radiation can be generated here, simulating the effect of the pulse produced by a nuclear explosion.

Beyond that and extending for a few miles east and south of the main base at Kirtland is the R&D field test area for the Air Force Research Lab and Sandia National Lab (Sandia is the third of the three atomic weapons labs, and the one historically charged with making deployable weapons out of the devices built by the two others, Lawrence Livermore and Los Alamos). One of the most unusual and diversified field test sites in the nation, the 25 square mile zone is littered with unusual and singular test structures related to weapons and nuclear technologies. Sandia’s Technical Areas 3 and 5 cover a rectangular area on the west side, where facilities include a 10,000 foot long rocket test track for studying accidents involving nuclear weapons and enclosures. The northeast area is dominated by the former nuclear weapons storage and work site inside the Manzano Mountains. The Air Force’s satellite surveillance facility at the Starfire Optical Range is at the southeast end, and the southern end includes Sandia’s solar energy research area, a small radar cross section range, and a biological lab for Lovelace Respiratory Research Institute (which began at this site as the Fission Product Inhalation Laboratory).

A good, though distant, view of Sandia Base can be had a short distance from the CLUI Field Unit. A road forks off of Los Picaros behind the waste transfer station and next to the shooting ranges, and climbs the edge of the Mesa del Sol. Arriving at the top of the mesa, the road curves to the right and dead-ends at the gate of Albuquerque Dragway, a dragstrip used on some Saturdays. Before the road curves to the right, there is a gate that is rarely locked, which enters onto publicly-owned land. Turn left once inside, and you pass some FAA antennas and eventually reach the perimeter fence of Sandia Base, on roads that are rough but passable to most
reasonably high clearance vehicles. Nearby, and a good site to get the full panorama of the land, is the Mark 17 Broken Arrow site.

It was here in May of 1957 that a thermonuclear bomb fell out of an airplane and landed on Mesa del Sol. The hydrogen bomb, a Mark 17 model, was one of the largest and most powerful weapons ever made by the United States. It was 24 feet long, weighed 42,000 pounds and had a design yield of 15 to 20 megatons of TNT, 1,000 times more powerful than the atomic bombs used in World War II. The bomb fell through the closed bomb bay doors of the plane, which was approaching Kirtland at an altitude of 1,700 feet. The bomb was destroyed on impact. Though a chain reaction was impossible, as the plutonium pits were stored separately on the plane, the accident spread radioactive parts over a wide area.

The Air Force cleaned up the site in secret, though fragments of the bomb — some mildly radioactive still — can be found in the area. It is one of more than 30 known “Broken Arrow” incidents involving the accidental loss or destruction of a nuclear weapon, but one of only a handful of such sites in the USA that can be visited. Little visible remains, except in aerial images that show the spread and the area where soil was removed and replaced. A post from a descriptive marker erected by the CLUI in 1996 remains as a mute version of its former self.

Southward, the mesa continues, until the next sculpts its southern edge. Westward, a few large sheds are the proto-business park of the impending development known as Mesa del Sol. The project, taking place in what was empty space a few years ago, may one day have as many as 38,000 homes, where currently there are none, with a Peter Colthorpe-designed city center. So far two solar panel manufacturing plants have been built, signaling the “green economy” of the Mesa of the Sun. Also up here is Albuquerque Studios, the largest film and television production facility in the state, built as the anchor business for the Mesa del Sol development. Next to it is the information, sales, and administrative center for the project. Although mostly vacant, the shell of the unusual building has been finished, and awaits the future.

LAND OF ANTICIPATION
STUDENTS MAKE EXHIBIT ABOUT MESA DEL SOL

AN EXHIBITION ABOUT MESA DEL SOL was put together by students from Albuquerque Academy and presented in the CLUI Exhibit Unit, located at the base of the mesa, at the end of Los Picarios Road. The exhibit featured photographs, text, paintings, and drawings on photographs, all made by the students, with text panels that described elements of the place with considerable thought and detail.

Mesa del Sol is a proposed development project on an empty mesa bearing that name, 10 minutes south of downtown Albuquerque. If it is built out as planned, it would fill in the southern limit of the city with a master-planned 20 square mile urban area, with as many as 100,000 people in four separate villages, built over the next 30 years. One of the largest “greenfield” developments in the West, the Mesa del Sol project is three times larger than the oft-cited mega development at the former Stapleton airport in Denver.

Though some commercial buildings have been constructed, and some infrastructure built, the project is on hold, pending a change in economic conditions. Its stasis and vacancy gives the land a sense of calm that is dreamlike. Drawn in to consider the space, one feels like an anachronistic voyeur, as if scanning an image of a video frame of a movie placed on pause. You are wandering in a place that is poised, and asked to extrapolate the future. Visiting it is a unique opportunity to see a proto-city, a potential place, a future not yet realized.

The exhibit opened December 10, 2009, and was on display through January 10, 2010. It was produced by the students of the AP-2D Design class at Albuquerque Academy, led by their teacher Louis Schalk.
The act of creation of the manmade sun collected the scattered resources of the planet — the tiny radioactive potential in natural rock — and processed it through the largest and most technologically complex landscape machine ever conceived, a machine that spanned the nation, from Oak Ridge to Hanford, converting the microcosmic energy that holds the world together into the energy that can break it apart. The energy of the stars. With this shift in scale, human industry becomes galactic.

This cumulative act, the Manhattan Project, was the collective bite of the Big Apple of the knowledge and power of the Universe, and the irreversible transition from not knowing to knowing. This loss of technological innocence marked the transition from the Eden of America as the garden of potential, to the kinetics of the post World War II consumerscape, dominated by the forces of American economics, spending the political capital acquired by winning the war for the world.

This moment of transition fomented across the globe, but its epicenter was in the state of New Mexico. So when the Center for Land Use Interpretation was asked to do a bus tour about New Mexico, we said yes.

New Mexico is a large state, and given the time (the bus had to be back at 6pm the same day), there was no way to really do a tour of the state. That sort of focus would appear in the Center’s exhibit, a few months later. Instead, the tour would head straight to the source of the energy that blasted the Land of Enchantment into the future — to Los Alamos.

But the tour was not only about Los Alamos. We used the attractive energy of Los Alamos as a destination to pull us towards it, then we entered its orbit, using its gravitational field to gain momentum, and to curve around it, then away, into another space. The trip would fall through several layers of context and meaning, then would end up back where we came from (in this case, Albuquerque), though in a somewhat transformed state.

The tour would be driving through the ancient and sacred ground of the Native Americans on a collision course with the place of hypermodern science fiction and fact. The tour would have two thematic parts: Going There, and Coming Back: the attraction, and the fallout; the action and reaction; up and down.

We got on Interstate 25, northbound. The road is an epic span of western motorism with continental connections, linking northern Montana (I-90) to southern New Mexico (I-10 at Las Cruces), part of a continuing Pan American Highway which connects Prudhoe Bay, Alaska with Tierra del Fuego, Argentina.

I-25 has also been called the Atomic Highway, stringing together White Sands Missile Range, in the south, where the first atomic bomb was detonated, to NORAD and Colorado Springs, with their command and control centers for our ICBM arsenal and defenses. And, of course, Sandia Labs here in Albuquerque, where most of the bombs are engineered, and Los Alamos, where the Atomic Era began, and continues.

It would take nearly two hours to get there, a perfect opportunity for preparation. With video monitors above the seats, the bus became a movie theater. First to be shown was the 18-minute film The Town that Never Was, a history of Los Alamos, made for the Bradbury Museum by members of the lab. Then a section of the documentary The Day after Trinity was shown, which described some of the personal history of Robert Oppenheimer, who selected the location for the lab based on his love of the area — his family’s cabin still exists in the hills across from Los Alamos.

Then the bus watched A Sense of Place: Preserving the Manhattan Project at Los Alamos, narrated by author and historian Richard Rhodes. This is a recent film that argues for the need for preservation of some of the early lab buildings. In fact, the National Park Service is considering the establishment of a Manhattan Project National Historic Park inside some of the historic parts of the lab, a notion supported by the Atomic Heritage Foundation, producers of the film. Opening up the park to the public, however, would be another issue.

After that we watched Welcome to Los Alamos/Stockpile Stewardship, a lab-made cinematic greeting that describes the present work of the lab, much of which is about modeling existing atomic bombs in virtual space, using the most powerful computers in the world and the most advanced visualization systems in the world, in order to understand their composition and decomposition, since treaties prevent us from making any “new” atomic weapons. Stockpile Stewardship is about how to maintain our weapons by replacing aging parts, and convincing the world that we know these bombs will still perform as they were designed to. Sabre-rattling has moved to cyberspace.
He calls the cabin Perro Caliente ("Hot Dog") and goes there nearly every summer through the 1930s, often with his brother Frank (also a physicist, who later founds the Exploratorium in San Francisco). While there he rides horses on long trips into the mountains for days on end, eating peanut butter and drinking whiskey. He famously says, at this time, "My two great loves are physics and New Mexico – what a pity they can't be combined."

When the war starts, and the Germans are suspected to be developing a bomb, Oppenheimer is tapped to run the American effort to beat them to it. He suggests the Los Alamos Ranch School as a site to establish a lab. General Groves visits the site with him, likes the security that the remoteness provides, and agrees. Oppenheimer later regrets not just the creation of the bomb, but having ruined a beautiful place.

In the winter of 1942/43, a year after Pearl Harbor, the Ranch School property is taken over by the Army. School shuts down and bulldozers move in. A Van de Graff generator was shipped from the University of Michigan and a cyclotron came from Harvard. In March 1942, Oppenheimer and other key scientists arrive to help set up the lab. New arrivals check in at 109 East Palace Avenue in Santa Fe, then disappear, and are listed simply as residing at "P.O. Box 1663, Santa Fe."

By the fall of 1943, a few thousand people would call this P.O. Box home, while working at the lab thirty miles away in the hills. Most people in wartime Los Alamos were under the age of 30. They generally worked all day six days a week and recreated on Saturday night and Sunday. This continued for two years, until the summer of 1945’s Trinity, Hiroshima, and Nagasaki.

After the war, many scientists left, some disappointed by the use of the bomb. When the motive was to stop the Nazis, it was different. But the work continued after victory in Europe – the momentum just too great to stop. Oppenheimer is outspoken about his regret, and leaves Los Alamos soon after Nagasaki. He famously has his security clearance revoked years after the war.

Many of the lab scientists, even Edward Teller, form the Association of Los Alamos Scientists, ALAS, and draft a statement arguing for international cooperation and sharing of bomb technology in order to prevent an arms race and perpetual political instability. President Truman responded by classifying the document.

Norris Bradbury became the first director of the lab after Oppenheimer. His main task was to make bigger and/or better bombs. And that has been the main purpose of the lab ever since. In 1949, Sandia Lab was founded at the Air Force Base in Albuquerque, to focus on new weaponizations of the bomb. In 1952, Ed Teller founds the third of the trinity of national nuclear labs, Lawrence Livermore, to develop thermonuclear/hydrogen bombs, and to provide compelling competition for Los Alamos. And so it goes, still to this day.

Just before the top of the mesa, the bus pulls off at an overlook. On the valley floor to the east is the Rio Grande, and Otowi Station. On the other side of the valley is the Sangre de Christo Range, where Oppenheimer once wandered, innocently (his cabin...
still exists out there, near the campground at Iron Gate). Next to us is a remnant of the old road up the mesa, the last of a series of switchbacks, where in the old days trucks loaded with equipment for the lab had to be pushed up by bulldozers. As we crest the mesa in the bus, we enter into the exotic land of the past and present nuclear druids.

On the Mesa

The mesa is a landmass flowing like a tattered doily draped over the Valles Caldera, with edges that crumble into canyons, leaving long peninsular fingers of high ground between them. Arriving on the main road to town, one rises onto one of these mesa-top fingers, with a canyon on either side. The first active parts of the lab are visible on the left, while areas of the civilian town begin next to the road, on the right.

The lab’s land is divided into 74 Technical Areas (TAs). On the left is TA 53, visible on another mesa-top finger across the canyon. TA 53 covers 750 acres and has approximately 400 buildings and other structures, where about 800 personnel work. The principal facility in this technical area is the Los Alamos Neutron Science Center (LANSCE), once known as the Meson Physics facility. It is one of the largest research accelerators in the world, and an important part of the lab’s capabilities.

The road soon comes to the former gate of the lab, with an unused guard tower on one side and a guard house on the other, which is now a restaurant. Between 1943 and 1957, all traffic stopped here and passed through security. Today, traffic flows by these remnants and enters the open town. A sign past the old gate mentions Los Alamos’ Cold War sister city, Sarov, Russia, 200 miles east of Moscow, which was the site of the All-Russian Institute of Experimental Physics. That town disappeared from maps in 1946, only to reappear in 1994.

After the gate, another lab facility is visible on the left, Technical Area 21. Known as the DP Site, it is one of the most contaminated sites at the lab and the only recently active lab site immediately adjacent to town. Facilities at the DP Site were used for early research with plutonium and uranium, and it was here that the physicist Cecil Kelly was killed handling plutonium in 1955. Plutonium work stopped here in 1978 and moved to the more secure TA 55, where it continues today. Tritium research was conducted here from 1984 to 1999. The first gram of americium was isolated here, in a 120 foot long structure, known as Building 3 North, which was torn down in 1996. Due to obsolescence, contamination, and proximity to town, most operations at TA 21 ceased by 1996. The site is being remediated now using Federal stimulus funds, some of the $212 million of which was allocated for the decontamination and demolition of 28 buildings at LANL.

Los Alamos, the town, is located where the World War II lab site was, before everything was moved years later. The downtown that grew up to support the modern lab has two parallel roads of commercial establishments that emerge from a fork as you enter. The left fork says “Lab” the right says “Museums.” We take the latter, for now. The interpretive layer, which is pretty thick here in Los Alamos, is at its thickest at the Bradbury Museum, our first stop on the tour.

Named for the first lab director after Oppenheimer, the Bradbury Museum is a public visitor center operated by Bechtel for the lab. It resembles a science museum, with interactive three dimensional and computer displays, though one that stresses the nuclear sciences. There are some truly remarkable exhibits in this museum, such as a ten feet tall sculptural cone that represents the volume of all of the plutonium created by the United States, and a large model of a nuclear test equipment rack of the type that was lowered into one of the hundreds of drilled holes at the Nevada Test Site during the underground nuclear testing days. Other displays talk about the history of the lab, the town, and nuclear technology, radioactive safety, and other work conducted by the lab. 130,000 visitors a year come to this museum, which is adjacent to the independently-owned Otowi Station bookstore, which has a great collection of titles on subjects related to the lab.

After we visit these two places, the tour continued through town, looping around the historic core to point things out, before making another stop to let people out for a closer look. Among these sites is Fuller Lodge, the restored former main hall for the Ranch School, built in 1928 in a romantic rustic style, not dissimilar to the rustic camps of the Adirondacks and New England.

The Los Alamos Ranch School was a college preparatory school established here in 1917 by a businessman from Detroit named Ashley Pond. The school was small, though academically and physically rigorous. Several hundred students were educated there over its 25 years of existence, among them some future corporate presidents, as well as the writers Gore Vidal and William S. Burroughs.

During the Manhattan Project, Fuller Lodge was the executive dining and meeting room for the lab, and its pillared porch is an icon of the Los Alamos of that time. It is now a community hall, used for civic events and meetings.

Next to Fuller Lodge is Bathtub Row, the remaining faculty cottages from the school, which became the housing for the main scientists when the lab moved in. Other housing during the WWII days of the lab were trailers, dormitories and simple apartment tenements, so these faculty bungalows were considered luxurious for having things like bathtubs (prefabricated bathtubs were not made during the war, and these buildings had them because they predated the war.) Today one house has been converted into the local museum, but the others are private dwellings, including #1967, which was Oppenheimer’s residence.
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The house that the Oppenheims lived in during the Manhattan Project is still there, on Bathtub Row, and is now privately occupied.

CLUI photo

On the other side of Bathtub Row is Central Park Square, a town center built by the Federal government during the early postwar lab days to serve as the commercial and social hub for the lab. Built in a functional modernist style, the city center may be one of the earliest examples of the postwar modernist shopping plaza, but it is now just one of a few similar-looking beige shopping plazas around town, with remarkably plain signage that make it difficult to deduce the character of the retail spaces they contain.

Lunch at Ashley Pond

The bus pulled to a stop next to Ashley Pond, a pond named after the founder of the school, to let people visit the museum, look around, go to Starbucks, and eat lunch. In the WWII days of the lab, Ashley Pond was the center of the lab, completely surrounded by tech area buildings. In the 1950s the lab started to be moved across Los Alamos Canyon to the adjacent mesa fingers to the south, where by the 1960s the lab occupied the roughly 40 square miles that it covers today, leaving the town of Los Alamos to officially become a town, and privatizing its land starting in 1962. Today the pond is a pastoral park, with little visible evidence of the chaotic and toxic work done around it.

At 7,200 feet the community atop of the mesa feels a bit like an Indian Hill Station, with much of the exotic elitism of the early days still intact. With a population of around 12,000, the town is said to have the highest concentration of PhDs in the nation, with two thirds of the population having earned at least a bachelor’s degree. Though there are few fancy houses, the average household income is one of the highest in New Mexico, a state that is usually ranked as the poorest in the nation. It is still a company town.

After lunch the bus headed north past Acid Canyon, behind the Aquatic Center, where the main tech area’s untreated waste was dumped from 1943 to 1953. Unfenced for many years, the site is adjacent to the town’s high school. But the bus was headed further down the road, to a place that the owner was proud to proclaim was a “nuclear waste site,” a place known far and wide as The Black Hole of Los Alamos. The Black Hole is a jumble of laboratory cast-offs, purchased at auctions and otherwise acquired over decades by the owner of the Hole, Ed Grothus. Set up as a used and junk equipment store, the Black Hole is really a curated collection of surplus material, representing the “waste” that Grothus felt was endemic at the nuclear lab. Grothus, who died in February, 2009, once worked at the lab, but quit due to ethical concerns around the time of the Vietnam war. He remained in the community as one of the most outspoken and humorous critics of the lab.

Gazing into the Black Hole of Los Alamos.

CLUI photo

He established a church on his property, the First Church of High Technology, where he held “Critical Mass.” His most recent project was to build a memorial to the Atomic Age, but authorities never allowed it to be installed in a public place, so the two 32-foot carved granite obelisks sit inside shipping containers, more surplus at the Black Hole. His children are slowly selling the remains of the stock of the surplus store, while hoping to create a museum in his memory.

After this stop – the closest thing the lab has to a souvenir shop – the bus headed for the lab itself. Though accessed only by passing through new high-tech toll-both like guard stations, public access to the lab property is permitted, but only in certain areas. The most secure areas have their own additional gates and guards. The roads through the main administrative area of the lab, Tech Area 3, are visitable, but taking a full tour bus of non-lab people on site is another matter, we were told. Negotiations with lab representatives and the CLUI continued for weeks, until finally, with the support of a number of lab personnel and representatives, including the governor’s science advisor, it was determined that it would probably not be wrong for us to drive on lab property, and the security officials did whatever they did to prepare, and did not say no. A detailed plan for the route was submitted, and not disapproved. Though no one welcomed us there, and no one said it would definitely be okay, people seemed to be resigned to the fact that we were coming, and we had the highest hope, though no guarantee, that we would be allowed both through the gate, and to visit a few sites around TA 3.

Entering the Lab

After passing TA 43, the Genome building, where some of the work sequencing the human genome was performed, we crossed over the Los Alamos Canyon Bridge, and entered the awkwardly looping access road to the gate known as “the colon.” After a brief inspection, armed guards leave the bus and we enter the lab grounds.

Despite the ending of the Cold War arms race, nuclear testing, and the establishment of international treaties banning the development of new nuclear weapons, Los Alamos Lab is doing very well. The current annual budget of $2.2 billion is twice what it was just a few years ago. 12,500 employees, plus 3,300 contractors, do the work of the lab, which includes an increasingly diversified range of activities. In order to survive when the Cold War ended, the lab had to be seen as more than a bomb factory.
Parajito Road is the main artery through the lab, connecting the Administration center at TA 3 with Highway 4 and the bedroom community of White Rock. Along the way, though, it passes by many of the most sensitive parts of the lab, such as TA 55, the largest collection of plutonium on the planet, and TA 54, the radioactive storage facility for the lab. So after 9/11, with the construction of new main gates for the lab at Diamond and West Jemez Roads, Parajito Road was also closed to authorized uses only and manned gates were put in at both ends.

If we continued on Parajito Road, we would quickly end up at the gate, so we turn left onto Diamond Drive and pass the Material Science Lab, and the Chemistry and Metallurgy Research Facility (involved with research into plutonium metallurgy, superconductivity, and nuclear chemistry). With a right turn on Eniwetok Drive, we pass a cryogenic lab and the nanotechnology center, then enter into TA 60 to visit one of the tallest structures at the lab, the Nevada Test Site fabrication facility and test tower known as the Rack.

Until the moratorium on underground nuclear testing in 1992, Los Alamos and Lawrence Livermore used the Nevada Test Site for large scale nuclear testing (they still operate several facilities there for subcritical testing.) For a typical test, a vertical test rack several feet wide and dozens of feet tall was prepared with the bomb and the experiments packed on to it. It would be lowered into a drilled hole hundreds or thousands of feet deep, at the Nevada Test Site, wired to equipment trailers, and vaporized, sending data up the cables faster than the wave of disintegration. This tower, at TA 60, was used to prepare the experiment rack for hundreds of underground tests in Nevada.

Tour Orbit Apogee
The Rack represented the apogee of the tour, the tipping and turning point. We were as far into the meat of the lab as we were going to get. The road dead-ends in a mile or so, so after pondering the Rack, we turn around and head back to TA 3 and Diamond Drive, and pass the Computing and Integrated Computer Network buildings, which contain some of the most powerful supercomputers in the world, used to model tests, deconstruct weapons for stockpile stewardship, and drive digital reconstructions in the visualization labs. West on West Jemez Road takes us past the administration buildings again, then past the Department of Energy building, where 120 or so DOE officials are based, then through the west gate guard station, and back on State Road 501.

We were now embarked on a loop around the edge of the lab's 40 square miles, on public roads, passing periodically visible forward areas and field test areas of the lab, all off limits. First we pass the road to Two Mile Mesa, a high explosive testing region with historic Manhattan Project facilities, such as a plutonium recovery bowl, and the Explosives Detonator facility, at TA 22, with its rows of explosive bunkers, and the additional high-explosives detonator and shock wave propagation research site, TA 40, at the end of Two Mile Mesa Road.

Next we pass the Anchor Site, an active research site with capabilities to measure explosive dynamics with million volt x-ray machines, in TA 8. Little Boy bomb development also occurred here, in existing buildings from the old Anchor Ranch, which became part of the early Anchor Ranch Proving Ground, with cement blast proof bunker buildings made for tests with explosive guns to trigger a chain reaction. Many of these original facilities are still there. Nearby, at Anchor East, is an explosives storage and stability research area, at TA 9. The road continues past Anchor East to TA 14, a field test area for experiments that are...
too dangerous to be performed at other parts of the lab, called the Outdoor Chemical Laboratory. The isolated facility has fourteen buildings and five firing mounds for studying new high explosive types, and the wastes and residues they produce. Further down the road, in TA 15, is the Dual-Axis Radiographic Hydrodynamic Test facility, known a DARHT, an x-ray facility for studying subcritical nuclear testing as part of the Stockpile Stewardship program. The $350 million facility uses two x-ray machines at an angle to create three dimensional images of the explosive kinetics.

The bus continues rolling south down the hill along the western edge of the lab, changing course where Highway 501 meets Highway 4, and heading eastward, along the lab’s contorted southern flank. Inward at the intersection is TA 16, one of the most developed of the forward areas at the lab. Though in use as a high explosives test area since the Manhattan Project, TA 16 is also now the main trinitro site at the lab, with dozens of machining, handling, and storage buildings. Tritium is a radioactive material used in nuclear weapons. Like plutonium it is very expensive to make, requiring manufacture in specialized reactors, like those at the Savanna River Site in South Carolina. It exists in very small quantities, and much of it is here at TA 16.

Heading east on Highway 4, we pass Frijoles Mesa, designated as TA 49, which has a helipad and fire station at the gate. This area was used for 41 small underground nuclear tests between 1959 and 1961, in tunnels extending as much as 150 feet into the ground. The site is also the location of the Laboratory’s Antenna and Pulse Power Outdoor Range User Facility, where a spectrum of outdoor tests is carried out on materials and equipment components that involve generating and receiving short bursts of high-energy, broad-spectrum microwaves. The Laboratory’s Hazardous Devices Team uses the site as a training area and as an isolated location for blowing up suspect packages.

The road continues on the southern edge of the mesa, with little evidence that on the escarpment below is the famous cluster of native dwellings in Bandelier National Park. Soon the main entrance to the park appears, a long curving road that descends into the canyon below. It was on the grounds of the park that a controlled burn, set by the Park Service, got out of control, and spread through this area. Fire has always been a concern at Los Alamos, as anywhere, but the vital resources at the lab, not to mention the possibility of a fire taking radioactive material into the air, makes fire an especially ominous event here. The Cerro Grande fire of 2000, as it became known, burned for weeks, reaching into the hills above Los Alamos, forcing an evacuation of town, where it destroyed 400 homes. The lab shut down for two weeks, and dozens of buildings in the forward areas were burned, though no critical ones. It was ironic of course that the fire was started by an agent of the Federal Government. The Superintendent of the park resigned afterwards.

After the entrance to the park, the highway makes some switchbacks in and out of a canyon, first passing the gate to TA 33. This is the part of the contiguous lab grounds that are furthest away from the more developed areas, so it has been used for things that are especially in need of isolation. A testing area was first established here in 1947, known as the Hot Point Site. Tunnels were made in the cliffs overlooking the Rio Grande to test nuclear weapon initiators. The site has also been used for neutron generation studies and tritium processing. There is also an intelligence technology group based here and an antenna of the VLBA, the network of ten radio telescope dishes that extends from New Hampshire to Hawaii.

As we reach the bottom of the canyon, we pass the gate to TA 39, the Ancho Canyon site, a dead-end up a road in the canyon. Because of its isolation, Ancho is more of a self-contained TA than most, with its own machine shops, heavy equipment support, and administrative support buildings. This TA was started as a high-explosive test site in 1953 to extend the capabilities of TA 15 (which is atop Three Mile Mesa), to include larger shock wave studies. The abrupt walls of Ancho Canyon could contain much of the sound and other effects. The dynamics of explosions are still studied here, using high-speed cameras and other means. Pulsed power systems have also been studied here, employing high voltage capacitor banks. The National High Magnetic Field Lab is based up the canyon as well.

The technical areas along either side of the state highway east of Ancho Canyon, TA 70, 68, and 71, are mostly undeveloped, and serve as buffer zones for the explosives areas to the west, and the settlements to the east, which we soon reach. White Rock is a bedroom community for the lab, first established by the Atomic Energy Commission in 1949, but later privately developed into a planned community of nearly 6,000 residents. White Rock is at the base of Parajito Road, which is a main artery through forward areas of the lab, and was closed to public traffic a few years ago. We began at the other end of Parajito Road – it took us an hour or so, but we are nearing the end of the loop around the lab.

The main radioactive and chemical waste area at the lab, in TA 54, is visible on the mesa above White Rock. One of the largest radioactive waste sites in the nation, TA 54 stores high and low-level radioactive materials, chemicals, and other hazardous wastes generated by the lab, including material that has to be disposed of separately for security reasons. Most of the material is now stored above ground in sheds, such as those visible from the highway at White Rock. In the past, radioactive material was placed in unlined pits and shafts, and covered with dirt. Some of this material is being exhumed and contamination is being addressed. 15 nuclear reactors have operated at the lab over the years.

**Notice:** This area is not open to the public. Unauthorized Access Prohibited.
As we head eastward, leaving the lab behind us, we think lingering thoughts about the waste up on the hill, looming above White Rock, and the broader extent of radioactivity scattered around the planet. This material, the product and byproduct of the atomic age that originated here a mere 65 years ago, dominated our foreign policy, economics, and culture since the moment it was birthed at Trinity. It will continue to do so, guiding our fate, indefinitely. Our technology and industry has expanded into geologic time, global scale, and galactic resonances. Los Alamos’ lingering legacy will stay with the world for hundreds of thousands of years, likely beyond the life of mankind, cleaving half-lives clicking away under buried mounds and trapezoidal waste pyramids. The end of the process has just begun.

Back
On the way down the mesa, the way we came, we watch Ellen Spiro’s spirited documentary about Atomic Ed Grothus, and his monument to waste, the Black Hole. Everything goes in, and nothing comes out. Grothus’ grave humor is the humanist conscience that short circuits all rationalizing of the Bomb. If only it were that simple. Maybe it is, he says.

We approach Santa Fe and this time go through town, instead of around it, first passing by graveyards and shopping centers, heading for the core of this historic city. Santa Fe is a spatiotemporal axis, and a three-dimensional American history lesson. It was established in 1609 as the northern limit of the Spanish colonial empire in the new world. This line, extending from south to north, ends at the preserved Plaza in the middle of town, the northern terminus of the Camino Real. Next to the Plaza is La Fonda, now a fancy hotel, which marked the end of the Santa Fe Trail, the historic migratory artery from Missouri established in 1792. This east/west axis of territorial settlement meets the north/south axis of the Spanish, at the Plaza.

The bus snakes through the city to 109 East Palace Avenue, on the other side of the Plaza from La Fonda, in the heart of Santa Fe. It was here where a third axis of American History emerged, maybe the techno-time axis. This was the door that the scientists were directed to knock on when they arrived in 1943, to be checked in by Dorothy McKibben, hired by Oppenheimer to be the gatekeeper of Los Alamos’ rabbit hole. The office is now an art gallery, of course.

Such is the case as we continue into the Galisteo Basin, where the Old West is sufficiently alive to attract numerous Hollywood productions. Behind the adobe walls of Galisteo and in the hills around town, renowned artists such as Bruce Nauman and Nancy Holt have chosen this place, above all, to live and to work. The sky opens wider here, attracting exotics and visionaries, like the spiritual healer Chris Griscom, who established the Light Institute, north of town, as a center for multi-incarnational exploration.

After winding through as much of the adobe labyrinth of the tiny hamlet of Galisteo as we could with a giant white tour bus (residents no doubt are aware of the value of low trees, electric wires, and weight-limited bridges as defense from such interlopers), we headed south, past the writer Lucy Lippard’s house (author of The Lure of the Local and other books about place and art), past the fairgrounds where shooting had recently wrapped for Did You Hear About the Morgans?, a film about two displaced Manhattanites who make comedic adjustment to living out west. We turn around at the remote and remote controlled gate to the fashion designer Tom Ford’s 24,000 acre ranch, where “New Western” films such as The Missing, Appaloosa, and 3:10 to Yuma were shot, and where Ford is apparently most at home: he commissioned the architect Tadao Ando to design both his house, and his mausoleum.
Rather than continuing south on Highway 41, we took the Camino Los Abuelos west out of town. After passing outdoor sculpture studios and outlying homes, the road turned to dirt. Near the house that Burl Ives lived in for many years, we encountered a stream crossing the road, which the bus driver, Joe Villarobos, summoned up the courage to cross. We crossed the tracks for the new Railrunner commuter train which runs between Albuquerque and Santa Fe, then hit highway 14, heading south. We passed more roadside outdoor sculpture, then turned into the town of Cerrillos, looped around, and parked outside Mary’s Bar. The locals scattered at the sight of the bus.

Mary’s is one of those rare ancient places that transcends authenticity. Though there is a bar along one wall, boxes and debris fill most of the space, so just a few people can be in there at once, and it’s usually the same few people. If there is artificial lighting, it goes unnoticed. Mary Trujillo, a local legend, who some say is more than 100 years old, comes out of the kitchen in back to greet us and to sell beer. The rest of the group wanders around this weird anachronistic town.

Cerrillos was a mining town laid out in 1880 by the Santa Fe Railroad. Gold, silver, lead, and zinc, were all mined around here, and later coal. The Tiffany Company of New York operated the largest of several turquoise mines here, and the corridor along Highway 14 is still called the Turquoise Trail, though commercial turquoise operations are now very small. Some call Cerrillos a ghost town, but it is nearly completely occupied, with weekenders and creative types hidden amongst the ramshackle relic of a town with so much integrity that its main street has survived the art department make-overs of the movies shot here, like Young Guns. Cerrillos feels affluent poverty stricken, preserved by obdinance. The families that have lived here layer-on the generations, in modest homes that are now either worth a million dollars or a million cents, with little change, except the world around them.

Back on the bus, and south on Highway 14, we pass yet more outdoor roadside sculpture, and soon end up at a local epicenter of roadside craft and creativity, Madrid. The town was built by the Albuquerque and Cerrillos Coal company in 1906, and once had a population of 4,000 people. When coal was replaced by gas and electricity, the town emptied out. Never completely abandoned, the town, halfway between Santa Fe and Albuquerque, was preserved and became known as a cheap and fun place to live, attracting hippies, exurbanists and creative types. Though main street is now a bit of a local crafts tourist shopping spree, Madrid still has its crazy charm, and wild side. The road house in the middle of town is a favorite stop for bikers, and for movies. From Easy Rider, which was filmed in Madrid, to its mundane update Wild Hogs, shot here a few years ago, this town spans the era of the modern New Mexico cinematic.

The phenomenon of a place becoming a version of itself is the essence and essential outcome of tourism (recall the Heisenberg principle). When the cinematic depiction of place is compounded on top of this, things get even more fuzzy. A new kind of meta-place authenticity can emerge, one that combines self-conscious rehistory and filmic narrative, converging continuities and coalescing into mythic potentials. This is what’s happening all over New Mexico as the film industry moves through it. Through the Sagan-inspired Contact, the Very Large Array becomes a search for a heavenly Father. And here, in Madrid, the slag pile behind town is where David Bowie fell to earth.

When Director Nicholas Roeg brought his all-British film crew to New Mexico in 1975 to shoot The Man Who Fell to Earth, they probably felt like aliens. The film is a kind of cosmic tour through the state, shot all over. The narrative is evocative of the conditions of the place, the high-tech land of enchantment, where the sun burns through the skin.

The movie stars David Bowie as an alien (a few years after Ziggy Stardust). He crashes his spaceship into earth, landing safely with a splash in a lake (shot at Jemez Lake, on the other side of the caldera from Los Alamos), and then stumbles down the slag heap of Madrid, and wanders around, getting oriented. He has a fedora, an angled posture, and a gaunt head, with riveting eyes. He looks, remarkably, like J. Robert Oppenheimer. His character’s name, Newton, is also that of a scientist, though of an earlier era, the discoverer of gravity. Bowie/Newton has special technological knowledge that he brings from the advanced society of his home planet. His home planet is drying up in a blistering sun, and his people are dying from a lack of water. He is here to try to save them, but he fails.

As the bus passes the slag heap of Madrid, we begin the film, with Bowie/Newton crashing into the lake and lumbering down the slag heap of Madrid. The bus lumbered, too, back towards Albuquerque.

Passing the big cement pit on I-40, a source for so much of the construction of the city, and entering the sprawl from the west, a passage is read from V.B. Price’s book Albuquerque: A City at the End of the World, that concludes, “Remote, endangered, at the end of the world, Albuquerque has survived the postwar boom, scarred and diminished, but with an authentic future still within its grasp.”

Then we pull off the highway, heading back to the Albuquerque Museum. The end of Dr. Strangelove plays on the monitors overhead: the nuclear tests of Bikini detonate as Vera Lynn sings the World War II tune, and the bus sings along too: “We’ll meet again, don’t know where, don’t know when. But I’m sure we’ll meet again some sunny day . . .” ♠
The Lay of the Land               Spring 2010

AMERICAN SHIP BREAKING
IT ALL COMES APART AT THE BOTTOM OF AMERICA

PHOTOGRAPHS AND FILMS OF THE massive truncated hulls of scrapped ships beached on muddy Asian shores are among the most striking images of the contrasts of globalism. These images show people taking oil tankers apart by hand, and in bare feet. Somewhere around 90% of the world’s ship breaking takes place in this way in Pakistan (Gaddani Beach), Bangladesh (Chittagong) and in India. The biggest yard in the world is in Alang, India, in the State of Gujarat, where high tides enable ships to beach themselves under their own power, along a seven mile stretch of the nation’s west coast, and where up to 30,000 people work to take them apart. With aging fleets and increasing regulations in the West, the industry has moved to where labor is cheap, where environmental laws are still weak, and where the need for work, and steel, is high.

However, there are still are a few companies in the business in the United States. Though rules relating to the handling and disposal of the toxic materials that are built into old ships, including residual hydrocarbons, lead paint, asbestos, and PCBs, make the business run differently here then in the wild East (“ship breaking” is a term that is slowly being replaced by “ship recycling”). The industry is subsidized by the fact that federal policy prevents government ships from being scrapped by other countries, for the most part. With hundreds of such ships floating around the country, and around the globe, the domestic ship breaking industry is likely to continue.

In fact, ship breaking in the United States is booming at the moment, as congressional mandates to reduce the rotting hulks in the three Ghost Fleets of the nation are being implemented. These mothball fleets are composed primarily of US Maritime Administration (MARAD) reserve ships, initially kept in case they needed to be reactivated for war. These reserve fleets started after WWII, the biggest ship-building boom in history. In 1950, there were over 2,000 surplus federal ships, tied together in slack water clusters around the nation. Over the years, they were redeployed, converted to commercial use, scrapped, or sunk offshore. Today, MARAD has less than 200 ships in their “mothball fleets,” still mostly WWII era cargo ships, cruisers, destroyers, and even aircraft carriers.

The James River Ghost Fleet, off the shore at Fort Eustis, Virginia, is providing the majority of the ship breaking work in the nation right now. This ghost fleet was once the largest in the nation, with more than 800 ships in storage after WWII, stored here because it was up the river from the East Coast hub of the Navy, and the water was brackish enough that corrosion from salt water would be minimized. By 2001, the fleet was down to 107 ships. It now has less than 25.

Some of the ships were reefed – adopted by states to sink offshore, a practice that stimulates reef formation, and provides destinations for scuba divers. Others have been sunk at sea in live-fire military training exercises. Most of the 70 ships that have been scrapped from the fleet in the past ten years were taken apart at one of three ship breaking yards in the USA, two of which are in the mid-Atlantic.

Bay Bridge Enterprises of Chesapeake, Virginia, operates a facility along the industrial estuaries that surround the Norfolk Naval Shipyard, one of several Naval bases in the region around the mouth of the James River, the Navy’s principal East Coast hub. Bay Bridge is capable of handling up to three ships at a time. The company has been owned by the Adani Group, an Indian industrial conglomerate, since 2005. The second mid-Atlantic ship breaking operation is at Sparrows Point, Maryland, the mostly defunct hyperindustrialized steel peninsula near Baltimore. Part of the shipyard at the plant, which once cranked out hundreds of steel-hulled ships, became a ship breaking yard. The yard, recently operated by North American Ship Recycling, shut down a few years ago, and may or may not open again.

The third ship breaking site in the USA is at the very bottom of the country, in Brownsville, Texas, just a few miles from Mexico. This is where the vast majority of the nation’s federal ships are broken apart. A 15 mile-long channel, made from scratch from 1934-1936, connects the Port of Brownsville to the ocean, at South Padre Island. Built inland to protect the port from hurricanes, not much occurs along the channel’s first ten miles. The inland end of the channel is home to a modest amount of shipping terminals, taking advantage of the proximity to Mexico, three miles away. One of the largest oil platform manufacturing yards in the nation is providing the majority of the ship breaking work in the nation than any other activity.
Currently four companies are in the ship breaking business here, though Bay Bridge, from Virginia, is hoping to enter into the market here too. The largest of the companies is ESCO Marine, which has dismantled more than 500 ships at this location. ESCO has three slots, which are long coves dug diagonally into the side of the channel, where the ships are grounded, that allow access to the ship for dismantling. The ships are not drydocked, for disassembly, they are beached inside the slot, sometimes two at a time. Often, as one shrinks as pieces are removed, another one comes in behind it, when there is room. The mouth of the slots are roped off with booms to keep materials from escaping.

ESCO is the largest shipbreaking company operating in the United States, and one of four companies on the Brownsville Ship Channel. CLUI photo

Between these slots at ESCO is an active 88 acre yard full of scrap piles, metal processing machinery, cranes, and processing areas where larger chunks of the ship have been removed and are being cut down on shore with torches and other equipment. ESCO has salvaged former offshore rigs as well. Across the channel from ESCO is the International Shipbreaking yard, with two slots, one of which is the largest of the seven that are currently active in Brownsville. The company says it has “the largest and most specialized facility for ship dismantling in the United States.” The facility is capable of handling up to nine vessels at a time, and accommodates ships up to 1,000 feet in length. This company has been active since 1995, and has plans to expand its facilities at Brownsville.

Next to the International Shipbreaking yard is the Marine Metals yard, with one slot. Across the channel, on the east side of the AMFELS yard is another slot, used by All-Star Metals, the fourth ship breaking company here.

There are just over a dozen ships left in the Ghost Fleet at the northern end of Texas’ Gulf Coast, on the Neches River, near Beaumont, some of which are destined for Brownsville soon. The vast majority of ships are at the third remaining Reserve Fleet site, in the muddy Suisun Bay, east of San Francisco. With more than 60 ships remaining, Suisun Bay is now by far the largest Ghost Fleet in the nation. Located off the shore of Benecia, across from a former arsenal and a current oil refinery, the ships are tethered into seven clusters, and tended by service boats from a dedicated wharf. Ships are being removed from this site more slowly as there has been disagreements about how to prepare them for shipment to Brownsville.

Though the federal government was suggesting cleaning them on site in the Bay before shipment, state environmentalists disagreed. It has recently been decided that the ships will now be cleaned up in local dry docks to remove them of invasive species before heading out to sea. The three most recent ships selected for dismantling are being cleaned up at BAE systems, in San Francisco.

Meanwhile, some local companies are trying to win the scrap contracts away from Brownsville. These operations would occur at the Mare Island Shipyard, a massive former military shipyard with several drydocks, just a few miles away from Suisun Bay. These companies are working their way through the stringent California environmental regulatory permit process. But until and if these local companies are permitted, the ships of the Suisun Bay Ghost Fleet will make their last journey under tow, via the Panama Canal, all the way to Brownsville, where they will meet with their undoing.
KODAK PARK IS THE KODAK Corporation’s principal research and manufacturing site. It is located in Rochester New York, which is the historic imaging capital of America, where Kodak, Bausch and Lomb, Xerox, and other companies developed their headquarters. Though the Kodak company is in the trailing end of its implosion tied to the obsolescence of chemical-based photography, Kodak Park is still a formidable presence, and because of its central relationship in the evolution of imaging, the site is one with many conceptual and physical qualities worth considering.

No other place has as much title to the claim of being the American ground zero of photography, with all that represents. Kodak dominated and defined photographic imaging for nearly a century, popularizing and enabling the depiction of all people, places, and things, positioning us on the trajectory of a duplicated world. The company changed time by branding notions of instant nostalgia, and changed travel and tourism from experiences into forensic photograph safaris.

Kodak Park is the epicenter of this global reformulation of one of the most formative elements of the information age. This is where mass imaging – analogue, chemical – was birthed. Within its 22 mile perimeter, and over its 1,100 acres lies the physical history of physical imaging.

Kodak Park is said to be the largest industrial complex in the northeast. Though it is surrounded by the city of Rochester, Kodak Park is self-contained, with 30 miles of roads, its own power plant, rail system, and water treatment facility. It is also, as would be expected, one of the most contaminated places in the nation. Taking pictures was a dirty business. In 1920, George Eastman, Kodak’s founder, established the Eastman Chemical Company to supply chemicals for film-based photography. The company’s principal plant, in Kingsport, Tennessee, became one of the largest chemical plants in the world (and still is, though it is no longer part of Kodak). With over a thousand storage tanks on site, and millions of square feet devoted to chemical-based manufacturing, Kodak Park was often ranked as the worst polluter in New York state. Though a decrease in production and emissions have dramatically improved the situation, the legacy of over a century of liquid intensive R&D and manufacturing is left in the ground of the Park.

A hydraulic containment system under the plant provides suction, pulling contaminated groundwater towards it instead of away from it, (a technique used in other places where pollutants migrate from the ground into the groundwater). The 33 continuously pumping wells pull 55 million gallons a year out from under the plant, water which is then treated at Kodak’s liquid waste plant on the Genesee River. Hydrofractured wells use explosives detonated below ground to break open the rock structure, making the wells more effective over a wider area. Still, contaminated groundwater has been known to migrate off-site.

Change has come rapidly, and recently, to Kodak Park, reflecting the transition of imaging from analog to digital. Over the past ten years, thousands of workers have been laid off and fifty buildings have been removed, several in dramatic implosions. The company operates out of 80% of the remaining buildings on site, with around 8,000 employees continuing its R&D and manufacturing. This is still the only place where Kodak makes coated photographic film, though it is mostly for the dwindling motion picture market. The demolition of buildings has stopped, for now, and the company is marketing the empty spaces to potential tenants. The industrial campus is being retooled as “Eastman Business Park,” though the company acknowledges that for its employees, the community, and history, it will always be known as Kodak Park. ♦

The chemical effluents of Kodak Park drain into the treatment plant on the Genesee River. CLUI photo

main entrance to the publicly inaccessible Kodak Park. CLUI photo

Acetate film roll coating wheel, a displaced relic at Kodak Park. CLUI photo
PHOTOGRAPHY AND LANDSCAPE ARE UNIQUELY fused at Kodachrome Basin State Park, in Utah. In 1948 the National Geographic Society explored and photographed this area east of Bryce Canyon, hoping to find “unexplored and unnamed” geographical oddities. An account of the expedition, titled “First Motor Sortie Into Escalante Land,” appeared in the September 1949 issue of National Geographic magazine. The article depicts an area the writers named “Kodachrome Flat,” after the film famous for its color saturation, which had been invented in 1935, and was often used and promoted by the Society. (The article also had a photograph of a natural arch which they named after the President of the Society, Gilbert Grosvenor, though the picture of the arch was shot with Ektachrome, not Kodachrome film).

“Kodachrome Flat” became a state park in 1962, but fearing retribution from Kodak, the state named it Chimney Rock State Park. The company later approved renaming it back to Kodachrome Basin, and it remains one of the few, if not the only, State Parks named after a trademarked product. Kodachrome itself has not fared so well. Kodak ceased production of the fabled film in 2009. The last certified processor of it, Dwayne’s Photo in Parsons, Kansas, will cease production at the end of 2010. The last few rolls of film off the assembly line at Kodak Park were donated to the archives and museum at the George Eastman House in Rochester. Steve McCurry, the National Geographic photographer who shot the magazine’s most famous cover (June 1985’s “Afghan girl”) will be taking pictures with some of these last rolls of Kodachrome, and will donate them to the George Eastman House archive.

In the 1980s, the Kodak Company helped the museum raise $30 million for an endowment, and to construct 73,000 square feet of new space in a separate building, connected to the house, for exhibition, research and study space, as well as a climate controlled archive, which is mostly underground. The archives now have over 400,000 images, 23,000 films, 43,000 publications, and 25,000 pieces of photography-related technology. Nitrate films are stored off site, at the Louis B. Mayer Conservation Center in nearby Chili, New York.

George Eastman had some unconventional qualities, some of which are reflected in the restoration of his house, which had been altered in the years after his death in 1932. The restorations, conducted during the late 1980s, returned some features, such as the living room’s exotic, tropical air, rich with the trophies of Eastman’s African safaris. Missing, though, are the thousands of pipes of his organ, which once “played through the whole house” (though he didn’t play it, he had an organist do so, especially during breakfast). Eastman was a bachelor, and left most of his fortune to the University of Rochester, though he gave generously to other charities in town during his life. Approaching the age of 75, he was terminally ill. He decided to end his life, in the house, with a single bullet in his heart. He left a note: “To my friends, My work is done, why wait?”

The connections between photography and guns are many, as suggested by the terminology – pictures are shots, you point and shoot. One pulls life out of time, and makes an inanimate thing live on. The other sends animate matter – life – on a journey of decay and disappearance. The Eastman House preserves these lifeless legacies, while Eastman himself disintegrates in his grave at Kodak Park.
Earlier in the year, the center’s *Trans-Alaska Pipeline* exhibit represented conveyance and the movement of oil. *Texas Oil: Landscape of an Industry*, shown at the Blaffer Gallery in Houston, and later in modified form at the CLUI in Los Angeles, focused on refining, processing, and petrochemicals, the downstream end of the industry. *Urban Crude: The Oil Fields of the Los Angeles Basin* was about extraction—about oil fields themselves. It depicted and described the active oil fields in the LA basin, and the ways that oil is removed from them today.

Los Angeles is the most urban oil field in the United States. Here, the petroleum industry operates in the cracks, corners, and edges, hidden behind fences, and camouflaged into architecture, literally pulling oil out from under the feet of the city’s inhabitants.

Every year around 28 million barrels of oil are extracted from 41 oil fields under the Los Angeles Basin. (An area defined as the urban region of Southern California south of the San Gabriel and Santa Monica Mountains, and north of the San Joaquin Hills in Orange County—which the state Division of Oil, Gas, and Geothermal Resources designates as District 1.) 12 million of these 28 million barrels come from portions of oil fields that extend past the shore, where three offshore platforms and four artificial islands extract oil from beneath the land and the ocean. The rest of the oil extracted in the basin comes from fields that were initially developed between 1880 and 1943, and they underlie a quarter of the city’s urban land.

In the mid 1920s, Los Angeles was the largest oil exporting region in the world. At the peak of production in 1969, Los Angeles produced 133 million barrels of oil. Today, of the thousands of wells known to exist, around 5,000 are still in use. Though the fields are being depleted, it has been estimated that less than half of the recoverable oil in the Los Angeles basin has been removed. This is a calculation based on economics: the relative price of oil, and the cost of extraction. Los Angeles is an active laboratory for how to extract oil from a developed city, a phenomena that may become more significant as more of the world develops, and urbanizes. Oil fields are not desired in most nonindustrial areas—they are generally considered unsightly, dirty, and smelly. Thus the oil industry has had to develop defenses against the rising value of land, and the encroachment of housing and retail. Sound muffling technology and visual barriers help shield the industry from the community. The concentration of wells into smaller areas, and the use of directional drilling techniques to access fields through diagonal and horizontal wells, are all technologies employed and refined in the Los Angeles basin.

While production continues in the cracks of the city, there are still several large swaths of exclusive oil production land that have remained in their pure industrial state, and are still used only as oil fields. These places are off limits to other forms of development. As land in Los Angeles increases in value, the pressure to convert the remains of these true “oil fields” into real estate will increase to the breaking point. The oil industry, though blamed for many urban woes, has paradoxically left a legacy of the largest remaining open spaces in the basin. How to develop these fields represents one of the major regional land use debates of the future.
The popular creation myths of the city of Los Angeles are about water, movies, real estate, and oil. Many of these things, of course, overlap. Chinatown is the cinematic version of LA’s water myth, and is a film that did as much to modify the myth as the morsels of historical facts on which it was based. Early Hollywood has been addressed in countless films and other historic tales. Real estate too, in diffused ways. But what about oil? Might this subject be the other “Chinatown” of Los Angeles?

ON FRIDAY, DECEMBER 18, 2009 the Center embarked on a public day-long foray into the physical and cultural space of oil in Los Angeles, as part of the exhibit Urban Crude: The Oil Fields of the Los Angeles Basin. The attendees on the bus were the ones quickest on the draw. The tour sold out seven minutes after tickets became available.

The bus departed from the Center’s office in Culver City. By 9am, we were on the road headed west on Venice Boulevard, then up the 405 freeway just a few miles. In that time, CLUI director Matthew Coolidge, the main tour guide, provided some background and an introduction. The tour would have two principal parts, divided by location and lunch. The first part would look at oil extraction from the fields under the densest parts of Los Angeles, including Beverly Hills and downtown. The second part of the tour would look at the expansive and productive oil region of Signal Hill and Long Beach, where most of the oil in the basin now comes from.

Sawtelle Oil Field
We exit the 405 freeway at Wilshire Boulevard and are soon at our first stop, a fenced enclosure next to the freeway, on the grounds of the vast campus of the Department of Veterans Affairs. This lot, full of interconnected tanks, pipes, valves, vents, and office trailers is the well site for the Sawtelle Oil Field, which lies ten thousand feet beneath us.

Sawtelle is the westernmost of a chain of eleven oil fields that extend for ten miles between here and downtown Los Angeles. These are the most urbanized producing oil fields in the nation, if not the world, collectively producing around two million barrels of crude every year, in and amidst the heart of Los Angeles. The Sawtelle Field’s share of that is around 185,000 barrels, all of which is extracted through wells inside this fenced compound, just 500 feet long and 200 feet wide. Currently 12 to 14 wells are active on site, with a few idle. Like nearly all wells in urban Los Angeles, they are drilled laterally, meaning they curve outward from the surface as they are drilled, extending like tentacles of an octopus from this centralized well head location. These legs are typically one to two miles long. This is what allows for the sizable fields underlying this part of the city to be accessed from just a few dozen surface sites, such as this.

The Sawtelle operation looks like other drill sites in the area, hidden in plain site, behind shrubbery, cement block walls, and a chain link fence. It is operated by Breitburn Energy, a local company which operates a number of other fields in the area, and which has been active in these urban fields since 1988. Breitburn was founded by two Stanford petroleum engineering students who bought up mature existing leases like this and redeveloped them using computer oil field modelling that had become suddenly achievable with the proliferation of personal computers. Though Breitburn has expanded now beyond California, they are still headquartered downtown, in the old Arco Tower.

We continue on, past the rows of soldiers’ identical tombstones at the Los Angeles National Cemetery. Then we head east on Wilshire into Westwood, passing the Federal Building, and then the headquarters tower for Kaufman and Broad Homes, one of the largest homebuilders in the nation and the source of wealth and power for Eli Broad, the principal art patron of Los Angeles.

After another block we pass the headquarters building of the Occidental Petroleum Company, the largest oil company still based in Los Angeles. Occidental is the fourth largest U.S. oil company, after ExxonMobil, Chevron, and ConocoPhillips. Founded by Armand Hammer, who helped open Libya up to oil and gas extraction, “Oxy” operates all over the Middle East, is the largest oil producer in Texas, and is the largest natural gas producer in California (due to its operations at Elk Hills, in Kern County). Its subsidiary, OxyChem, based in Texas, is one of the largest petrochemical companies in the nation, making more vinyls than just about anyone else. Among Oxy’s other assets are the THUMS operation in Long Beach, which we will see later; Love Canal, the famously contaminated site in New York state, which it acquired 26 years ago, long after the contamination occurred, as part of its purchase of Hooker Chemical; and, of course, the Hammer Museum, located at the base of the corporate tower.

Beverly Hills Oil Field
We soon pass into the Beverly Hills Oil Field, though of course there are no visible signs of doing so, as it is thousands of feet below us. This is a major field, trending east/west, from Century City to the Miracle Mile. It was discovered in 1900, and since then has produced 150 million barrels of oil. Today it produces around 850,000 barrels per year, from just three well sites, each among the most unusual urban oil well sites in the world. We will visit all three.

We arrive at the first one right on time, 10am, pull the bus into an alley off Olympic Boulevard, and get out to meet Sally English, operations supervisor for Venoco, which owns the site. This well site is a landmark, as a tall oil derrick tower looms above the walls of the site, covered in a tattered sound absorbing jacket that has been decorated with a floral design. The group gathers under
As we enter the most architectural portion of the tour, spread out over a few miles along Pico Boulevard, CLUI associate Ben Loescher takes over the narrative for a while. As a licensed architect and the primary researcher on the Center’s Urban Crude project, Loescher is better equipped than anybody to deal with the landscape ahead.

We turn left on Pico, at the leafy Rancho Park and Hillcrest Country Club. These two green areas on either side of Motor Avenue, contain the only two active well sites in the Cheviot Hills Oil Field. In each case, the cluster of wells is obscured by foliage in the middle of golf courses. Golf courses and oil fields are quite compatible, as the open space acts as a buffer against noise and smells reaching the community, and landscaping can easily hide separation tanks and other equipment.

Originally the derricks on site were jacketed in acoustical insulation designed by Hollywood sound stage engineers, and painted under the direction of architect Henry C. Burge to appear grass-green at ground level, with a gradient leading to sky-blue at the top so as to better harmonize with their pastoral golf course setting. As at most other sites, the fixed derricks have been replaced by truck-mounted mobile rigs that are brought in only when necessary.

Golf courses often become the redevelopment of choice at former industrial landscapes like oil fields, as their light development and surficial treatment does not require a reengineering of the ground. There are several other more dramatic cases of golf course/oil fields east of the city, such as in eastern Orange County, but those are out of range of our tour today. Here at Rancho Park and Hillcrest, a total of 57,500 barrels a year are extracted from the 18 non-golf holes on these courses. Though not a large amount compared to the 850,000 barrels produced by the neighboring Beverly Hills Oil Field, it still adds up to a couple million dollars a year in revenue. For a while Hillcrest Golf Club members received oil royalties instead of paying dues.

There are now a lot of rules surrounding oil production in an urban environment, but of course it wasn’t always so. Until the 1920’s, Los Angeles wasn’t much of a city, so most oil discoveries and production initially occurred in rural or lightly developed areas, allowing oil production to proceed fairly freely. Regulation usually follows conflict, so as the population of Los Angeles seeped into oil producing areas, policies and rules grew accordingly. The cities of Beverly Hills, Santa Monica, Torrance, and the former City of Hollywood all banned new drilling within their boundaries.

Los Angeles occupied a cautious middle ground, moving first to prevent drilling on parcels of less than one acre, and then as the city grew (encroaching on established well sites and inhibiting the creation of new ones) it limited oil producers to no more than one well site per 40 acre lease.

Much of what we see today is the result of regulatory changes that happened in the 1950’s and ’60’s, when Los Angeles enacted drilling ordinances that imposed further restrictions on producers – to control off-site sound, derricks had to be muffled – to limit odors, more gases had to be trapped – and to limit traffic, deliveries had to be made inside a fenced enclosure, and oil had to be removed by pipeline.

Back on the bus, we head into the anomalously epic corporate hotel modernist plaza development at the heart of Century City, along Boulevard of the Stars, where the new Annenberg Space for Photography abuts the huge new headquarters of the Creative Artist Agency, across from the Century Plaza Hotel. We then pass Fox Plaza, the tower featured in the mildly Ballard-esque movie Die Hard, located on the edge of the Fox Studios compound, which sits atop the Cheviot Hills Oil Field. Though there are several oil wells on the densely built lot, none are active anymore, and they are buried under the studio’s asphalt, basements, and soundstage slabs.

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Continuing east on Pico, we reenter the Beverly Hills Oil Field and approach the second of its three unique active well sites, the Cardiff well site. It is visible some distance away, as it has one of the tallest structures around, though most people don’t realize what it is. The architecturally sheathed oil rig resembles the tower of a synagogue, as would be appropriate in this Jewish part of town (a recent article in an oil trade journal even mistakenly depicted an actual synagogue tower a few blocks away as the Cardiff oil tower). Originally built by Occidental Petroleum in 1966, the Cardiff tower was as tall as a ten-story building, and touted as the first “architecturally designed oil derrick.” The California Department of Oil and Gas noted that “the appearance of this drill site is much more attractive than that of the surrounding small business properties.” Mayor Sam Yorty attended the ribbon cutting, commenting that the structure was “an outstanding contribution to civic beauty.”

The tower has been rebuilt since then, but is not much different than it was. In 2000 Breitburn Energy, the owners of the site, enlarged the masonry wall around the drill site and rebuilt the derrick tower (which moves on tracks to service the well heads) in exchange for increased drilling rights. The tall walls that ring the two block long lot were built at the height of a single story building, and are heavily vegetated. Inside are 40 active and 12 idle wells and five water injection wells. The site produced 260,000 barrels of oil in 2008.

At the site, the bus turns left on Doheny Drive (suitably named after the discovery of oil in Los Angeles) to make a loop around the site, stopping in the alley behind it for a closer look, then heads eastbound again on Pico, to the third and last well site in the Beverly Hills Field. This is the Packard well site, at Genesee Avenue. The group exits the bus here, and gathers at the front of what looks like an office building, but is actually an oil drilling lot with walls that are around 100 feet tall. Inside, a drill rig is free to move on tracks above the wells, completely obscured from the outside world.

When Standard Oil opened this facility in 1968 it was a show piece for the integration of oil production amidst the dense urban fabric. Visitors could enter the lobby, where displays described the operations at the site, and stairs led to a public viewing gallery, where they could watch the work on the well floor, which was open to the sky above in this roofless “building.” Though it is still the most unusual and architectural oil well site in Los Angeles, possibly the world, its current owners, the Houston-based oil company PXP, seem less than proud to show it off. The structure is locked and behind a locked fence. Plants and debris are encroaching on the lobby and the interpretive plaques, barely visible from the sidewalk through the dirty glass doors, are faded and water damaged. Like most urban oil sites, the companies that operate them seem to want the public to ignore them, and let them go about their business.

And business indeed continues, out of site, inside the Packard well site, where 51 oil and gas wells produced 491,000 barrels of oil and 763 million cubic feet of gas in 2008. 13 water injection wells reinjected some of the 5.7 million barrels of water that came out of the ground with the oil and gas. PXP operates oil platforms off the coast of California and in the Gulf of Mexico and oil fields in the San Joaquin Valley, Wyoming, Texas, and Oklahoma, as well as several other fields in Southern California, including the Baldwin Hills. The company’s total assets amount to more than $7.5 billion, and generated $2.4 billion in revenue in 2008.

After considering the implications of all this, the group heads back to the bus, and we continue down Pico. With more time to sit in traffic, we might have taken the bus up to the Beverly Center shopping mall, where PXP operates a fenced well site nestled in an indentation in the mall’s west flank. There, 54 wells dive into the Salt Lake Oil Field and into the adjacent San Vicente Field, producing more than 500,000 barrels per year.

Then, with more time, we might have headed west on Third Street to Farmers Market, where another drill site operated until recently. The site is now becoming a parking garage. Across the street, Ross Dress for Less blew up in 1985 when a tunnel boring machine working on the Red Line subway hit a volatile pocket of methane. Some blamed the pumping that was occurring at Farmer’s Market for increasing reservoir pressure that may have pushed the methane close to the surface. Although the oil operator denied responsibility, their insurer did settle out of court with injured parties for an undisclosed sum (and it was only a few years ago that the prohibition on the spending of federal funds on the subway extension was lifted, allowing work to continue in this volatile area).

On the other side of Park La Brea from Farmers Market are the La Brea Tar Pits, the most famous oily site in Los Angeles. Tar pits (or seeps) like the one at La Brea occur when petroleum works its way through the surface and is trapped, forming pools of tar that can reach depths of several feet.
way to the surface; once exposed to air, lighter volatile constituents evaporate, leaving the viscous asphalt behind, where it can entrap prehistoric animals and entertain school children. Tar from the La Brea site was used early in the region’s history for waterproofing native boats and roofing haciendas. It was a well enough regarded civic resource that the original land grant for the Rancho La Brea (Tar Ranch) stipulated that access to the tar not be restricted. Although it’s the largest, La Brea isn’t the only tar pit in town. Dozens of smaller tar seeps occur throughout the city. Some are permanent, while others spring up spontaneously in yards, driveways, and basements. It was these surface seeps that first drew people to dig, and then drill, for oil.

Las Cienegas Oil Field

But the Labrea Tar Pits are easy to find, and most people have been there, so we don’t visit that either. Instead we continue down Pico and pull over at a nondescript cement slab, behind a fence, next to the LAPDs West Bureau, where some kind of building once stood. On closer inspection, the shapes of the slab show the features we have begun to recognize as the floor of an urban oil site, with the recessed cellar holding the remains of a battery of well heads, and the circular impressions where the separation and storage tanks once stood.

Indeed, this was the westernmost well site in the Las Cienegas Oil Field. It had 18 wells on it and shut down in 1993, but like many oil sites, it has expensive closure issues, and is awaiting enough of an incentive, and momentum, for the legal and bureaucratic process to remediate it. Or perhaps it will go back to being an oil site, as the four other well sites on the Las Cienegas Field are all still active, collectively producing around 500,000 barrels per year. Three of the four are operated by PX&P (at Washington and 4th; Adams and Gramercy; and Jefferson and Van Buren). We head to the fourth, the easternmost one, at St. James and 23rd, near the 110 freeway, on the campus of Mount St. Mary’s Doheny Campus.

Edward Doheny lived at this site for most of his reign as Los Angeles’ first and biggest oil tycoon. Long after his death, his widow gave it to the Catholic Church, which turned it into a small college campus. Though the college has built up the site with new classroom and administration buildings, the compound that Doheny called Chester Place still has many of the qualities of the affluent exotic oasis it once was. The mansion he lived in is still there, and is the showpiece of the campus.

Doheny discovered oil in the city of Los Angeles, drilling its first well in 1892. If there was father of the industry here, it would be him. He developed a lot of Mexico’s oil industry as well, pre- sciently selling the holdings before the industry was nationalized. His fortune came from building up companies such as the Pan American Oil Company, and selling them off as other companies grew.

He is also a tragic figure, who spent the last decade of his life defending himself against the bribery charges of the Teapot Dome Scandal. Though he was eventually acquitted, the trials and humiliations, compounded by the murder of his only son, crippled his spirit. Doheny died in 1935, after living here for 34 years.

The basic story of his life is recounted by the CLUI tour guide as the group walks down the middle of Chester Place and stops in front of the Doheny Mansion, now used as an administration and reception center for the college. But our final destination on campus awaits us. We walk down an alley behind a row of buildings, then up the stairwell of a parking garage, then gather on the upper deck for a view of the oil well site immediately below.

This is the 23rd Street site, the easternmost well cluster on the Las Cienegas Oil Field. It is owned by Allenco, a small oil company based out of Denver, which bought it from St. James Oil, with the hope of making it more productive. It is the smallest of the four active well sites on the field, pulling only around 16,000 barrels out a year through eight wells. Another 12 wells on site are idle.

This site was completely idle in the late 1990s, due to low oil prices, and calcification. Over time, oil wells can become plugged with mineral deposits, mostly left by the huge volumes of mineral rich water that flow through the wells, clogging the pores that seep into the drilled shaft and pipe. Well service companies, such as Halliburton and Schlumberger, are specialists in dealing with this problem, using acids, steam, explosives, and other techniques to get the oil flowing again. In this case, St. James began an acid treatment to unplug the wells, part of a project co-sponsored by the US Department of Energy. Hydrochloric and phosphoric acid was injected into five wells at the site, and by 2005, the wells were back online producing oil.

The workers on site look up at us as we watch them move around the oily lot. Though the manager had been invited to speak to
us, he declined, preferring to continue his business behind the tall walls of the site, laid out before us from our perch like a schematic. In the near distance, a block away, the meandering roof and lofty palms of the Doheny Mansion can be seen. The span of the history and state of oil in Los Angeles, from the gritty urban lot to the gables of its bars, are visible in one vista.

Back on the bus, we head east on Adams, passing the cathedral-scale St. Vincent’s church, which Doheny paid to have built on the corner of his property in 1925 at the height of Teapot Dome scandal, and where his murdered son’s funeral was held in 1929, and later, his own, in 1935. Across from it is the similarly grand and ornate Spanish colonial style headquarters of the Automobile Club, whose role in the story of oil in Southern California should also be acknowledged, as without cars, there would be a lot more oil still in the ground. Oil was created to be consumed by cars, and cars were created to consume oil, a classic chicken and egg relationship.

Los Angeles Downtown Oil Field
We cross the 110 freeway, turn north on Hill Street, and enter the Los Angeles Downtown Oil Field. This relatively small field is an ovoid just over a mile wide, underlying the Staples Center, Convention Center, and the epic intersection of the 110 and 10 freeways. Only one well site remains active on the field, at 14th Place and Hill Street, and we pull over next to it. The site is similar to the other urban oil lots we’ve seen, half a small city block in size and behind a tall wall, though in this case its much more inner city in appearance.

The site, operated by the St. James Oil Company, has had some difficulties recently. Though there are 16 wells on the site, it is currently producing only around 5,800 barrels per year. Well stimulation efforts have included the injection of steam at high pressure to force the oil out. But, according to the city attorney’s office, the subterranean pressure forced oily ooze and smells out of the ground in a number of other places, including into storm drains, streets, and basements. On February 20, 2006, at the Iris Apartments two blocks away, the hot tar-like liquid seepage was significant enough that the residents of the 35 units in the building were evacuated for a week. Outside the door, Olive Street was so destabilized by the heated ooze that it had to be shut down for two months while the goo was siphoned out and the street resurfaced.

Back on the road into downtown we pass some of Los Angeles most remarkable architectural landmarks, such as the Herald Examiner building, part of William Randolph Hearst’s empire, designed by Julia Morgan, who also designed his castle at San Simeon. The Herald Examiner building has been shuttered since 1989, used principally as a film location (this is the fate of many buildings downtown, which helps sustain their limbo). Plans for its redevelopment include Thom Mayne/Morphosis-designed towers rising up from the site. We’ll see about that.

Turning left on Olympic we pass the urban twins of the Standard Oil Building and the Petroleum Building, the headquarters built by Doheny in 1925 as part of his 1920’s building boom. North on Figueroa, we point out the Arco Building, where Breitburn has its offices (Arco was absorbed by BP a few years ago), and Unocal’s former headquarters, shuttered when the company was acquired in the 1980s, which became a film location site, that evolved into the movie production facility LA Center Studios.

Los Angeles City Oil Field
North on Third Street, we enter the Los Angeles City Oil Field, which underlies the area on the north side of downtown, between Vermont Avenue and Dodger Stadium. This is the last of the belt of the 11 urban LA fields that we will look at, that started with the Sawtelle Field on the westside of Los Angeles. Hundreds of wells have been drilled into the Los Angeles City Oil Field over more than a century of production, starting with Doheny’s discovery well in 1892. This was the first urban oil field. It was close enough to downtown that residential development grew up with the oilfield and many old houses around here had pumpjacks in their front yards for decades.

This field is also notorious for the gases that come with the sulfury oil of the region, and the fear of their effects, on development. Methane alarms and vents can be seen in businesses and municipal structures built on top of LA’s oil fields – look for alarms on the walls at the Los Angeles Museum of Contemporary Art, or the Apple Store in the Grove, and for vents on the sidewalks around Park La Brea, where they emerge as painted steel poles out of the ground, like steampunk street sculpture. But the Los Angeles City Oil Field has Belmont.

Now open and called the Roybal Learning Center, Belmont ended up being a $400 million high school, the most expensive high school in USA. It took 15 years to build, and cost so much primarily because of uncertainties about oil field gases. Over the years of construction, demolition, redesign, politics, hearings, and demonstrations, construction was stalled so long that building codes changed, forcing more changes. Then there was the earthquake fault fears (oil collects along faultlines.) Finally opened a few years ago, the campus of 2,500 students is plumbed with an elaborate methane and hydrogen sulfide collection system that redirects the gas from under the building to tall vents outside, some of which double as light stanchions in the surrounding park and parking lots.

Because the Los Angeles City Field is the oldest field, and pumped the longest, it is now among the most played out. In fact, there is currently just one active well left. We go to it. The bus pulls in
OIL IN LOS ANGELES

The last working oil well on the historic Los Angeles City Oil Field. CLUI photo

behind the Esglesia de Dios, la Esposa del Cordero, a storefront church on Alvarado, and we meet the operator of the well, Daniel Reyes of the Lesco Company, who has kindly agreed to meet us there to have a close look. He had been unaware that this was the last well in the LA City Field (a fact we had confirmed earlier, after a search conducted by the State Division of Oil and Gas). We are a few minutes early and his crew is just finishing touching up the paint for us. The group flows out of the bus, through the opened gate, and quickly fills the small lot. Resembling an animal in a zoo, the well is topped by a small, solitary pumpjack that produces around 1,000 barrels a year. The little pumpjack is even, in the words of one visitor, cute.

After many photos and questions for Daniel, the group gets back on the bus. We stop at the corner of Rockwood and Belmont to look at a cluster of pumpjacks in a bushy, scrappy, fenced lot, looking even more like animals in a zoo habitat. Though the pumps are permanently motionless now, this was an active well site a few years ago. We are a search conducted by the State Division of Oil and Gas). We are a minute early and his crew is just finishing touching up the paint for us. The group flows out of the bus, through the opened gate, and quickly fills the small lot. Resembling an animal in a zoo, the well is topped by a small, solitary pumpjack that produces around 1,000 barrels a year. The little pumpjack is even, in the words of one visitor, cute.

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According to records of the State Division of Oil, Gas, and Geothermal Resources, (the agency that regulates the oil industry in California, and whose database locates and describes all of the more than 200,000 known wells in the state, operating and not), it was here, under the asphalt in the middle of the parking lot, where Doheny’s well was dug. We park the bus over the spot, and idle for a moment, and recreate the scene of the Discovery Well myth.

Doheny was an Irishman from Wisconsin, who came to Los Angeles at the age of 40, after failing to make it rich in the mines of New Mexico. He was nearly broke, with a wife and sick child. Staying in a boardinghouse downtown, legend has it he saw someone pushing a cart that had black goo in it, the tar (brea) that came out of the ground in a number of places in the region. He asked the man with the cart where it came from, and was told about a hole in Westlake Village. Inspired, Doheny set off to find it, and upon doing so learned that the pitch was used locally as a fuel in place of coal.

Doheny convinced his friend, Charles Canfield, to go into business with him, to help raise money to lease a three lot parcel with bubbling goo on it, the parcel right here. They started digging by hand in 1892 with a small crew, and reached a depth of 60 feet after 39 days of continuous work. Doheny’s sickly seven year old daughter dies at this point, and after the funeral, he comes back, and keeps digging. They reach 155 feet and are so sick from the fumes that they have to stop. They develop a crude drilling rig, which raises and lowers a steel rod that drills into the ground. The apparatus falls apart, collapsing into the hole. It takes weeks to extract it and put it back together, but they do so. After drilling another thirty feet, they hit a hard surface. Extracting the bit, they see it is coated in oil. The digging gives way to bailing, and the first oil well in Los Angeles is online, stimulating a regional boom.

This story is conveyed to the group on the bus, idling over the spot in the parking lot outside the pool, by reading the account in Doheny’s biography, The Dark Side of Fortune, by Margaret Leslie Davis. The bus then heads for the 110 freeway, passing the Bel-mont/Roybal school on the way, and heads southbound. As we transit the Los Angeles basin, we are shifting places, scales, and time. Leaving the site of the first oil well in the basin, and the dwindling, sputtering old fields around it, we are moving to the newest and most developed oil fields in the basin, and some of the most productive fields in the nation.

In Transit

On the way we address the shift in time, scale, and form through a continued exploration of the legacy of Doheny. If the account of the miner coming to California and the details of his excavation of the discovery well seems familiar, that’s because it resembles the story as told in the film There Will Be Blood. This film, and Upton Sinclair’s novel, Oil, are both based, very loosely, on the Doheny story. There Will Be Blood, Paul Thomas Anderson’s movie of 2007, comes as close as any film has to mythifying the foundation of oil in southern California. But it misses the mark, derailed into a father/son story, and a story of epic cruelty, and epic acting.

Doheny’s as yet untold cinematic story might make him out to be an empire builder, like his contemporary, William Mulholland. Both of these Irish men built big things, became legends in Los Angeles, and both had lives that ended in tragedy. For Mulholland it was the failure of the San Francisquito Dam, along the Los Angeles Aqueduct, which he had declared safe hours before it...
crumbled, washing away hundreds of people. For Doheny, it was the Teapot Dome scandal, but more – the fact that he had involved his son in it, and that this involvement caused his son's murder. By most accounts, Doheny was a personable fellow, nothing like the exaggerated Noah Cross character of Mulholland in Chinatown, LA's water myth. The scandal that brought shame on Doheny was perceived by many, especially him, as a simple misunderstanding of intention.

Teapot Dome is the name of a Wyoming oil field, one of two federally controlled fields kept mostly undeveloped in case of a sudden need for oil for national security purposes. Teapot Dome, the scandal, erupts under the presidency of Calvin Coolidge in 1923, after the death of President Harding. Oil man Harry Sinclair was accused of bribing President Harding's Secretary of Interior, Albert Fall, to allow his company exclusive rights to drill for oil at that field. Ed Doheny was accused of the same thing, relating to the other federally controlled field, the much larger Elk Hills field in Kern County, California.

In Doheny's case, the scandal is based on the interpretation of the relationship of two events, which nobody denies: Doheny gave a $100,000 loan to the secretary, Albert Fall, who was an old friend as well as the Secretary of the Interior, to buy a ranch. A few years later, Fall gives Doheny's company exclusive access to Elk Hills, with an estimated $100 million in profits expected for Doheny. Was the loan a bribe or a friendly gesture? Did the first act beget the other? It didn't help Doheny's case that he had his son, Ned, personally go to Fall's home in Washington DC to deliver the loan, in cash, in a bag.

This was a truly national scandal, about big business and government corruption. It went on and on, with federal hearings, local, civil, and criminal trials, all covered minutely in the national press over the following eight years.

During this period, Doheny tries to help his case through philanthropy, and builds churches and civic buildings in Los Angeles, like those we have seen today. Recognizing the power of film, he asks Cecil B. De Mille, over a lunch at Chester Place, if he would make a film, funded by Doheny, that tells his life's story, which, he believed, was that of a patriotic hero, not a criminal. De Mille says no. Doheny pays a writer to write a favorable biography of Albert Fall, the interior secretary, but it is never published.

In 1927 Upton Sinclair publishes Oil, a book loosely based on Doheny's life, up to that point, though the most dramatic part was yet to come. In 1928, after a few years of construction, Graystone Mansion is finished, the fanciest house south of San Simeon. Doheny builds it in Beverly Hills for his son Ned and his family. In 1929, Ned is shot dead in Graystone, evidently by his good friend and personal secretary, Hugh Plunkett, whose body is found next to him, dead of an apparently self-inflicted wound. A murder suicide. Ned shot by Hugh.

Hugh and Ned had been friends since boyhood. They went together to deliver the $100,000 in cash to Albert Fall, and so both were implicated in the scandal, and both were preparing to go to DC to testify. Hugh showed up at the mansion on the night of the murder in a disturbed state, according to staff at the house, but there were no witnesses to the shooting. The motive remains a mystery, and suggests some hidden truth, never uncovered. Doheny Sr. rushes to the house when called, and cradles his son's body. The scene of the crime is tainted by the time the police arrive, and there are some discrepancies suggesting something else might have occurred, but the case is soon closed. The verdict is that an emotionally disturbed Hugh shot Ned, in an impulsive argument, then turned the gun on himself.

Doheny Sr. is crushed by this. He feels guilty for involving his son, and causing his death by the unstable and anxious Hugh. In a year he is, surprisingly, acquitted of bribery charges. The jury did not disagree with the fact that he gave $100,000 to Fall. Perhaps influenced by sympathy, they believed that his intent was not to gain favors, but to help a friend. Curiously, Albert Fall was convicted of receiving the bribe, even though Doheny was no longer accused of having offered one. Fall and Sinclair were both convicted.

Doheny is absolved of this scandal that occluded his life's work, but it is too late, and he is a broken man. His wife, Estelle, builds a country house retreat near Santa Paula, in the hills north of Los Angeles, and Doheny lives out the five remaining years of his life, increasingly despondent, between there and Chester Place.

The mansion where the murder took place, Graysone, is still there and is unoccupied. It is owned by the City of Beverly Hills, used for events, and as a film location. Creepy films shot there include Death Becomes Her, Witches of Eastwick, Eraserhead, Dead Ringer, Winter Kills, and Dark Shadows. In the basement, there is a bowling alley (as there also was at Chester Place). It was used for the final scene in There Will Be Blood (where, indeed, there is blood).

The conversation in the last scene of the film brings up an important point about oil production, one especially related to what we have seen today, and will see soon in some of its most impressive forms: lateral drilling, what the character Daniel Plainview emphatically describes to his nemesis Eli in the film as “Drainage!” This is the practice of drilling wells laterally to access oil under-neath land beyond the drillsite. This practice is now the norm in the industry, and technology now enables drills to meander in all directions underground. Royalties are paid to every holder of the mineral rights through which it passes. But in the old days, it was practiced clandestinely. Derricks were sometimes wrapped in canvas to conceal the diagonal position of the drill stem, so that its direction was unknown, and royalties could be avoided.

“I... drink... your... milkshake!” Daniel Plainview explains to Eli in the film. This analogy, of the oil well as a straw curving over a table, linking mouth to drink, is a concept that the director of the film, Paul Thomas Anderson, claims to have lifted from the transcript of the federal testimony of Albert Fall during the Teapot Dome scandal. After the film comes out, this phrase becomes something of a cultural catch phrase for some reason, it strikes a chord. People mash it up with homemade videos on the internet, and Saturday Night Live does a skit “There Will Be Milkshakes for Old Men” (conflating two popular films of the time, both, curiously, made by idiosyncratic auteurs, and shot around the same time around Marfa, Texas). There Will Be Blood has an effect on the California Oil Myth, mutating elements of facts. Though it is no Chinatown.
Long Beach Oil Field
By this time, on the bus, we are getting close to our lunch stop, Curley’s Café, in Signal Hill, which offers standard American fare, including milkshakes. On the way we watch part of a short, locally made film, Signal Hill: Diamond in the Rough, which describes the community, and it’s history of oil. The bus pulls into the parking lot of the restaurant, which proudly sports two large and active pumpjacks. Inside, the place is decorated with old pictures of the oil industry of Signal Hill, site of one of the largest oil strikes in California, and today home of one of the most integrated urban oil fields in the world.

After lunch, Brady Barto, of Barto Enterprises, joins us on the bus to guide us through his city. Barto Enterprises is a real estate company which has developed much of modern Signal Hill, building housing areas and shopping centers on former oil production land. The company also owns the Signal Hill Oil Company, which owns and operates 95% of the 266 or so active oil wells in the city.

Signal Hill is the name of the community that surrounds the hill of the same name, which sits atop the Long Beach Oil Field. Signal Hill incorporated in 1924 to keep its oil revenue from being taxed by the city of Long Beach. Though it is relatively small in area, five miles long and a mile wide, it is the second most productive oil field in Los Angeles County, after the Wilmington Field, which we will see later. Nearly a billion barrels of oil have been extracted from this field since it was discovered in 1921. It still produces more than 1.5 million barrels per year from pumpjacks scattered throughout the community, connected by underground pipelines.

The tour makes a loop around town, passing the Starbucks drive-thru with a pumpjack, the McDonalds with a pumpjack, the Home Depot with several pumpjacks, and the cemetery, which, though it has no pumpjacks on it, is surrounded by pumpjacks and has laterally drilled wells underneath it. We also visit an active drill site, where a new well is being dug in an open area of chaotic old oil field land in the middle of town, a relic of how this area once looked.

We head up Skyline Drive, up the steep slope of Signal Hill, once referred to as Porcupine Hill when it was covered in oil derricks and not a single home. Now the derricks are gone and houses cover Signal Hill. But the wells are here too still, in small fenced lots in and amongst the housing, where individual electrically powered pumpjacks run off a dedicated high voltage grid operated by Signal Hill Oil, pumping their oily water through underground pipelines to off-site separation facilities. This reduces the footprint of well sites to only the pump.

We get off the bus at the top of Signal Hill, where a small park offers the region’s most complete view of the Los Angeles Basin: a panorama from downtown, to the Port, and southward down the coast. Helping us interpret this sweeping vista, from an oil point of view, is the petroleum geologist Don Clark, who meets us there, with maps and charts. He describes the earth’s subsurface structure here, the fault lines that trend northwest/southeast, and how the oil fields formed along them. He points out the various oil fields and oil refineries and reminds us how much oil remains to be had, especially here in Signal Hill. And he points out the distant artificial oil extraction islands off the coast of Long Beach, unique in the world.

We leave the two urban oil experts on the top of their hill, pass the communication antenna spires rising from the high point of the hill, (today’s smoke signals), and curve around the far side in order to point out the field’s Discovery Well, still pumping at the corner of Temple and Hill Streets. Then south on Cherry Street all the way to the coast.

Wilmington Oil Field
Our last stop of the day is atop the Wilmington Oil Field, the Southland’s largest field in area and output. It is fifteen miles long and five miles wide, extending from Torrance to off Seal Beach, underlying most of the port of LA and Long Beach. The field has produced close to 3 billion barrels of oil since its discovery in 1932. In 1964 it became the first oil field in California to produce a billion barrels, the second one in the nation to have done so at that time. The field, discovered after most of the LA basin’s fields, was attacked with vigor. Within just a few years the land above the field was noticeably sinking.

By the 1940s, after only a decade of oil production, the land level was dropping to such an extent that buildings and roads cracked, oil well casings and pipelines sheared, and portions of the port flooded. Subsidence reached its peak, or pit, in the early 1950s, when the ground dropped by four feet in just two years.

The lowest point of the subsidence bowl was directly above the middle of the oil field, at the northern end of Terminal Island. Here the land was 29 feet lower than it had been before oil production...
began. The nearby Naval Ship Yard had suffered damage and flooding and the entire port itself was in danger. Drilling for oil was banned in Long Beach.

A program to inject water into the wells commenced, and soon the land stabilized and eventually began rising, as if inflated by air. The drilling ban was lifted in the early 1960s (though it remains in place to this day in the residential parts of town). Today an extensive network of water injection wells operates continuously, returning 105% of the volume of oil and water extracted from the field, in order to maintain equilibrium. Water injection will have to continue long after the oil is gone.

Of the 6,150 wells drilled into the oil field over the years, 1,300 remain active. By most estimates, the oil field is 90% depleted. But that depends on the price, and the value, of oil in the market and the cost of extraction. The western, land-based side of the field, where most of the early pumping occurred, still has pumpjacks peppered around the industrial and residential areas of Wilmington, and the port of Long Beach has batteries of wells on its land. But most of the oil from the field is extracted through wells that were drilled after 1963, on the (then) less tapped eastern end of the field, from four artificial islands known as THUMS.

The THUMS Long Beach Company, named for the original field contractors Texaco, Humble, Union, Mobil and Shell, was created to get at Long Beach's oil with minimal disurbance to the city. The plan that was developed with the city was to position most of the wells offshore, on low-profile artificial land masses. The ten-acre islands were built quickly, starting in 1963, by barging rock from a quarry on Catalina Island. Rock was dumped in a linear fashion on the ocean floor, forming the outline of the four islands. Once a rectangular ring above the water level was attained, sand was then sucked from the adjacent ocean floor to fill the space inside the ring to above water level.

With the islands thus made, the most intense localized drilling operation in recent California history began. Eventually up to 300 wells were completed on each island, in a ring around their outer edge. Each well head sits a few feet from its neighbor in a trench, above which is a track that carries the moveable derrick. The city required that the two islands closest to shore have decorative walls which hide the industrial operations, and deflect their sound. These camouflaged features, which include lighted waterfalls and a building-like enclosure around the derrick, were designed by the architect Joseph Linesch, who also designed theme parks for Disney.

Some time after their completion in 1964, the islands were renamed after the first four astronauts to die in the Apollo program: Grissom, White, Chaffee, and Freeman. THUMS is now owned by Occidental Petroleum, and we are on our way to meet Bill MacFarland, a representative of the company.

Since we don’t have time to set foot on the islands, something that is sometimes possible for groups, but is a rather time consuming affair, we let our fellow California explorer, Huell Houser, tell us about his trip to the islands a few years ago, captured on film for his television show, California's Gold. As the video winds down, the bus pulls up at the Shoreline Marina and Yacht Club, and we
where the conflict reaches its conclusion, just like the oil, which is being refined to its final state, gasoline.

We are watching one such scene on the bus as we pass the refinery at Torrance, the classic climactic ending of the film White Heat, which was filmed at the Torrance refinery. The clip shows the cops tracking the bad guys, who are hidden in an oil tanker truck, across town using a newfangled electronic radio location beacon gizmo. They are followed into the gates of a refinery, where after various shoot outs, James Cagney, playing a crazed crook, is cornered on the top of a tank farm. With no way out, he gleefully blows the whole thing up saying, “Top of the World, Ma!” This is a too rare gem of early petroleum noir, shot at the innocent beginnings of the postwar American boom.

In the waning light, we invisibly pass more oil fields, most nearly played out: Torrance, Dominguez, Lawndale, El Segundo. And further east Rosencrans, Santa Fe Springs, Montebello, Whittier, Brea Olinda. Not to mention the coastal Orange County fields of Seal Beach, Newport, and the giant Huntington Beach field, with its battery of hundreds of pumps in parallel rows along the coastal highway. In total there are 40 active oil fields in the Los Angeles Basin, the region south of the Santa Monica and San Gabriel mountains, from which 28 million barrels a year are extracted.

In 1925, almost half the world’s oil came from California, and most of that was from the Los Angeles Basin. Peak production wasn’t reached until 1969, when 135 million barrels were extracted, mostly out of THUMS. Though diminished, LA County today is the second most productive oil county in California. But it pales behind Kern.

Kern County, bordering the north side of Los Angeles County, includes the city of Bakersfield and the industrial agriculture of the southern San Joaquin Valley. But its western side, west of Interstate 5, is one of the most productive oil fields in the nation, historically, and to this day. About 180 million barrels per year come out of Kern County. Pipelines take the crude to refineries near San Francisco and to Los Angeles. 38% of the oil consumed in California is produced in California, and most of it comes from Kern County.

The other major domestic source of oil for the state are the oil fields of the North Slope of Alaska, a forty mile-wide swath along the Arctic Ocean, whose oil comes to us via the Alaska Pipeline and the 20,000 tanker trips that have been made up and down the west coast since the pipeline opened in the mid 1970s. But around half of what we consumer here, half of what we are burning in the bus on this trip, comes from other countries, mostly Saudi Arabia, Iraq, and Ecuador.

Though the Los Angeles Basin’s totals are still significant (certainly you would have a hard time sneezing at 28 million barrels of oil), it represents, proportionately, only 4% of the 665 million barrels of oil consumed in California every year. And, in fact very little of the basin’s oil is turned into gasoline, diesel, or jet fuel. LA’s oil is too thick and goopy to compete with lighter crudes from Kern, Alaska, and the Middle East, which are more productive to refine. Just about all of the crude extracted in LA is turned into asphalt to pave the roads.

We turn off the Interstate near LAX, and take the back way to Culver City, through the Baldwin Hills. The Baldwin Hills sit atop the Inglewood Oil Field, one of the most productive oil fields in the region. It was discovered in 1924, and since that time it has produced almost 400 million barrels of oil. When it was first developed, most of the surface above the field was owned by just five companies, so it was developed in a more orderly fashion than some of the chaotic fields, like Signal Hill and Huntington Beach, and reached peak production in just a year.

Operated for many years by Stocker Resources, it is now owned by PXP, out of Houston. The company keeps around 430 of the 1,200 wells in the hills pumping, extracting more than three million barrels of oil annually. It is the largest undeveloped (other than as an oilfield) area in urban Los Angeles County, and a veritable museum of Los Angeles’ landscape of the 1920s, when the city was still largely open land and was supplying a quarter of the world’s oil. The Baldwin Hills are an extemporaneous island, surrounded by an ocean of asphalt. They are a hole in the urban fabric: the largest open space west of the Puente Hills and south of the Santa Monica Mountains.

Its future is destined to be one of the major land use battles in Los Angeles. Proposals include a 1,400 acre Great Park, integrating the existing park lands at Kenneth Hahn State Park with a land bridge across La Cienega Boulevard, to the 950 acres of a restored, natural-esque, post-oil landscape with trails, recreation, and a wildlife habitat. In the meantime, and for the foreseeable future, supported by the rising value of oil, the Baldwin Hills will continue being what it has been since 1924: an oil field (currently generating over $100 million per year in oil and gas revenue for its owners).

The bus drives through the dark, wild oil lands on either side of La Cienega Boulevard, and down into the grid of the city, through the surreal crumbling new architecture of Erik Owen Moss-land, past the Metro construction corridor along National Boulevard (the urban train reclaiming the old railway right of way), past the closed car dealerships on Jefferson, being turned into digital effects and post production satellites for Sony Studios, and back, finally, to the Center’s offices to disembark, and to drive home.
EXHIBITS GENERATED BY THE CLUI travel to various venues, either as stand-alone displays, or as part of thematic, curated exhibits about land and earth art, architecture, and photography.

A version of the Center’s exhibit *Post Consumed: The Landscape of Waste in Los Angeles*, about the landforms and migrations of post-consumer waste, was presented at the 11th Venice Architectural Biennale, as part of *Into the Open: Positioning Practice*, the installation that year in the U.S. Pavilion. It was later shown at the National Constitution Center in Philadelphia, and at the Parsons New School for Design in New York City.

*Autotechnogeoglyphics*, a collection of CLUI images of automotive test tracks, traveled around some more as part of the exhibit *World’s Away: New Suburban Landscapes*, visiting the Carnegie Museum of Art in Pittsburgh, and the Yale School of Architecture in 2009. The Barbican museum in London showed the Center’s Trans-Alaska Pipeline photoscape as part of the exhibit *Radical Nature: Art and Architecture for a Changing Planet 1969–2009*. The pipeline photoscape was also shown at the Center for Art and Environment at the Nevada Museum of Art in Reno. And the Center’s project about the Hudson River Valley, *Up River: Points of Interest on the Hudson from the Battery to Troy* was on display at the Beacon Institute in Beacon, New York in the summer and fall of 2009. It will be installed again at the CLUI regional office in Troy, New York, in the spring of 2010.

An array of posters of CLUI projects were exhibited in 2009 at the Rochester Art Center in Minnesota, the Albuquerque Museum, and at the Miller Gallery at Carnegie Mellon University in Pittsburgh, as part of the well-travelled *Experimental Geography* exhibit, currently on view (February 21–May 30, 2010) at the Colby College Museum of Art, in Waterville, Maine. Another group of CLUI posters were displayed at the Los Angeles County Museum of Art, as part of the restaging of *New Topographics: Photographs of a Man-Altered Landscape*, October 2009 to January 2010.

An exhibit produced by the CLUI about the landscape of the San Francisco Bay region, called *Back to the Bay*, showed at the College of Environmental Design at UC Berkeley in January and February, 2010. In this incarnation, the exhibit, now ten years old, was retitled *Back to Back to the Bay*. But even though its fifty photo/text panels with hundreds of images and maps, providing an overview of the entire Bay shoreline, is getting time (and color) shifted, the exhibit is interesting, as it now contrasts the changes to the land since 2000, and shows the lack of change. Old maps are sometimes more informative than new ones.

*The Houston Petrochemical Corridor*, originally shown at the Blaffer Gallery in Houston, was shown again in Houston as part of the Texas Society of Architects convention. It was also shown a few times in New York City, at Triple Canopy events at the Kitchen and at Light Industry in Brooklyn, with the Center’s latest land-scan of the South Belridge Oil Field.

The director of the CLUI, Matthew Coolidge, is invited to lecture here and there at colleges, universites, and cultural organizations around the nation, including last year at Temple University in Philadelphia, the La Jolla Athenaeum, Rochester Institute of Technology, Art Center College of Design in Pasadena, the Albuquerque Museum, Los Angeles County Museum of Art, University of Illinois, Champaign-Urbana, and Ohio State University in Columbus.

Michael Dear, Professor of City & Regional Planning at UC Berkeley, examines one of 50 panels in the *Back to Back to the Bay* exhibit.
THE CENTER WAS ASKED TO DO something about a re-release of the exhibition New Topographics: Photographs of a Man-Altered Landscape, to be shown at the Los Angeles County Museum of Art, October 25, 2009–January 3, 2010. This historically important exhibition of photography, originally organized in 1975 by the George Eastman House, had the effect at the time of defining a new genre of vernacular landscape photography, and included many small black and white photos of suburban housing, office parks, diners, motels, gas stations, streetscapes and industrial sites by photographers such as Louis Baltz, Robert Adams, the Bechers, Joe Deal, Franke Gohlke, and Stephen Shore.

It seemed the best response to this was to expand the frame of what this sort of landscape photography could be, how it has evolved, and how now it needn’t be even photographic anymore, or shot by a photographer. It could be electronic, kinetic, robotic, like the factories and informationscape of today, and the future. It could be about a place, an actual physical place, so clearly and evocatively depicted that it would seem like science fiction, but it was real, here, and now. The project called for a “landscan.”

The museum agreed, and commissioned the work. Because it was the sesquicentennial year of the oil industry, in the midst of the Age of Oil, and the CLUI was opening an exhibit about California Oil the week the LACMA exhibit was to open, it was decided that it should be a landscan of the oil fields of Kern County, California, part of the largest oil producing area in the state, and a major source for the oil that drives Southern California. After scouting the area by map, GoogleEarth, car, and small airplane, a swath spanning the length of the South Belridge Oil Field was selected, coordinates and landmarks noted.

The shoot was conducted over several hours spent in a helicopter rigged with a gyrostabilized high definition video camera, aimed obliquely downwards. Several passes were made of the same seven-mile stretch of oil field, back and forth, forwards and backwards, scanning the land.

The purpose of a landscan is to show a section of ground with a minimum of intervention, to allow the place itself to be the object of attention. No edits, limited camera movement, a fixed focal length, no vibration or sudden moves — just let the camera roll over the landscape at an oblique angle, following a scripted path through the terrain, like a vacuum cleaner sucking up the sights.

Its not about the technical means of capturing, but about the selection and presentation of a place. The site needs to be of sufficient scale, complexity, and import to warrant and support the attention of a landscan. The view is not a meandering in a scenic landscape, it is a picture of a site, a portrait of a subject, one of such a large scale, that it can only be shown in a lengthy durational cross-section.

Though the place may or may not be familiar to viewers, the view of the site from a low altitude oblique, using the great detail now available through high definition video, and with the rock-solid stabilization of the gyro, makes it seem new, even though it has been there all along. The point of view of the landscan can be compelling, even shocking, as well as mesmerizing, alienating, and hyperreal.

People, certainly, are accustomed to aerial video, but normally viewed in short shots, and as part of an edited documentary, or film. The landscan is new, because it is one shot, a scan, which continues for as long as possible, until the subject runs out. The longer the shot the better, at least ten minutes seems about right — enough so that people can sit down and watch it. Photography and place merge: the land itself becomes like a strip of film, unwinding its story.

Sound completes the cinematic experience. A landscan needs just enough sound to fill the void, and provide an atmosphere. A sort of room tone for space. If one were to record the actual live sound present when making the landscan, the noise would be wind noise on the microphone and loud helicopter chop. If it were recorded on the ground, it would have to be of a fixed point, not reflective of the kinetics of the scene. So it has to be made up, adding a layer of artifice. But if the sound is right, its artifice melts into the scene, making it seem like an inevitable byproduct of the view.

The landscan shown at the New Topographics show was shown in tandem with a previous one, the Houston Petrochemical Corridor. Side by side, these views represented upstream: the source of oil from the ground, and downstream: the processing of the oil into fuels and plastics that make up our world. The audio bringing them together was constructed by the musicologist and sound designer George Budd. Videography was by Ron Chapple of Aerial Filmworks. ✯
BOOK REVIEWS

BOOKS NEW TO THE SHELVES OF THE CLUI LIBRARY

Great to have an on-line version of some of the greatest hits of Bldgblog, to be enjoyed while in places without an internet connection. Not all blogs should be books, that’s for sure, but this blog, about the outer reaches of architecture and landscape phenomenology, could be several, so far. In fact, the whole thing should be printed out and buried somewhere, in case there is some kind of electromagnetic pulse that knocks out the internet. Add that to your to-do list, Geoff!

Finally someone does a book about these hundreds of tiny little cabins, built mostly in the 1940’s and 1950’s, rotting away in the region near Joshua Tree, in the Morongo Basin. While there have been some photo projects that have touched on them, like John Divola’s Isolated Houses, Stringfellow provides some essential text describing how they came to be, as well as images depicting their current state of disintegration, in a taxinomical way, similar to her previous book, in the same format, about the Salton Sea. She has become the regional queen of desiccated desert rot.

Stories in Stone, by David B. Williams, Walker, 2009
Nice book about quarrying, from the facades backwards. Makes some wonderful connections between buildings, and their sources, and the dimensional stone industry in general. Ends up, as such things must, it seems, at the Getty Center, where fossil-embedded travertine is hung on the exterior walls as if it was a display of geologic hieroglyphics.

Oil, by Edward Burtynsky, Steidl, 2009
Burtynsky’s epic $128 Steidl book of his Corcoran exhibit covers a lot of ground. Sure the aircraft boneyards of Arizona, and the franchise-scapes of the Pennsylvania turnpike are about oil in some respects, but it’s the images of the oil fields that really stand out, are on subject, and are maximally sublime. Burtynsky is a still photographer working on the level of a film production, with location scouts, pre-production crews, cranes, and gyroscopically stabilized helicopter platforms.

Tattered Fragments of the Map, Edited by Adam Katz and Brian Rosa, 2009
Nice thin book from the exhibit Photocartographies, with contributions by Denis Wood, Anthony Auerbach, Bill Brown, Bill Fox, Herbert Gottfried, and others.

All things campy, composed of about a hundred examples, and covering everything from Camp David, to Meme Camps, from the permanent to provisional, and divided into three sections: Autonomy, Control, and Necessity. Camp Out!

Canal Terminology of the United States, by Thomas Swiftwater Hahn and Emory L. Kemp, West Virginia University, 1998
The canal system of the USA is like the infrastructure of some ancient, alien, aqueous world. Its hard to believe the extent of the digging that went on before trains made the moving of goods so much easier. This book, while essentially an A-Z dictionary of terms, is well and simply illustrated, spanning the subject with a practical depiction that conveys this bygone technology more vividly than most historic accounts, and brings it into the present, where these structures still remain.

Though a certain (East coast) comfort sets in when depictions of Los Angeles’ destruction occurs in film and other fictional accounts, it is of course New York City that has been destroyed more often then any other city in the USA, fictionally speaking. The question is not why, as it’s simply the biggest city and the most claustrophobic, but how. This book offers a wide view of the many attacks on this city, including the few that made it past the barrier of fantasy.

The Fabric of America, by Andro Linklater, Walker, 2007
A historical account of surveying and boundary defining within the United States, primarily following the work of the early surveyor Andrew Ellicott. An important look at the fundamentals of the perimeterscape of the USA, and an under-recognized pioneer and master of terrestrial delineation.

White Elephants, by Christian Helmle, Jovis, 2007
The Swiss photographer’s contemporary images of monumental empty unused architecture and infrastructure in Europe. Mostly ill-conceived state projects that were obsolete before or soon after completion. Some humdingers in here.

This edition of the academic journal explores the spatial characteristics of energy, and among the many interesting articles is a very nicely done version of the CLUI’s Trans-Alaska Pipeline documentary project. New Geographies is the biannual journal of Design, Agency, Territory, founded and produced by doctoral candidates of the Graduate School of Design at Harvard University.

Catalogue of the exhibit which originated in the Barbican, London. The CLUI participated with our photoscape presentation on the Trans-Alaska Pipeline, and other images. Other than that, the show was a great compendium of land/earth/art, without being too formal, or too eco.

Frank, brother of Robert, also worked on the bomb at Los Alamos. After a sort of exile, due to the political fallout that enveloped him and his brother, Frank emerged from the hills of southern Colorado to create one of the most principled and innovative institutions in the world, that “woods of natural phenomena,” the Exploratorium, in San Francisco. This is the essential book that describes the man, and explains how this incredibly wonderful thing happened.

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CLUI CORPS

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Welcome to The Lay of the Land #33. If this issue is a bit easier to read, it is not due to diminished viscosity of prose, but simply a larger font size. After 16 years of the newsletter, our instinct for economy and compression has finally given way to ease of use (by one point of type, at least). Most people will read the newsletter online, where you can adjust the size of the text as you like, and the images are in color (and check out our new website design!) But we still feel, as you apparently do too since you are holding this in your hands, that there is a place for the printed word in this world, so we will continue to generate a physical copy of the newsletter to those who want it until we are all fully dissolved into substanceless electro-intelligence plasmoids fueled by the sun. This issue reflects upon New Mexico, a state we examined loosely fifteen years ago, and which in many ways still holds the keys to the universe, it seems. This issue also wrings out the last of our oil projects of 2009, the sort-of sesquicentennial year of the industry. Two too-long articles recount CLUI tours into these respective terrains. Since the tours are available to so few to experience directly, we give them a disproportionate amount of space here. It is also conceptually satisfying to couple their obsessive minutiae with our otherwise macrocosmic national scope. A telescope narrows the field when viewed in one direction, and widens the field when viewed in the other, as it were. Another theme reflected in this issue of the newsletter is photography, and the way it is changing, and changing us, as we move into the digital future. On the Horizon? We are focusing on the future in 2010, especially our database and photo archive, as well as the American Land Museum. Of course we’ll keep you posted. And, as always, thanks for being there! —Lay of the Land Editors
South Belridge Oil Field, Kern County, California.

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