



Muybridge
underneath a
sequoia near
Yosemite Valley,
ca. 1872
(photographer
unknown).

RIVER OF SHADOWS

Eadweard Muybridge and the
Technological Wild West

REBECCA SOLNIT

VIKING

VIKING

Published by the Penguin Group
Penguin Putnam Inc., 375 Hudson Street, New York, New York 10014, U.S.A.
Penguin Books Ltd, 80 Strand, London WC2R 0RL, England
Penguin Books Australia Ltd, 250 Camberwell Road, Camberwell, Victoria 3124, Australia
Penguin Books Canada Ltd, 10 Alcorn Avenue, Toronto, Ontario, Canada M4V 3B2
Penguin Books India (P) Ltd, 11 Community Centre, Panchsheel Park,
New Delhi-110 017, India
Penguin Books (N.Z.) Ltd, Cnr Rosedale and Airborne Roads, Albany, Auckland,
New Zealand
Penguin Books (South Africa) (Pty) Ltd, 24 Sturdee Avenue, Rosebank,
Johannesburg 2196, South Africa

Penguin Books Ltd, Registered Offices:
Harmondsworth, Middlesex, England

First published in 2003 by Viking Penguin,
a member of Penguin Putnam Inc.

10 9 8 7 6 5 4 3 2 1

Copyright © Rebecca Solnit, 2003
All rights reserved

Photograph credits appear on page 297.

LIBRARY OF CONGRESS CATALOGING IN PUBLICATION DATA

Solnit, Rebecca.

River of shadows : Eadweard Muybridge and the technological wild west / Rebecca Solnit.
p. cm.

Includes bibliographical references and index.

ISBN 0-670-03176-3

1. Muybridge, Eadweard, 1830-1904. 2. Cinematographers—United States—Biography.
3. Photographers—United States—Biography. 4. Chronophotography—History. I. Title.

TR849.M87 S55 2003

778.5'3'092—dc21 2002066384

This book is printed on acid-free paper. ∞

Printed in the United States of America

Set in Guardi with Gill Sans

Designed by Carla Bolte

Without limiting the rights under copyright reserved above, no part of this publication may be reproduced, stored in or introduced into a retrieval system, or transmitted, in any form or by any means (electronic, mechanical, photocopying, recording or otherwise), without the prior written permission of both the copyright owner and the above publisher of this book.

CONTENTS

The Annihilation of Time and Space 1

The Man with the Cloudy Skies 25

Lessons of the Golden Spike 55

Standing on the Brink 75

Lost River 101

A Day in the Life, Two Deaths, More Photographs 125

Skinning the City 153

Stopping Time 177

The Artist in Motion and at Rest 207

From the Center of the World to the Final Frontier 239

Chronology 261

Notes 271

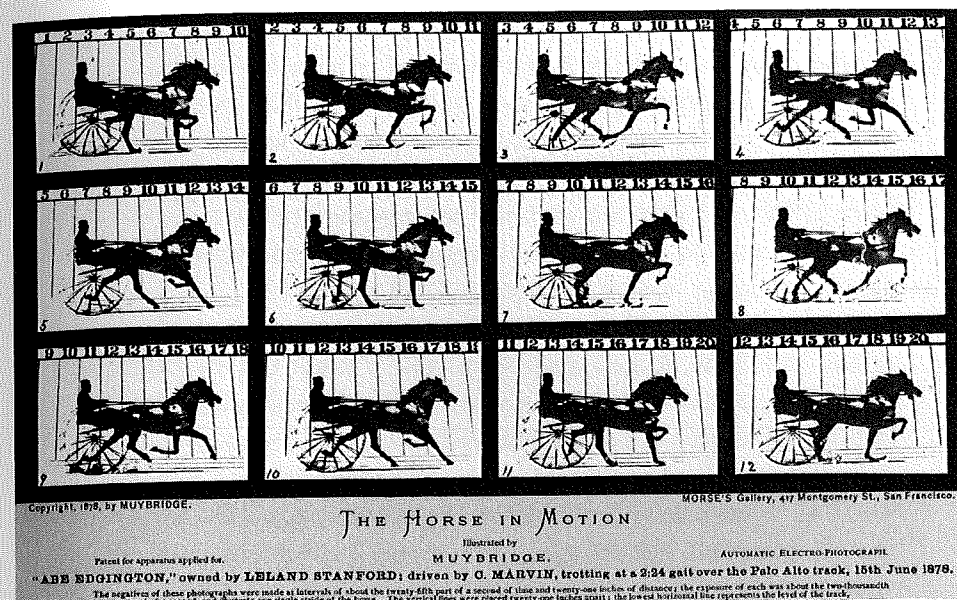
Acknowledgments 295

Photograph Credits 297

Index 299

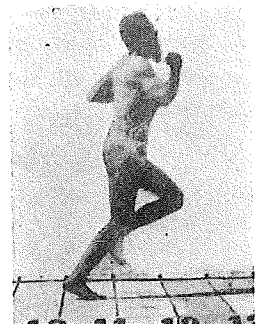
3 0750 01775 3181

THE ANNIHILATION OF TIME AND SPACE



In the spring of 1872 a man photographed a horse. The resulting photograph does not survive, but from this first encounter of a camera-bearing man with a fast-moving horse sprang a series of increasingly successful experiments that produced thousands of extant images. The photographs are well known, but they are most significant as the bridge to a new art that would transform the world. By the end of the 1870s, these experiments had led to the photographer's invention of the essentials of motion-picture technology. He had captured aspects of motion whose speed had made them as invisible as the moons of Jupiter before the telescope, and he had found a way to set them back in motion. It was as though he had grasped time itself, made it stand still, and then made it run again, over and over. Time was at his command as it had never been at anyone's before. A new world had opened up for science, for art, for entertainment, for consciousness, and an old world had retreated farther.

The man was Edward James Muybridge of San Francisco, already renowned for his photographs of the West. In the eight years of his motion-study experiments in California, he also became a father, a murderer, and a widower, invented a clock, patented two photographic innovations, achieved international renown as an artist and a scientist, and completed four other major photographic projects. These other projects are also about time: about the seasonal and geological time of landscape, about the difference between the time that the camera sees and the eye sees, about a war between two societies with radically different beliefs about time and space, about the passage of a midsummer day's sunlight across a city in turmoil. The experience of time was itself changing dramatically during Muybridge's seventy-four years, hardly ever more



- Overleaf: Abe Edgington, one of six cards of *The Horse in Motion*, 1878.
- On right-hand pages: *Running*, plate 96 from *The Attitudes of Animals in Motion*, the 1881 album of motion studies. The nude runner is Muybridge.

dramatically than in the 1870s. In that decade the newly invented telephone and phonograph were added to photography, telegraphy, and the railroad as instruments for "annihilating time and space." The big corporations were spreading their grasp across wider spaces and into more subtle interstices of everyday life. The Indian wars were reaching their climax and their turning point. The modern world, the world we live in, began then, and Muybridge helped launch it.

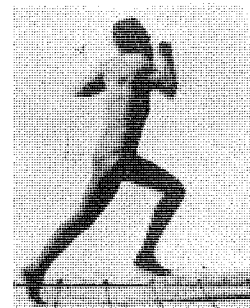
Muybridge produced more successful high-speed photographs than anyone had before. His 1878 camera shutters were a triumph of engineering that made reliable exposures of a fraction of a second for the first time, a speed at which extremely rapid motion could be captured in focus rather than recorded as blurs. The photographs were also a triumph of chemistry, which made the film "fast" enough to record so brief an instant. They froze motion so that the legs of a trotting or galloping horse, then a leaping man, and eventually the movements of lions, doves, dancing women, water spilling, artists drawing, could be depicted as a sequence of still images. At the same time, Muybridge improved upon the zootrope, a small device invented in 1834 that makes a series of spinning images seen through a slot appear to be a single image in motion. His zoopraxiscope, as he called it, projected versions of his motion studies on a screen: moving pictures, pictures of motion. It was the first time photographs had dissected and reanimated actual motion, and it was the foundation of cinema, which emerged tentatively in 1889, in full force in France and the United States by 1895. Motion pictures proper were invented by others, but no matter which way the medium's genealogy is traced, it comes straight back to Muybridge. And motion pictures changed the relationship to time farther; they made it possible to step in the same river twice, to see not just images but events that had happened in other times and other places, almost to stop living where you were and start living in other places or other times. Movies became a huge industry, became how people envisioned themselves and the world, defined what they desired and what was desirable. The Russian film director Andrei Tarkovsky thought that time itself, "time lost or spent or not yet had," was what people desired and fed upon in the films that became a collective dreamworld inhabited by multitudes. It all began with photographs of a horse in California.

Occident, the horse that Muybridge photographed in 1872, was one of the fastest trotting horses in the country. At that time trotting races were a

national passion, and the great trotters were more celebrated than horses that ran their races. Occident belonged to Leland Stanford, who had brought speed to the country in a far more dramatic way, as one of the four masterminds of the transcontinental railroad completed three years earlier. Once, the North American continent had taken months to cross, and the passage was arduous and perilous. In the decade before the railroad the time had been whittled down to six or seven grueling weeks, barring accidents. With the completion of the railroad those three thousand miles of desert, mountain, prairie, and forest could be comfortably crossed in under a week. No space so vast had ever been shrunk so dramatically. The transcontinental railroad changed the scale of the earth itself, diminishing the time it took to circumnavigate the globe. Walt Whitman hailed it as the long-dreamed-of "Passage to India."

The railroad had utterly transformed its builders too, into multimillionaires, buyers of estates, commissioners of paintings and photographs, corrupters of politicians, controllers of much of California, managers of one of the most powerful monopolies this country has ever seen. Stanford was the president of their company, the Central Pacific Railroad, and its most visible figure. Governor, senator, thief on a grand scale, he also became a philanthropist on a grand scale with the establishment of Stanford University on the grounds of his vast country estate forty miles south of San Francisco, the site where Muybridge perfected his motion-study technology in the late 1870s. His sponsorship of Muybridge was his first venture into scientific research for its own sake. Stanford University carried and carries on this venture with a hybrid of commercial and pure research that continues to change the world. Like other immensely powerful men, Stanford affected the world indirectly. In person he seems to have been ponderous and a little dull, a respectable effect he may have cultivated, but his impact was, to use a term of the time, electrifying. Spatial changes on a continental scale, technological innovations, influences on national policy and the national economy, the thousands of men who worked for him, the vast edifices and institutions that arose under his direction, and the countless lives he affected are his real expression. His support and encouragement of Muybridge is not the least of these impersonal effects.

In the spring of 1872, a man photographed a horse. Stanford commissioned the photographs in the hope



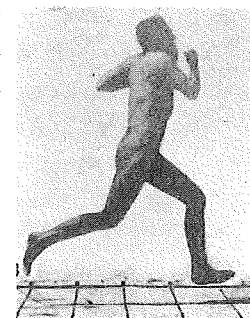
that they would solve a debate about whether a trotting horse ever has all four feet off the ground at a time. Muybridge's first photographs gave an affirmative answer to that minor scientific question, but by later in the decade he realized that the project had broader possibilities and got Stanford to underwrite his development of them. He told an associate he was going to "revolutionize photography" with the technique he developed, and he did. The story of what Muybridge accomplished with Stanford's support is a peculiarly California story. Much has been written about the artistic and literary modernism that was born in Paris, but only high culture was born there, though that high culture was a response to the pervasive alienations and liberations brought by industrialization. Another part of the modern world came from California, and this part was and is an amalgamation of technology, entertainment, and what gets called lifestyle that became part of everyday life for more and more people around the world and a form of industrialization itself. Perhaps because California has no past—no past, at least, that it is willing to remember—it has always been peculiarly adept at trailblazing the future. We live in the future launched there.

If one wanted to find an absolute beginning point, a creation story, for California's two greatest transformations of the world, these experiments with horse and camera would be it. Out of these first lost snapshots eventually came a world-changing industry, and out of the many places where movies are made, one particular place: Hollywood. The man who owned the horse and sponsored the project believed in the union of science and business and founded the university that much later generated another industry identified, like Hollywood, by its central place: Silicon Valley. Hollywood and Silicon Valley became, long after these men died, the two industries California is most identified with, the two that changed the world. They changed it, are changing it, from a world of places and materials to a world of representations and information, a world of vastly greater reach and less solid grounding. Muybridge's life before those eight years of the California motion studies was a preparation for that phenomenal productivity; his life afterward only polished, promoted, and enlarged upon what he had accomplished in those years. This book is about those years that followed upon that encounter between photographer and racehorse and about that man who seems in retrospect like a bullet shot through a book. His trajectory ripped through all the central stories of his time—the rela-

tionship to the natural world and the industrialization of the human world, the Indian wars, the new technologies and their impact on perception and consciousness. He is the man who split the second, as dramatic and far-reaching an action as the splitting of the atom.

Muybridge was forty-two when he began the motion studies, and he had been traveling toward this achievement down a circuitous path. He had been born Edward James Muggeridge on a street in Kingston-upon-Thames paralleling the banks of the Thames, not far upriver from London, on April 9, 1830. An ancient market town, Kingston had a millennium earlier been the place where seven Saxon kings of England were crowned. The lump of sandstone said to be their coronation stone was, with great ceremony, rescued from its long role as a mounting block and raised on a pedestal in the center of town in 1850. On the pedestal below this molar-shaped stone were carved the names of those kings, including two Eadweards. Though Muybridge wouldn't change his first name to Eadweard until his visit to England in 1882, he likely derived it from this monument (he changed his surname twice, to Muygridge in the 1850s and to Muybridge in the 1860s).

His own birthplace and childhood home was a row house only a few dozen feet away from the coronation stone, on the other side of one of the oldest surviving road bridges in Britain, a twelfth-century bridge across a small tributary of the Thames on which locals liked to idle and gossip. At the time, the town's buildings and pace of life seemed hardly changed over centuries: the mayor walked to church amid a procession every Sunday, the market square bustled, a night watchman patrolled the streets, locals got their water from the town pump and their beer from the many public houses. Muybridge's father, John Muggeridge, was a merchant dealing in grain and coal, and the ground floor of the family home had a wide entrance for horses and wagons to come through with their loads. John and Susan Muggeridge and their four sons lived above, in compact rooms whose back windows looked out onto the broad Thames itself, and some of the family business must have been conducted by barge. Like Stanford, Muybridge was born into a quiet commercial family in a provincial town, and like Stanford had he stayed where he was he might have lived and died having made hardly a ripple in history. It



was California that set them free to become more influential than they could have imagined. Or California and the changing world around them, for their fame was achieved by taking hold of those changes and pushing them farther. The year of Muybridge's birth and the years of his childhood saw a set of inventions and discoveries that set the stage for his own.

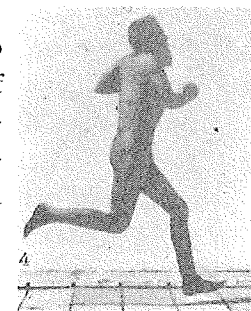
John Muggeridge died in 1843, and like her mother before her Susan Muggeridge took over her husband's business and seems to have run it successfully, for in 1845 the corn and coal business was listed in her name. Muybridge's grandfather Edward Smith had died when his wife, Susannah Norman Smith, was pregnant with her ninth child. She assumed command of his flourishing barge business and ran it successfully until she passed it on to her older sons, and she presided regally over her large family and larger workforce for decades afterward. When Susannah Smith died at a great age in 1870, she owned more than a dozen houses and considerable other property, though the barge business with its stables of powerful horses seems to have unraveled. Barges had transformed the transport of goods in England before railroads arrived, and the manmade canals built in the late eighteenth and early nineteenth century to accommodate them had transformed the English landscape. Before, most communities had relied largely on local materials for building supplies, provisions, and other materials. Roads were bad and sometimes dangerous, horses were expensive, and each village and town lived in a kind of isolation hard to imagine now. Most people who wanted to get somewhere walked, and many lived and died having never gone farther than a day's walk from home. By the early nineteenth century a carefully coordinated stagecoach system with horses changed every dozen miles or so brought traveling speeds up to ten miles an hour for those who could afford its exorbitant charges, and the coaches seemed reckless and godlike in their swiftness.

Goods moved on barges along canals dug into the landscape, and the barges themselves were a slow-moving business. Muybridge's cousin Maybanke Susannah Anderson recalled that when their grandfather Edward Smith "drove in his gig to London, to buy wheat or coal, he took under the seat of his gig, a carrier pigeon, and in his pocket a quill or two, and when he bought a cargo, he wrote on a small piece of paper the number of barges he needed, put the paper in the quill, tied it under the wing of the pigeon and set it free. Someone watching for the bird's arrival unfastened the quill, took the message to the barges, and they started." Pigeons were the fastest

communications technology; horses were the fastest transportation technology; the barges moved at the speed of the river or the pace of the horses that pulled them along the canals. Nature itself was the limit of speed: humans could only harness water, wind, birds, beasts. Born into this almost mediocrally slow world, the impatient, ambitious, inventive Muybridge would leave it and link himself instead to the fastest and newest technologies of the day. But that world was already being transformed profoundly.

On September 15, 1830, less than six months after Muybridge's birth, the first passenger railroad opened. The celebrated young actress Fanny Kemble had been given a preview of the Manchester and Liverpool Railroad that August. In a letter to a friend she exclaimed, "The engine . . . set off at its utmost speed, thirty-five miles an hour, swifter than a bird flies (for they tried the experiment with a snipe). You cannot conceive what that sensation of cutting the air was; the motion is as smooth as possible too. I could have either read or written; and as it was, I stood up, and with my bonnet off 'drank the air before me.' . . . When I closed my eyes this sensation of flying was quite delightful, and strange beyond description." Thirty-five miles an hour was nearly as fast as the fastest horse, and unlike a gallop, it could be sustained almost indefinitely. It was a dizzying speed. Passengers found the landscape out the train windows was blurred, impossible to contemplate, erased by speeds that would now seem a slow crawl to us. Those who watched the trains approach sometimes thought they were physically getting larger, because the perceptual change in a large object approaching at that speed was an unprecedented phenomenon. Ulysses S. Grant remembered riding on one of the early railroads in Pennsylvania in 1839 with the same amazement that most early travelers recorded: "We traveled at least eighteen miles an hour when at full speed, and made the whole distance averaging as much as twelve miles an hour. This seemed like annihilating space." If distance was measured in time, then the world had suddenly begun to shrink; places connected by railroads were, for all practical purposes, several times closer to each other than they ever had been.

At the railroad's official opening, Kemble returned to ride with her mother, who was "frightened to death" of "a situation which appeared to her to threaten with instant annihilation herself and all her traveling companions." That celebration of a thousand passengers and



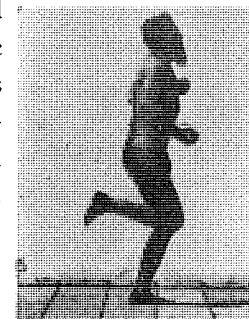
almost a million onlookers along the route was interrupted by an actual annihilation, the death of the progressive Tory politician William Huskisson. At a stop to take on water for the steam engines, Huskisson got out to stretch and was hit by an oncoming train. It is hard to imagine today the reflexes and responses that made it impossible to step away from a noisy locomotive going perhaps thirty miles an hour, but Huskisson could not. His leg was run over and crushed. Though the duke of Wellington applied a tourniquet to prevent him from bleeding to death on the spot, he died that evening. In Manchester the duke, who had been the hero of the battle of Waterloo and was now the prime minister preventing the democratization of voting, was greeted with angry cries of "Remember Peterloo." The railroad cars had to retreat hastily. It was no coincidence that the first railroad linked two of the Industrial Revolution's primary sites or that the Manchester workers linked the duke and the new technology to the 1819 Peterloo massacre of workers demanding reform. Industrial workers saw the new market economy as bleak and brutal, and they launched a powerful reform movement in the 1830s to gain a voice in it. The agricultural economy was as grim: the Captain Swing riots in the south of England that season of the first passenger railroad's opening protested starvation wages and wrecked reaping machines. An old order had vanished, to be replaced not by a new one but by turbulence and continual change.

Long afterward, Kemble called this railroad "the first mesh of that amazing iron net which now covers the whole surface of England and all the civilized portions of the earth." The Industrial Revolution preceded railroads, but railroads magnified its effects and possibilities unfathomably, and these roaring, puffing machines came to seem that revolution incarnate. Often compared to dragons, they devoured coal and iron in unprecedented quantities, spreading mines and mills wherever they went. In the United States, they ran on wood, and whole forests were fed into their boilers, as though the landscape itself were being devoured by speed. Railroads made possible the consolidation of industries and the industrialization of traditional activities. The fast, cheap transport of goods meant that a town could be given over to shoe-making or beer-making, a whole region to cattle raising or wheatgrowing, and people grew used to depending upon commodities that seemed to come from nowhere. The New England philosopher Ralph Waldo Emerson opined in 1844, "Not only is distance annihilated, but when, as now, the locomotive and the steamboat, like

enormous shuttles, shoot every day across the thousand various threads of national descent and employment, and bind them fast in one web, an hourly assimilation goes forward and there is no danger that local peculiarities and hostilities should be preserved." He saw the network of railroads undoing the local character of every place and approved of the erasure. People were being drawn out of their small familiar worlds into one more free, less personal, in which the associations that once attached to each person, place, and object came undone. It was a leap forward of extraordinary liberation and equal alienation.

Grant and Emerson were sounding variations on one of the stock phrases of the day, "the annihilation of time and space," which was applied over and over to railroads and other new technologies. "Annihilating time and space" is what most new technologies aspire to do: technology regards the very terms of our bodily existence as burdensome. Annihilating time and space most directly means accelerating communications and transportation. The domestication of the horse and the invention of the wheel sped up the rate and volume of transit; the invention of writing made it possible for stories to reach farther across time and space than their tellers and stay more stable than memory; and new communications, reproduction, and transportation technologies only continue the process. What distinguishes a technological world is that the terms of nature are obscured; one need not live quite in the present or the local.

Between the time of the Roman Empire and the dawn of the industrial age, wheel-drawn transportation, roads, and ships were improved, but only the printing press made a major alteration in means. Afterward, the devices for such annihilation poured forth faster and faster, as though inventiveness and impatience had sped and multiplied too. Nothing annihilated more dramatically than railroads. As people and goods traveled more frequently and farther, experience was standardized. Distance had always been roughly measurable in time, the stable time of human or equine locomotion, but the railroad transformed those equations, shortening the time and thereby seeming to decrease the distance. The world began to shrink, and local differences to dissipate. People could go much farther because places were not, in terms of time, so far apart, nor was travel so expensive. Distance was relative; a technological infrastructure could shrink it spectacularly. Early in the twentieth century,





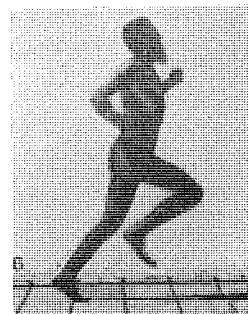
Rock Cut Between Promontory and Blue Creek, from the series *The Central Pacific Railroad*, ca. 1869 (one frame of stereo).

when Albert Einstein reached for metaphors to explain his theory of relativity, he repeatedly seized upon the image of a train running across the landscape, a train whose passengers were experiencing time differently than those on the ground.

Railroads transformed the experience of nature, and they transformed the landscape itself. Kemble had been amazed by the cuttings, tunnels and viaducts that leveled the route of the Manchester and Liverpool Railroad, raising the train far above and dropping it below the surface of the earth. "I felt as if no fairy tale was ever half so wonderful as what I saw," she said. Amateur geologists found a rich resource in the railroad cuttings that laid

bare Britain's rock and fossils. Geology was the key science of the Victorian era, as physics was of the modern era and perhaps genetics is today, and in that era geology texts sometimes outsold popular novels. One such book was Charles Lyell's *Principles of Geology*, whose first volume was published the year of Muybridge's birth and Kemble's ride. Geologists had begun to debate the age of the earth. Bible scholars asserted that the earth was only about six thousand years old. Its rocks suggested a far greater age to those who studied them, but they did not agree among themselves how old. Catastrophists argued for a comparatively young earth in which forces far more violent than those presently at work had wrenched and welded its topography, and some still claimed Noah's flood had placed aquatic fossils in the heights. The uniformitarians believed that earthquakes, volcanoes, erosion, and other forces still at work must have gradually shaped the earth, and it must be far more ancient than had ever been imagined. Lyell had gone to Sicily to study Mount Etna and concluded that its massive cone was the result of aeons of small eruptions, and that cone sat atop relatively young rocks. His uniformitarian *Principles* portrayed an earth whose age was in the millions of years.

The railroad shrank space through the speed of its motion. Geology expanded time through the slowness of its processes and the profundity of its changes. When they subscribed to the old biblical scale of time, human beings seem to have marched as confidently as elephants, sure they were center stage in a drama whose beginning and end were near at hand and whose set changes were slight. In the new industrial and scientific sense of time, they swarmed and darted like insects, quick but uncertain of their place in a cavalcade of unimaginable length. Expelled from the cozy millennia of biblical time, Lyell's wide audience found itself on a vast plateau of millions of years of geological time. As his colleague George Poulette Scrope put it in 1829, "The periods which to our narrow apprehension . . . appear of incalculable duration, are in all probability but trifles in the calendar of Nature. It is Geology that, above all other sciences, makes us acquainted with this important though humiliating fact. . . . The leading idea which is present in all our researches, and which accompanies every fresh observation, the sound to which the student of Nature seems continually echoed from every part of her works, is—Time! Time! Time!" It was geology, specifically Lyell's



book that he took with him on the *Beagle's* sail around the world from 1831 to 1836, that would lead Charles Darwin to his theory of evolution, and that theory would further transform the place of human beings on the stage of life, more distant from God and closer to the other species. Muybridge, by photographing human beings as "animals in motion" among other animals, took a Darwinian stance.

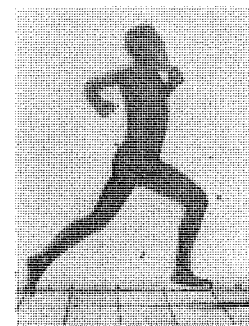
At the far end of the decade of the railroad's arrival came a third great transformer of time: photography. The Industrial Revolution is most often represented by the bleak textile mills of the British Midlands. But the same steam engines that drove the factories drove the railroads, and though railroads required mines and manufactories, they themselves produced exhilarating effects. Photography is equally a technology of its time, but it generated few such impositions on the landscape or on workers; it was an artisan's technology (though photographic factories came into existence by the late nineteenth century, and every version of the medium has involved toxic chemicals, starting with mercury and cyanide). It did not impose itself on the world but interpreted it, transporting appearance as the railroad transported matter. As a technology, it requires a very different argument about effects and merits than the heavy-duty icons of the Industrial Revolution. For if railroads and photography had one thing in common, it is that they brought the world closer for those who rode or looked. While the dull, repetitive toil of the factories seemed like slavery, these technologies often seemed liberatory.

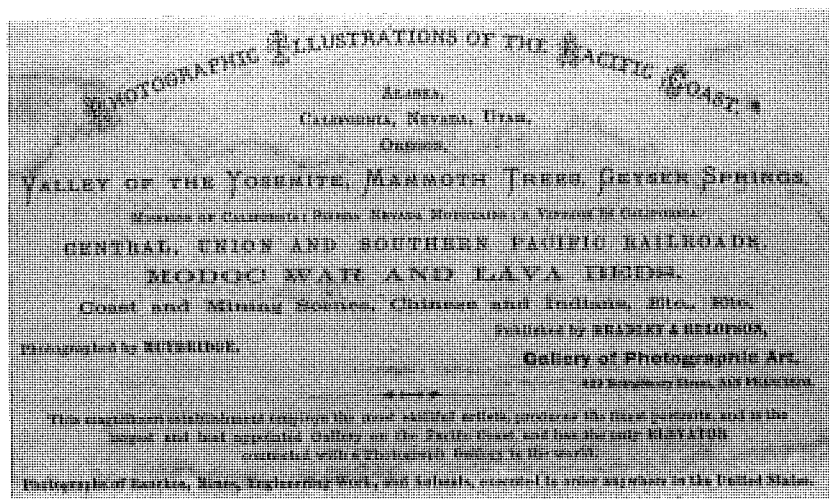
The brothers Nicéphore and Claude Niepce had begun working on the chemistry of photography in the teens, as had Louis-Jacques-Mandé Daguerre in the 1820s, while the Englishman William Henry Fox Talbot took up the challenge in 1833. Just as the date that counts for the railroad is not that of the invention of the steam engine or the railroad track or the locomotives hauling coal in remote mines, but the date that railroads began to transform public experience, so photography was nothing but a desire, a few premature announcements, and a few faint images before January 7, 1839. That day, Daguerre publicly announced his invention of the photographic method he called daguerreotypy, prompting Talbot to rush to announce his own breakthrough later that January. (In much the same way, the American painter Samuel F. B. Morse and the Englishmen William Fothergill Cooke and Charles Wheatstone invented electric telegraphy at

virtually the same time in the early 1840s, and Darwin overcame his long reluctance to announce his conclusions about evolution when Alfred Russel Wallace announced similar conclusions in 1858.)

Photography was in the air. The hope of making images mechanically rather than manually was widespread, and so was the knowledge of the light-sensitive chemicals and the basic principles of the camera obscura, or dark chamber, whose small aperture casts an image of the outside view within its walls. Photography arose out of the desire to fix the two-dimensional image that the camera obscura created from the visible world, to hold onto light and shadow. That desire was compounded of many elements. There was the enormous value placed on realistic images and accurate representations as part of the European embrace of the empirical and the expansion of knowledge and power (a society whose art was abstract or symbolic and whose goal was stasis might never crave this verisimilitude). There was the tendency to replace the activities of the hand by machines, just as the railroad replaced the actions of the traveling foot. And there was the restlessness that characterized modern European and then American society, always willing to overturn what is for what might be, that restlessness of exploration, colonialism, science, and invention, of originality and individualism, the restlessness that regarded the unknown as a challenge rather than a danger, time as something to speed up or speed through. Photography may have been its most paradoxical invention: a technological breakthrough for holding onto the past, a technology always rushing forward, always looking backward.

Photography did not appear all at once as we know it now. Talbot's process, the almost-universal method of photography since the 1850s, produced a negative image and the possibility of printing multiple positives from that negative. But it was Daguerre's process that dominated the first decade of photography. Daguerre had found a way to make direct positive images on polished plates. Each daguerreotype was unique, since there was no negative and no printing, and the images were small and elusive. The mirrored surface that at one angle showed the image at another showed the viewer looking at the image; it seemed phantasmagorical in a way paper prints would not. Compared to painting, early photography was astonishingly fast, but it required exposures from dozens of seconds to several minutes. Morse, who was in





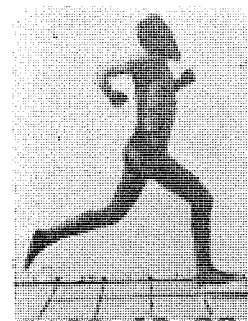
Verso of one of Muybridge's stereo cards, ca. 1873-74.

Paris the spring of Daguerre's announcement, wrote back to New York of the new invention, "Objects moving are not impressed. The Boulevard, so constantly filled with a moving throng of pedestrians and carriages, was perfectly solitary, except for an individual who was having his boots brushed. His feet were compelled, of course, to be stationary for some time, one being on the box of the boot-black and the other on the ground. Consequently his boots and legs were well defined, but he is without body or head, because these were in motion." This man having his shoes polished and the blurry bootblack were the first human beings photographed, and it is eerie to look at them apparently alone, but really surrounded by scores who vanished into speed. Photography was faster than painting, but it could only portray the slow world or the still world. People sat for their portraits with braces to hold their heads steady, and in those old portraits fidgeting children are often a blur. Landscapes were photographed on windless days when the leaves wouldn't move and the water was smooth. The bustling nineteenth century had to come to a halt for the camera, until Muybridge and his motion studies.

Even so, photography was a profound transformation of the world it entered. Before, every face, every place, every event, had been unique, seen only once and then lost forever among the changes of age, light, time. The past existed only in memory and interpretation, and the world beyond

one's own experience was mostly stories. The rich could commission paintings, the less rich could buy prints, but a photograph reproduced its subject with an immediacy and accuracy art made by hand lacked, and by the 1850s it offered the possibility of mass reproductions, images for everyone. Every photograph was a moment snatched from the river of time. Every photograph was a piece of evidence from the event itself, a material witness. The youthful face of a beloved could be looked at decades after age or death or separation had removed that face, could be possessed like an object. Daguerreotypes, which were soon sold in elaborately molded cases with cut-velvet linings facing the image that sat within, were alluring objects. Soon countless thousands were lining up to possess images of themselves, their families, their dead children, to own the past. Most daguerreotypes reached out in time to make familiar faces permanent possessions; it was only when the later photographic processes arrived on the scene that photography extended its grasp in space as it had in time. The images piled up, and photography became an industry too. The world was growing larger and more complicated, and photography was both an agent of this enlargement and a device for trying to sort it all out, to own it, to make it manageable. Photography had frozen the river of time, but a torrent of photographs began to pour from the photography studios into homes, pockets, albums, photographs of pyramids, empresses, streets, poets, cathedrals, trees, actors.

Five years after photography, one more technology, telegraphy, arrived to transform time. Telegraph messages traveled almost instantly as electrical impulses over the wires, a technology that telephones and the Internet would only elaborate. "This is indeed the annihilation of space," the *Philadelphia Ledger* exclaimed over the first long-distance telegram in the United States. Many of the early telegraphic lines followed the railroad tracks, and they replaced the railroad as the fastest communications technology. News, words, data, were dematerialized and almost instantaneous wherever the telegraph wires were strung. The distance between places that had once been measured at ten miles an hour or less was wavering, drawing closer, almost dissolving. Karl Marx took up that catchphrase of the day when he wrote, "Capital must on the one side strive to tear down every spatial barrier to intercourse, i.e., to exchange, and conquer the whole earth for its market. It strives on the



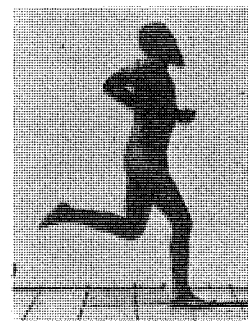
other hand to annihilate this space with time, i.e., to reduce to a minimum the time spent in motion from one place to another." In other words, the more capitalism shrinks space and speeds up time, the more it can profit. In Marx's view, capitalism itself was the engine of the annihilation of time and space, the locomotive its tangible form, and time and space were being annihilated to increase profits. This led to the formation of ever-vaster fortunes and the first modern corporations, even the stock markets whose first major stocks were railroad shares. Capitalism, stocks, corporations, transformed the labor of workers and the materials of the world into that abstraction profit. Labor and materials were themselves abstracted as the one went into the factory to become a series of simple repetitive gestures rather than an authorship of objects, and the objects themselves came to be bought and used by people more and more remote from the process of their making. But these changes also transformed the way everyone touched by the technologies perceived time and space. To use railroad terms, the engine of this cultural and perceptual change was economic.

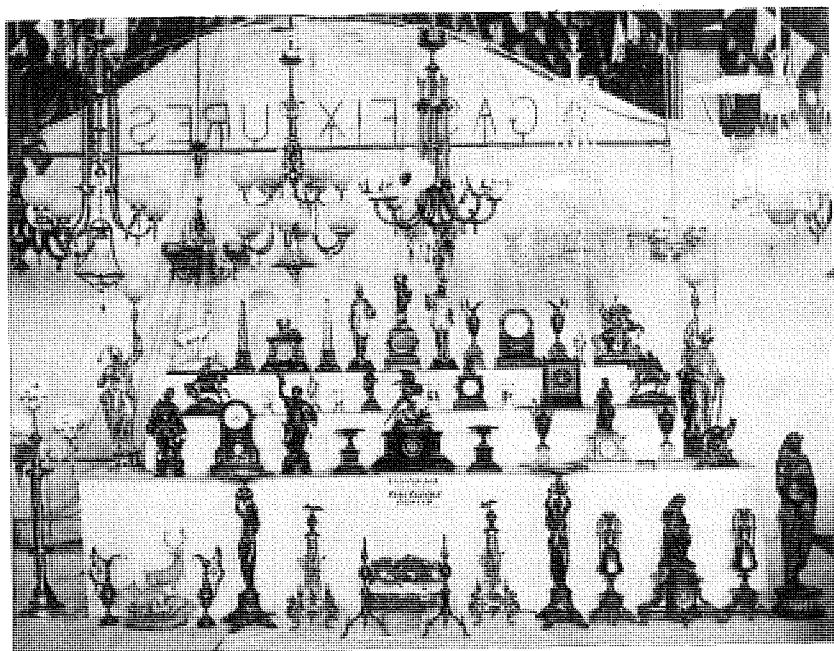
Before the new technologies and ideas, time was a river in which human beings were immersed, moving steadily on the current, never faster than the speeds of nature—of currents, of wind, of muscles. Trains liberated them from the flow of the river, or isolated them from it. Photography appears on this scene as though someone had found a way to freeze the water of passing time; appearances that were once as fluid as water running through one's fingers became solid objects. Through the nineteenth century, as Darwin worked out his theories about literal evolution, it is as though consciousness evolved from something utterly immersed in this river to something that clambered onto land. There the atmosphere was thinner, the view was farther, and no current forced these mutating Victorians to move at a set pace—but no water bore them up and carried them along either. And there was no going back. The art of the hand had been replaced by the machinery of the camera; the travel of the foot, human or equine, had been replaced by the pistons of the locomotive; bodies themselves were becoming insulated from nature by machinery and manufactured goods; and memory had been augmented and partly replaced by photography, that freezing eye whose gaze soon reached the corners of the world. Appearances were permanent, information was instantaneous, travel exceeded the fastest speed of bird, beast, and man. It was no longer a

natural world in the sense it always had been, and human beings were no longer contained within nature.

Time itself had been of a different texture, a different pace, in the world Muybridge was born into. It had not yet become a scarce commodity to be measured out in ever smaller increments as clocks acquired second hands, as watches became more affordable mass-market commodities, as exacting schedules began to intrude into more and more activities. Only prayer had been precisely scheduled in the old society, and church bells had been the primary source of time measurement. In the preindustrial world, most work was agricultural, and the time of the year mattered more, the time of day less. Work was done according to task and available light, and tasks varied from season to season. People worked for themselves or worked with masters who were, for better or worse, more than employers. The new age, with its factories and mobilities, its industrial scale, was to be impersonal as nothing had been before. Tightly enforced schedules came in with the factories whose owners sought to calibrate human labor to machine labor, the machine labor that was speeding up the production of goods, thereby speeding up the raking in of profits, the consumption of raw materials, and on and on—a runaway train of consumption driving production driving consumption. It was these factories and railroads that made knowing the exact time important, that launched the modern world of schedules and bustle. Goods increased in abundance as, for example, Manchester mills generated cheap cotton fabric, but time was becoming scarcer—literally so for workers putting in fourteen-hour days at the mills and slaves growing cotton on the other side of the Atlantic, apparently so for those in the rush of the growing cities, the greater variety of experiences, publications, images, the hectic greed of that era.

The railroad, the photograph, the telegraph, were technologies for being elsewhere in time and space, for pushing away the here and now. They made the vast expanses not so vast, the passage of time not quite so unrelenting. They were celebrated for the very real powers and pleasures they supplied, the real isolations and inconveniences they undid. But there were doubts too about what Thomas Carlyle in 1829 called the Mechanical Age, and the literature of the time is full of it. Hans Christian Andersen's 1844 tale "The Nightingale" compared the drab, independent-minded real nightingale with its bejeweled me-





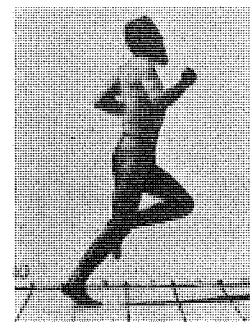
Thomas Day, Importer of Gas Fixtures, French Clocks, Fine Bronzes, etc., San Francisco. A fine example of Muybridge's commercial work.

chanical imitation, which sang the same waltz over and over. The court music master approved of the machine's predictability: "For you must perceive, my chief lord and emperor, that with a real nightingale we can never tell what is going to be sung, but with this bird everything is settled. It can be opened and explained, so that people may understand how the waltzes are formed, and why one note follows upon another." But it is the mechanical nightingale that grinds to a halt and finally fails the dying emperor because there is no one to wind it up. The live nightingale returns to sing the emperor back to life, out of an affection beyond the abilities of a machine. In a similar vein, Nathaniel Hawthorne's grimly comic short story of 1846, "The Celestial Railroad," sent a group of pilgrims by railroad across the landscape of the great spiritual allegory *The Pilgrim's Progress*. The harsh terrain John Bunyan's Pilgrim had trod on foot sped by pleasantly, but the train ended up in hell rather than paradise. The old world, Hawthorne seemed to argue, was arduous, but it knew where it was going, and it went the slow, sure way. Machines made life easier, faster, more predictable, but

they led away from an integrity that people missed from the beginning. It is said that on the first day of fighting in Paris's July Revolution of 1830, the clocks in the towers were fired on simultaneously and independently from several points. The destruction of machinery would be a hallmark of resistance to industrial regimentation and industrial time up through the nationwide railroad riots of 1877, which involved Stanford and, less directly, Muybridge.

Each event and thought itself must have been experienced at a radically different pace—what was slow then was slower than we could now tolerate, slower than we could pay attention to; while the speed of our own lives would have gone by them like the blur of speed before Muybridge's images or been as invisible as the passersby in that first photograph of the Parisian boulevard Morse described. Distance had a profundity that cannot be imagined now: a relative who had moved a hundred or a thousand miles away often seemed to have dropped over the horizon, never to be seen again, and travel for its own sake was rare. In some psychological and spiritual way, we became a different species operating at a different pace, as though tortoises became mayflies. We see much they did not, and can never see as they did. In 1860, George Eliot mourned the transformation of time with an aside in a novel: "Ingenious philosophers tell you, perhaps, that the great work of the steam-engine is to create leisure for mankind. Do not believe them; it only creates a vacuum for eager thought to rush in. Even idleness is eager now—eager for amusement, prone to excursion-trains, art-museums, periodical literature, and exciting novels; prone even to scientific theorizing and cursory peeps through microscopes."

Out the train window, the landscape disappeared into a blur; traveling was no longer an encounter, however awkward and dangerous, but a transport. It was as though the world itself was growing less substantial, and though some doubted the value of the change, many celebrated it. The year before Eliot mourned leisure, the essayist and judge Oliver Wendell Holmes exulted over the way photographs of the material world seemed to eclipse their subjects: "Form is henceforth divorced from matter. In fact, matter as a visible object is of no great use any longer, except as the mould on which form is shaped. Give us a few negatives of a thing worth seeing, taken from different points of view, and that is all we want of it. Pull it down or burn it up, if you please. . . .



Matter in large masses must always be fixed and dear; form is cheap and transportable. We have got the fruit of creation now, and need not trouble ourselves with the core." In Holmes's account, this dematerialization was liberatory. "Everything that is solid dissolves into air," said Marx of that uncertain era, and Holmes thought that dissolving into air was wonderful, that his generation would rise up like birds into that thinner medium, with a new freedom to see the whole glorious nineteenth-century world as a bird in flight might see it, as small pictures of things far away.

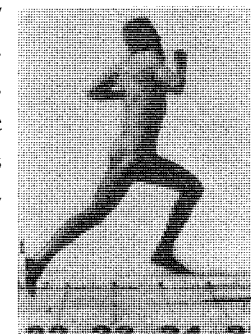
Photographic reproduction would make the world's images and experiences as available as the Manchester mills made cotton fabric. It's not hard to see ahead from Holmes's vision of the photographic revolution to cable television with its torrents of nature documentaries and news reports, comedies and advertisements, but behind it lay the hunger and ignorance of a world where images and information were scarce. One way to describe this transformation of the world whose great accelerations came in the 1830s, the 1870s, and the age of the computer is as increasing abstraction. Those carried along on technology's currents were less connected to local places, to the earth itself, to the limitations of the body and biology, to the malleability of memory and imagination. They were moving into a world where places were being homogenized, where a network of machines and the corporations behind them were dispelling the independence of wilderness, of remoteness, of local culture, a world that was experienced more and more as information and images. It was as though they sacrificed the near to gain the far.

There was no simple dichotomy, however, between nature's pace and the railroad, between images and the natural realm of the senses. It was not long before railroad lines were being built to take people into the landscape for scenic excursions and cameras were being used to make landscape photographs. It is as though the Victorians were striving to recover the sense of place they had lost when their lives accelerated, when they became disembodied. They craved landscape and nature with an anxious intensity no one has had before or since, though they pursued it in new ways: with microscopes and rock hammers, with guidebooks and cameras, with railroad excursions and collections of specimens. They filled their houses with pictures of places, but even the close-ups were often as not of places far away. The ideal landscape seemed formed of a wholeness that was no longer theirs. They looked for this wholeness as a place, and so

mostly do we. These histories suggest nature was equally a kind of time or a pace, the pace of a person walking, of water flowing in a river, of seasons, of time told from the sky rather than electrical signals. Natural meant not where you were but how you moved through it, and a woman drifting across London on foot could attain certain harmonies not available to those speeding across the prairie on the express train. But the Victorian age had launched a juggernaut, and slowing down was the single thing hardest to do.

This is the paradox of Muybridge's work. He was using his state-of-the-art equipment to feed that ravenous appetite for place, for time, for bodies. He had turned his back on the slow world of his grandfather's barges and pigeons to embrace the new railroad and photographic technology, and with electricity and chemistry he made the latter faster than ever before. But his work is largely a collection of striking still images of the settlements and wilderness of the West through the mid-1870s, then an avalanche of images of bodies, the bodies of horses, then men, then women, children, camels, lions, vultures, reenacting their most familiar gestures. His inventive technology was depicting the place and the bodies that seemed ever more alienated by technological change, as though what had been lost as direct experience could be, just as Holmes dreamed, recovered as imagery. The speed of Muybridge's invention allowed real motions to be recovered at their own pace, though watching them meant stepping out of one's own time. If the experience that was vanishing can be summed up as a person standing alone in a landscape, then photography and, subsequently, film would offer images of that experience. The very essence of that solitary experience in the landscape, however, was its immediacy, its situation in a resonant here and now, while representations are always about there and then, a substitute, a reminder. Yet Muybridge spent much of his adulthood in some version of that experience, photographing the landscape for the market.

In the spring of 1872 a man photographed a horse. With the motion studies that resulted it was as though he were returning bodies themselves to those who craved them—not bodies as they might daily be experienced, bodies as sensations of gravity, fatigue, strength, pleasure, but bodies become weightless images, bodies dissected and reconstructed by light and machine and fantasy. The movements of horses dismayed artists and amused members of the public when Muybridge's in-



stantaneous photographs revealed them as much more complex and ungainly than the rocking-horse gallopers in paintings. Then he offered his audience of scientists, artists, dignitaries, and connoisseurs the whole world of everyday gesture back. Those gestures—a gymnast turning a somersault in midair, a nude pouring water—were unfamiliar and eerie stopped because they showed what had always been present but never seen. Set into motion, they were uncanny another way when they undid the familiar distinction between representations, which did not move, and life that did. Through the new technologies—the train to the landscape, the camera to the spectacle—the Victorians were trying to find their way back, but where they had lost the old familiar things they recovered exotic new ones. What they had lost was solid; what they gained was made out of air. That exotic new world of images speeding by would become the true home of those who spent their Saturdays watching images beamed across the darkness of the movie theater, then their evenings watching images beamed through the atmosphere and brought home into a box like a camera obscura or a crystal ball, then their waking hours surfing the Internet wired like the old telegraph system. Muybridge was a doorway, a pivot between that old world and ours, and to follow him is to follow the choices that got us here.

THE MAN WITH THE CLOUDY SKIES

Muybridge ■ Helios ■ Muybridge



THE END OF TIME

In the Modoc version, the world was once nothing but water, until the creator, Kamookumpts, reached down to the bottom of Tule Lake for a handful of mud. He sculpted the mud into the world around the lake and around himself. "He had shaped and decorated the world as a woman shapes and decorates a basket," said Evangeline Schonchin, the daughter of a Modoc rebel. At the center of the world he sculpted was his seat, the peninsular bluff on the southeast shore of Tule Lake. Around its base are more than five thousand petroglyphs of human and animal figures, of celestial bodies, circles, lines, and zigzags incised in the pale stone, an alphabet of images hard to read now. This wall of markings went straight into the water when the petroglyphs were carved, and the carvers must have approached by canoe. Perhaps they used the same kind of reed canoes as the Modocs did when they fled from Lost River at the north end of Tule Lake to the Lava Beds across the water, at the beginning of the Modoc War, the war that took the Modocs from the center of the world. It was California's most spectacular Indian war, and Muybridge was its official photographer.

There are things that are hard to photograph: guerrilla warfare, the end of an era, the meaning of a place. And there are things it is nearly impossible to photograph: the subtle workings of the human heart, the wandering paths desire and fury take, the bonds of love and blood that tie people together, the decisions that tear them apart, the way that the most unprepossessing landscape can become home and thus speak of stories, traditions, gods that strangers cannot decipher from the rocks and streams. The Modoc War posed a simpler problem, though the meaning of the terrain was part of it. From the first battle in the Lava Beds until nearly the end of the conflict, the U.S. Army fought an enemy so well hidden in the folds and crevices of the landscape that the Modocs might as well have been invisi-

Overleaf: *Toby (the Squaw Who Warned General Canby of His Impending Fate), and Four Old Modoc Squaws*, from the series *The Modoc War*, 1873 (one frame of stereo).

ble. Like Civil War photographers, Muybridge depicted no battles, no dramas unfolding, only soldiers in camp, civilians, battlefields, and backdrops, valuable information enough. He showed not a war unfolding but a war's raw ingredients: participants and locations. He appears to have been the first photographer the U.S. Army hired directly to document a war, and he produced its principal images, more than fifty stereoscopic images that were turned into *Harper's Weekly* magazine engravings, sold by Bradley and Rulofson, and later illustrated virtually every book on the subject.

It was his first major project since the Yosemite photographs. The news of his Yosemite and first motion-study pictures was announced in early April 1873; by the end of that month he had left San Francisco for the battlefields by train and then by horse in company with Captain Lydecker of the topographical engineers and Jefferson C. Davis, the commanding general of the *Columbia*. He photographed from, so far as the newspapers tell, May 2 to May 14 (and seems to have been in Sacramento beforehand, perhaps to wind up the first round of motion studies). The war was international news. Because of it, Joaquin Miller's *Life Amongst the Modocs* became a best-seller in England, and even the New York papers eagerly covered the story. "The wide spread and accurate knowledge" of the Modoc war's terrain and participants, Muybridge declared in one of his periodic fits of immodesty, "is due chiefly to the innumerable and valuable photographs" he had taken. Another photographer from the nearby town of Yreka, Louis Heller, got there before him and stuck around to make the photographs Muybridge missed, of the Modoc captives after the war was over.

Though the Lava Beds lacked Yosemite's vertical splendors, Muybridge seems to have found the landscape there to his taste. Muybridge was always a lover of tangles, thickets, and rubble-heaps, of complexity and texture. He photographed three versions of Schonchin Rock, a dark, dramatic outcropping, and made a five-stereoscope-card panorama of the Tule Lake shoreline with the army's tents like little white cones in the distance. He made another panorama of the Lava Beds themselves, twelve images that may constitute one of the most ambitious panoramas in stereo. In the fifty-six-page catalog of his work Bradley and Rulofson produced that year, the war is described not as a history but as a landscape: "The extraordinary system of natural fortifications known as the Lava Beds, are situated in the northern part of the state, on the borders of Oregon. A few miles to the south of Tule Lake are several extinct volcanoes, and from these the lava



Captain Jack's Cave in the Lava Beds, from the series *The Modoc War*, 1873 (one frame of stereo).

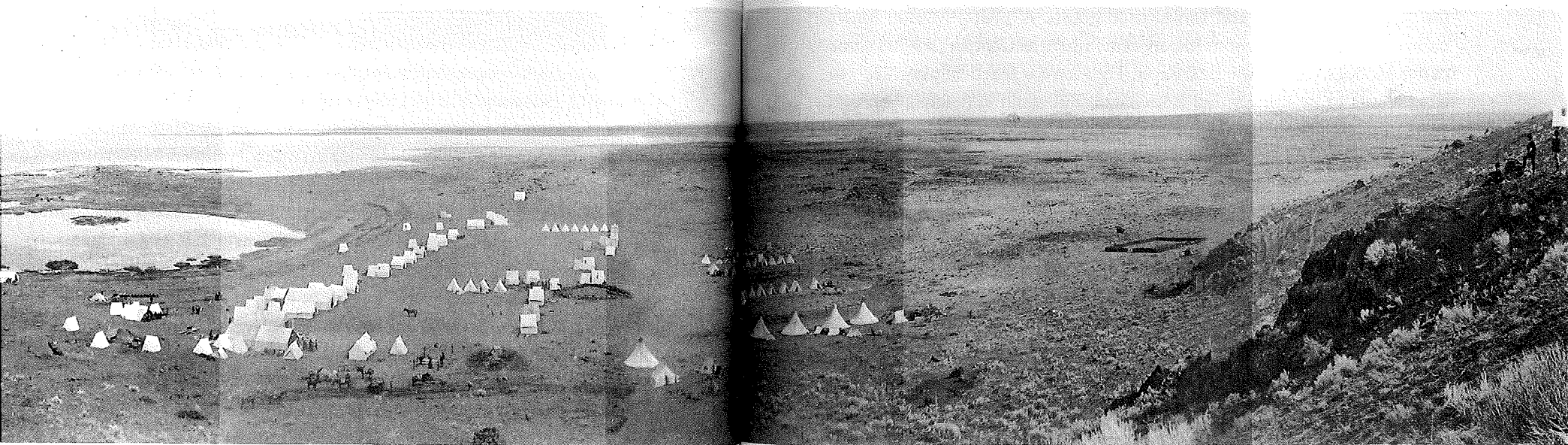
probably flowed, which, in cooling, formed upon its surface numerous fissures, caves and rugged valleys and channels, surrounded by natural walls. There are many channels connecting the rivers and lakes of the surrounding country." It was a landscape war. That is, it was a war over land, and it was a war in which the Modocs' profound knowledge of the lay of the land gave them one great advantage. They spent most of the war within sight of Petroglyph Point, in the labyrinthine Lava Beds on the south shore of Tule Lake, a shallow reed-fringed body of water beloved of waterfowl.

During the war, much of this band of ancient petroglyphs was probably underwater, but the bank swallows who live higher up this west-facing cliff must have carried on as though nothing had changed. Even now they fly in

and out of their nests, swooping and climbing through the clear air of this arid place as their shadows slide smoothly up and down the rough wall. The flight of the swallows and the steady sound of the wind make it possible to believe that nothing more than this ever happened in this region now known principally for the hundreds of bald eagles that winter in it. But the sound of artillery shells must have echoed from the cliff in 1873, and history didn't start then. Before the whites came, the Modocs warred with their neighbors, and they were fierce fighters. Like the Plains Indians, they were impacted by the guns and horses of white culture before whites were a significant presence in the area, and some sources say that in the quest to find something to trade for horses they began to capture neighboring tribespeople to sell into slavery. But in the Tule Lake region they had bounty enough to stay home for. The area is rich in fish, in game, particularly waterfowl, and in the camas bulbs, water-lily seeds, and other plants that furnished the staples of their diet. From almost anywhere in their pine-studded uplands and sagebrush valleys the snow-covered volcanic cone of Mount Shasta is visible, a fourteen-thousand-foot-high landmark that makes it hard to get lost here (the Lost River is thus named because the river itself disappears and reappears on its route from Clear Lake to Tule Lake). With their guns and horses, the Modoc had already

embraced the accelerations brought from Europe; what they were not ready for was the concomitant detachment from ritual time and intimate space that came as part of the package. The part they accepted made it easier for them to resist the rest—that is, they could fight with the guns and horses.

The Modoc War had an end on June 1, 1873, but its beginning is hard to trace. Was it inevitable from when the first fur trappers came through the area in the 1820s, or only after the gold rush, when whites began to settle the area in earnest? Massacres, revenges, white encroachments, Modoc resistance, mutual fears, and suspicions piled up like the bones beneath the hawk nests at Petroglyph Point. Something immensely valuable was at stake, but those defending it were not innocents, nor were the lines clearly drawn. The whites were intruders, but some became friends and allies of the Modocs and stayed that way even in the thick of the war. There were atrocities on both sides, and some on each side seemed to believe that harm done by any member of that race could be avenged on virtually any other member of that race. There were also marriages, acculturations, friendships; and many of the Modoc men and some of the women were given nicknames by their white neighbors. The government's translators during the Modoc War and trial were Toby Riddle and her white husband



Panorama of Lava Beds from Signal Station at Tule Lake, Camp South, from the series The Modoc War, 1873 (one frame each of five stereos).

Frank Riddle. More than thirty of Muybridge's fifty or so pictures of the Modoc war were of the landscape, but he photographed the strong-minded Toby Riddle twice, once with her bushy-bearded husband, once with, according to the caption, four "Old Modoc Squaws." The caption doesn't mention that Frank Riddle and Indian agent Oliver Applegate stand behind the five women. It's a strangely symmetrical image, the figures fixed and impassive like those on playing cards, a royal flush of Modoc women and two of a kind of frontiersmen. Three of the women are wearing the patterned basket hats of traditional Modoc women, though their dresses are calico, and Toby Riddle's and the fourth woman's neatly parted hair shines as smooth as water.

In 1864 the Modocs had been pushed, without a treaty, onto a reservation north of their homeland. The reservation was on Klamath land, and both Klamaths and Paiutes were settled there with the Modoc. As one Indian agent put it, it was expected that "the efforts of efficient and conscientious instructors will advance them rapidly in the customs, arts, and laws of civilization." But they had been set up to lose. Year after year, late frost killed the crops they were instructed to count on for sustenance; the timber mill that was supposed to provide income and building materials never worked right; the conscientious instructors were often little more than profiteers, and the Klamaths, traditional enemies of the Modocs, harassed the latter as squatters and unwelcome guests. A young Modoc leader named Kientpoos but whom history remembers as Captain Jack led some of the Modocs back to the Lost River. They left for practical purposes—to remain was to be hungry and humiliated. But again and again, through years of negotiations, they repeated that they wanted to live on their own land and no place else. Captain Jack and his people remained in their homeland for three years. At the end of 1869, Indian agent Alfred Meacham came to negotiate their return to the reservation, and the forty-three members of Jack's band reluctantly went back.

The Klamath resumed harassing the Modocs on the reservation, and in April 1870 Jack led 371 Modocs back to their land. About 130 more followed suit with Old Schonchin, another Modoc leader, and the Modocs began to move freely between the reservation and the Tule Lake region. Captain Jack obligingly offered to settle his people on a reservation on their own territory from this period through the climax of the war, but nothing came of it. Late in 1871 an Indian agent reported, "I was met by 'Capt. Jack'

and 'Black Jim' with twenty of their young men, nearly every man armed with gun and revolver. I lost no time in opening the council: carefully explaining to 'Capt. Jack,' all your instructions; after I had concluded, I asked him to speak in answer to the several propositions, which he proceeded to do as follows.

"I want to live in my own country, I will live on the East side of Lost River. People in Yreka tell me this is my country, though you want to talk with the President; I and all my people only want to be let alone. My father died here, I will die here, we do not want to kill whites; Soldiers kill for pay; they are not men with hearts; We do not want to live on any Reservation, we want no lines drawn around we [*sic*, meaning us?]; we do not want to see your diagram, giving [*sic*] us a small place, that place is covered with cattle—we want our Country from Pit River to Lower Klamath Lake—whitemen may have timber, grass, and cold water, but the Fish, Ducks, Roots, and warm Springs we want, we will keep these. This is my talk, I am a good man, and never tell a lie.'

"He then said, 'I am glad you talk about opening farms in our country. . . .'

"I ask him if his people will all stay upon a Reservation, if established in his country. At this he becomes excited, all his men talk at once; after a little while he answers, that he wants the freedom of all his country;

"'We want to live in this Country, to travel and camp anywhere in it, to live among our white neighbors.' The council lasted about three hours, every proposition was answered throughout with about the same speech:

"'We want to live here in our own country.'"

Two different worldviews were in collision, as well as two sets of practical wants. The religion of most Native American communities was tied to specific places; to lose those places was to lose the connection to that power, that spirit, that religion. Stories were inscribed in the landscape; place had a symbolic meaning; seasonal activities were tied to specific locales. The Modoc world had a center. The Indian agents and soldiers with their diagrams, their boundaries, their time determined by the clock were living in a world of abstractions in which one parcel of land was interchangeable with another and religion was as portable as a Bible. (Administering the Modoc War was made harder by the fact that the forty-second parallel, which is also the state border, runs through Tule Lake, so that the Lost River is in Oregon but the Lava Beds are in California.) After all, the

whites had all given up wherever they called home to come to the terra incognita of northeasternmost California and imposed upon it their agriculture with its foreign plants and animals. In photographing Yosemite, Muybridge had celebrated a landscape that was a superlative image and an ideal from Vienna to San Francisco, but to which almost no one in his society had a real relationship. In this light, Yosemite seems like the pinup a lonely soldier tacks up; it's not a place to which its audience has a deep connection but an ideal of place and nature for those who yearn for them. The Tule Lake region's value to the Modocs lay in entirely different qualities, in its familiarity, in its sustenance, in the accumulation of stories around its sites, in things that didn't show up in photographs.

What Europeans and European Americans had lost gradually as the Industrial Revolution loosened their ties to earthly place and celestial time, Native Americans would lose suddenly, as war took them away from familiar places and ancient practices, forcing them into dependence on the government, the cash economy, and domesticated plants and animals. The Europeans had mostly noticed what they were gaining; the colonized who had less to gain kept their eyes on what was being lost. In his speech, Captain Jack recognized the difference between what the two groups wanted from the landscape and proposed that, like two different species, they could coexist, the whites as ranchers and loggers, the Modocs as wide-ranging hunters and gatherers. He was trying to be reasonable. He tried to be reasonable till the end, and he was a peacemaker by inclination, but reasonableness doesn't do much for a person without rights. All he had left to rely on was his own land laden with stories, with meaning, with nourishment, with knowledge. As the situation between the settlers and the off-reservation Modocs deteriorated, topography was his last advantage.

Even when the U.S. Army rode all night through a freezing rain to arrest him at dawn at his Lost River winter camp on November 29, 1872, Captain Jack was moderate: the Modocs there declined to give up their weapons but didn't fire first. The soldiers did, and killed one man. The Modocs in Jack's camp fired back, killing a soldier and wounding several others before the U.S. Army could scramble out of the encampment of about a dozen huts. Across the river, a group of vigilantes who had ridden into Hooker Jim's camp started firing after a scuffle. They succeeded in killing a babe in arms with a shotgun blast. The members of Jack's camp ran for their canoes and paddled frantically for Tule Lake. The Modocs with Hooker Jim

scattered after killing another man, a civilian. Both villages were torched, and an old woman unable to flee burned to death in a blazing hut on that morning of hard rain and bitter cold. A local rancher, Henry Miller, had promised to warn Hooker Jim of any military approaches, but the incompetent military men had failed to warn the settlers in the vicinity that a war might break out. Thinking Miller had betrayed him, Hooker Jim vengefully killed him and eleven other men in the neighborhood but left the women and children alone. Always an advocate of violence, Hooker Jim had closed off any option but continued war. Another off-reservation band of Modocs at Hot Creek a dozen miles or so west of the battle, under the leadership of Shacknasty Jim, went to ask a friendly neighbor, the rancher John Fairchild, for advice. They knew that to join Captain Jack's band in the Lava Beds was, in the words of one historian, "to sign their death warrants." But when they tried to go back to the reservation with the helpful Fairchild, they ran into a lynching party and fled for the Stronghold in the Lava Beds, where Captain Jack's and Hooker Jim's bands had gathered.

The Lava Bed Stronghold is as close as nature ever came to making a full-fledged labyrinth. Even the ground is scattered with gray lava pebbles whose fretwork of curving holes seems to echo on a small scale the lacy intricacy of this harsh terrain. From a distance the terrain all across the Lava Beds looks relatively level, but in the Stronghold as elsewhere, pits, gullies, and the occasional twenty-foot chasm open up in the ground. Some of them are actually shallow caves slanting down at an angle into ground that was once hot volcanic magma, and the Modocs used these as shelters. Afterward, Muybridge made four pictures of Captain Jack's Cave, as it is still called, as a dark eye or mouth opening into the dusty landscape. Others of the caves contained water and ice. Higher than the surrounding landscape, the Stronghold gave the hundred and fifty or so Modocs in it superb views of their homeland, of Shasta's pure peak and of Tule Lake coming right to the northern edge of the Lava Beds. Made up of several rings of lava walls, mostly breast-height or higher with gaps that made excellent gun positions, battlements without a castle, the Stronghold was ideal ground to defend, terrible ground to invade.

The army waited until the bitter-cold dawn of January 17 to stage an attack, six weeks after the Modocs had holed up there. Thick fog was everywhere, and wiser commanders might have waited for clearer weather. Almost 350 regular soldiers and local militiamen plugged away until night,

but almost no Modocs were seen at all on that foggy day, even by the men who were wounded by them, and though only fifty-four Modoc men were fighting (with women loading guns and otherwise assisting) the soldiers, terrified by their unseen enemy, imagined that many times more held the miles of front line. Nine white men died, a dozen were wounded, and the Modocs easily persuaded the Klamaths who had been recruited to fight to leave guns and ammunitions behind in the Lava Beds. It was from beginning to end an intimate war, fought at quarters so close the Modocs could shout insults at individual whites and blandishments at the Klamath. Not a single Modoc was injured. Curly Headed Doctor, the Modoc shaman in the Stronghold, claimed credit. He had surrounded the Stronghold with a tule-reed rope painted red and promised that no Modoc within the rope's circle would be wounded or killed. The protective rope itself was apparently borrowed from the Ghost Dance religion the Modocs had taken up from their Paiute neighbors.

Despair and desperation had set in among the Indians of the Far West in those years. The 1870 Ghost Dance came out of that feeling, and it spread across western Nevada, southern Oregon, and northern California. It began at the Walker River Paiute Indian reservation in west-central Nevada (as did another version of the Ghost Dance a generation later, when it spread across much of the interior West). In 1869 or 1870 a Paiute prophet named Wodzibob, nephew of the great native-rights activist Sarah Winnemucca, began to preach that the Native dead were coming back and the whites were going to disappear. To bring these things about, believers were to paint their faces, to dance in a circle singing certain songs all night, usually for five nights, and to bathe after dancing. A similar doctrine was preached by a Wapum Indian named Smoholla or Shouting Mountain, who came from where the Columbia and Snake rivers meet. The Ghost Dance seems to be about wish fulfillment more than anything else: desperate wishes born out of hideous circumstances, out of a sense that nothing less than the apocalypse was needed.

But when the Modocs and the U.S. Army faced each other across ridges of lava, there were no other simple lines to be drawn than Curly Headed Doctor's rope. The Modocs with their rifles and their insults shouted in English do not represent some notion of native purity. They were in transition from a theocracy of shamans, and in Captain Jack's band there was no stable order, only uneasy shifting between fealty and argumentative major-

ity rule. Even the Ghost Dance had much to do with Christianity's vision of the Last Judgment and the Resurrection. "Sometimes," writes one anthropologist, "the 'Supreme Ruler' was to bring the spirits of the dead back to earth; sometimes dead relatives would be returning from the south; . . . sometimes the dead would return in armies from the rising sun; and sometimes the dead would return from their graves." The Modocs were fighting a defensive battle, but perhaps it lasted so long because they kept hoping that the Ghost Dance would save them. Like Sitting Bull snatching a moment of stillness out of the middle of war, the Ghost Dancers during their many months in the Stronghold seemed to be trying to seize time itself, to make it stand still or turn back.

They had danced the Ghost Dance on the banks of the Lost River before the war began. One participant, the son of the leader Schonchin John, recalled half a century later that the Paiutes came to the Klamath reservation "and said all were to believe that the dead were coming back. Doctor George [a Modoc shaman] brought the word to Tule Lake at the mouth of Lost River where Captain Jack's people were. He came in the winter before the grass began to grow. He said the dead would come from the east when the grass was about eight inches high. The deer and the animals were all coming back, too. George said the white people would die out and only Indians would be on earth. The culture hero [Kamookumpts, he who had made the first land] was to come back with the dead. The whites were to burn up and disappear without even leaving ashes. The rules of the dance Doctor George brought were that you must dance or you would turn to rock. They danced in a circle with a fire in the middle and camps around the outside. They danced all night and in the morning they jumped into the river and swam. Some of the men would come out with ice on their hair it was so cold. Some Indians fell down dead [fainted] and began singing and telling what the coming-back people wanted them to do." Another source quoted Doctor George as adding that the dead "will come back, and people will never die anymore. Those who will come back have died once, but they will never die anymore." A man named Jake from the neighboring Shasta tribe was told that the ghosts summoned by the dance had only one more creek to cross before they reached Tule Lake. Apparently the dead were pictured as crossing the landscape on foot, an army of the past marching to cancel out a terrible future. The Modocs were living at the end of time.

GHOSTS AND MACHINES

The Ghost Dance was a technology. Literally, a technology is a systematic practice or knowledge of an art, and though we almost always apply the term to the scientific and mechanical, there is no reason not to apply it to other human-made techniques for producing desired results. Maybe the best definition would be: A technology is a practice, a technique, or a device for altering the world or the experience of the world. To propose annihilating the inexorable march of history and the irreversibility of death was to propose a technology as ambitious as a moon walk or a gene splice. The Ghost Dance had its parallels in the spiritualist movement that began in the 1840s and reached its heights in the years after the Civil War with millions of believers and practitioners in the United States. Spiritualism likewise sought to cross that great divide, death, and even the white raiment women spiritualists sometimes wore to funerals seemed a defiance of death, like the Ghost Dance shirts of the 1890s. This spiritualism had close ties to the feminist movement of the middle decades of the nineteenth century. Women were the principal mediums in spiritualism, and it was something of a women's religion, an alternative source of power and an alternative kind of spirituality. In calling back the souls of the dead to communicate, these spiritualists seemed to politely doubt that the dead were otherwise occupied with heaven, hell, and the authority of God.

The supernatural is nowadays often seen as opposed to technologies, but the technologies of the era often seemed supernatural themselves. In the well-known words of science-fiction writer Arthur C. Clarke, "Any sufficiently advanced technology is indistinguishable from magic." It is only because nature no longer seems so strong and immutable a force that changes no longer seem uncanny. In the beginning electricity seemed spiritual, a form of the life force: it is electricity that brought Frankenstein's fictional monster to life in the teens of the nineteenth century, and a spiritualist machine of the 1840s that was supposed to generate a soul was electrical. Telegraphy was sometimes thought to magically transmit objects rather than signals, and in 1878 the *San Francisco Chronicle* published a story about a man getting evening calls from the dead on that new electrical invention, the telephone, whose disembodied voices still seemed uncanny. "Spirit photography," or photography of the souls who were supposed to appear at spiritualist seances, was often discussed and denounced over the

years in the *Philadelphia Photographer*, and even late in the 1870s the photographer John Thomson was reassuring a theoretical listener, "He may be tempted to inquire, What occult science confers on this mystic apparatus the power of picturing objects placed before it, producing an image so perfect that alike no point of beauty, no spot or blemish, escapes its microscopic observation? It is some solace to know that the camera and lens—names by which the apparatus are known—lend themselves to no sort of trickery. There is no medium—spiritual—within or without to link the process to the unseen world and works of darkness." The changes brought about by technology seemed supernatural at first, and photography was associated with death both in the many, many images of the dead made during the early years of the medium and in the way a photograph seemed to cheat death by making at least appearance permanent.

Muybridge, when he was photographing the Modoc War, was on his way to inventing a new kind of photography, a photography that with the aid of high-speed electric shutters would make it possible to recapture what had always been lost in the stream of time, not just an appearance but a gesture, a motion, an act, those immaterial events of which time itself is made. Even Thomas Edison, when he discussed the origins of cinema, invoked the supernatural. He wrote, "In the year 1887 it occurred to me that it was possible to devise an instrument which would do for the eye what the phonograph does for the ear and that, by a combination of the two, all motion and sound could be recorded and reproduced simultaneously. This idea, the germ of which came from a little toy called the zoetrope and the work of Muybridge and Marey and others has now been accomplished. . . . I believe that in coming years by my own work and that of Dickson, Muybridge, Marey and others who will doubtless enter the field, that grand opera can be given at the Metropolitan Opera House at New York . . . with artists and musicians long since dead." In other words, cinema would itself be a kind of Ghost Dance. It was and is a breach in the wall between the past and the present, one that lets the dead return, albeit as images of flickering light rather than phantoms in the dark or armies marching across the land. Anyone who watches old movies watches the dead, and Edison was not yet insulated as we are against what is macabre about this. In the first years of cinema, the Lumière brothers made a short film that showed a few men knocking down a wall and then ran in reverse so that the men walked backward and the wall arose whole from its own

rubble. For audiences then, it was deeply disturbing and more than a little magical. They were not yet used to time as a toy in men's hands. The Ghost Dance itself was an effort to make time run backward like a film, so the whites vanished, the game reappeared, even death reversed itself.

But the Ghost Dance, which by all objective accounts failed, would settle for nothing less than the return of the people themselves with their bodies, their love, their souls. The technological solution called forth by photography and later mutated into film, television, video, computer animations, succeeded so profoundly that it has become the medium in which we live, but it is only a medium of flickering light and darkness, a river of shadows. Still, electricity and photography were technologies linked and confused with spirituality, and the 1870 Ghost Dance had an ambiguous link to the transcontinental railroad. One apostle of Wodziwob reported long afterward that the prophet had said, "There are a lot of people telling this news but they aren't telling it right. What I said was that a train was coming from the east. My real dream was about that train, but people make it out different." Another member of Captain Jack's band recalled a half-Modoc man named Night Traveler who told them, "The dead were not coming back. He interpreted the message as meaning the whites were coming from the east. He told all about the whites, their churches and houses; how they were coming, like beavers mowing down the timber, like badgers and moles in turning up the earth for their mining, like grasshoppers in cutting down the grass. He said the whites were all around us and we were a little island of Indians, but the whites would come and we should see the truth of what he said. It was the whites and not the dead who were coming from the east." The railroad was bringing them in ever greater quantities. As for the builders of that railroad, grief could make them too turn to the supernatural. When Leland Stanford Jr. died in Italy at the age of fifteen, his devastated parents strove to make contact with him through spiritualism. Jane Stanford retained a lifelong interest in the supernatural, and her secretary remembered, "She prayed so earnestly for light, which meant to behold Leland, that it was pitiful."

They were all technologies of grief, technologies for building a bridge across the painful divide between the living and the dead, between what had been and what is, for defeating the trauma of time itself. The Modocs' grief was for a whole relationship to the natural world and to a specific place, for their culture and community, while the grief of those who pro-

duced and profited from their loss was purely personal. While the Stanfords were hosting a pair of spiritualists in their vast estate at Palo Alto, a wealthy neighbor not far to the south was pursuing her own manic version of spirituality through the material medium of architecture. Sarah Winchester, the widow of the man who manufactured the Winchester repeating rifle—"the gun that won the west" as the superb 1873 edition was called afterward—was an ardent spiritualist who spent the last decades of her life, from 1884 to 1922, building a house to ward off the spirits of the Indians killed by her husband's rifles, the technologically advanced repeating rifles whose sale gave her the funds to pay the craftsmen who worked without cease for nearly four decades. A spiritualist medium had told her she would be safe as long as construction continued, and the house came to seem like the emigrant West itself in its insatiable desire for expansion. Her labyrinthine house is often written about as a prefiguration of Silicon Valley, at whose heart it sits, and if all Silicon Valley's suburban sprawl and corporate campuses can be imagined as a larger labyrinth, then Sarah Winchester and her house were the monster, the minotaur, at its center. The house grew to cover six acres and contain 160 rooms, and it was not built to plan, so that skylights open into floors, windows look into other rooms, stairways lead nowhere. It was a labyrinth designed to baffle the souls whose enemy she was, and at its heart was a blue room in which the solitary Sarah Winchester held her séances (and spied on her servants).

The Modocs were at the center of a lava labyrinth surrounded by a shaman's red rope, and there they stayed from their triumph in the January battle through the peace negotiations that stumbled along into spring. Relations worsened during the truce. The Modocs moved freely in and out of the Stronghold, and in the army camps they heard rumors that led them to distrust the appointed peace commissioners. Both sides squabbled among themselves. Captain Jack was for compromise and peace, and many members of his band, particularly Hooker Jim and Curly Headed Doctor, attacked him bitterly for it. Messengers, mostly Modoc women and white friends of Captain Jack, went back and forth through February and into March. At a meeting in late March, Captain Jack reiterated his demand for a home on the Lost River, and afterward the army camps moved in closer to the Stronghold. Another meeting was held. Meacham reported of Jack, "After sitting in silence for a few moments, he replied, 'I give up my home on Lost River. Give me this lava bed for a home. I can live here; take away

your soldiers and we can settle everything. Nobody will ever want these rocks; give me a home here.'"

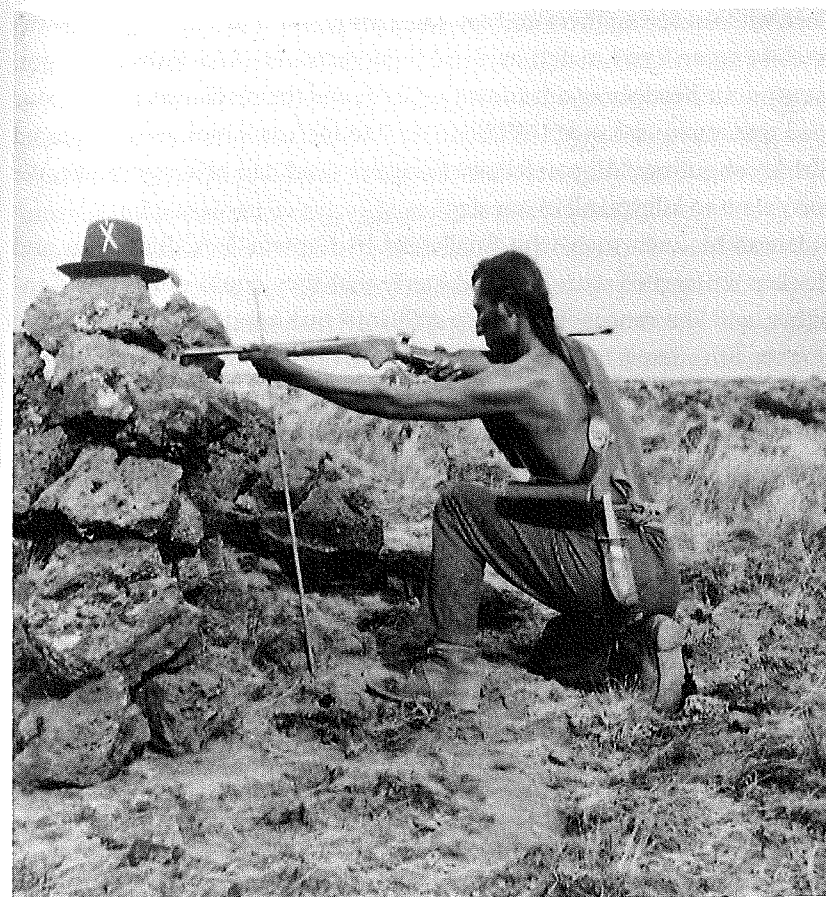
Meacham replied, "No peace can be made while you stay in the Lava Beds; we can find you another place, and the President will give you each a home."

And Jack declared, "I don't know any other country. God gave me this country; he put my people here first. I was born here,—my father was born here; I want to live here; I do not want to leave the ground where I was born."

The stalemate changed at the meeting on April 11, Good Friday. The Modocs had danced the Ghost Dance all night, and the morning was clear and cold. Toby and Frank Riddle warned the three peace commissioners and General Canby to stay away, but they went to the rendezvous site at the western edge of the Lava Beds at eleven in the morning. There Captain Jack, Hooker Jim, Schonchin John, Ellen's Man, Black Jim, and Shacknasty Jim awaited them at a sagebrush fire, and Bogus Charley and Boston Charley were nearby. As usual, Jack asked for land and the removal of the troops. The talks foundered. As Meacham, one of the three peace commissioners, recalled, Schonchin John, "eyes burning with passion," shouted, "Take away your soldiers and give us Hot Creek, or quit talking. I am tired of talking. I talk no more." At a signal, Jack pulled a pistol out of his clothes and turned General Canby into the only U.S. Army general to die in an Indian war. Boston Charley shot the Reverend Thomas, one of the peace commissioners, who died, and four Modocs went after the fleeing Meacham, who was wounded in several places and partially scalped but survived. The third peace commissioner ran for it and lived, as did the Riddles, who weren't targets.

Jack had been pushed into cooperating by the extremists in his band, and he knew that after the murders at the peace tent, they had no good way out of the Lava Beds. It was springtime, the great sky-darkening flocks of waterfowl were migrating over the Lava Beds and landing in Tule Lake on their way north, and normally the Modocs would have been shooting ducks with their sophisticated arrows faceted to skip like stones over the surface of the water. Easter Sunday, the corpses were sent away and seventy-two Indian scouts from central Oregon arrived to join the several hundred troops. The war resumed on Tuesday. Curly Headed Doctor continued to dance, and the Modocs continued to seem indestructible. Their

invulnerability and their widespread—but hardly universal—belief in the Ghost Dance made them unwilling to compromise, though their resources were so finite and the government's so vast. A prisoner of war who was allowed to escape so the soldiers would have the pleasure of finally killing a Modoc instead outran the rain of bullets without injury. Eight Modocs held off a battery all day, and the shelling that continued into the night caused no casualties until the second night, when a mortar shell landed without detonating and a naive Modoc blew himself to pieces by examining it. After that, faith in Curly Headed Doctor's power waned, and the



A Modoc Brave on the Warpath, from the series *The Modoc War*, 1873 (one frame of stereo). This image actually depicts a Warm Springs Scout working for the U.S. Army.

Modocs, who were running low on water, left the Stronghold after five months there.

The army was dumbfounded when they gingerly stormed the site the next morning, April 17, only to find it abandoned. The Modocs seemed to have vanished from inside the siege, though they had only walked south one night through the lava trenches. By this time, there was not much mercy left in the Modoc War. When the Modocs captured a young packer, Hooker Jim flattened his head with a rock. When the army found an old Modoc man left behind in the flight from the Stronghold, they cut off his head and kicked it around like a football. Finally on April 26, sixty-four soldiers who set out to look for the Modocs marched into their hiding place without seeing them and sat down for lunch. The ensuing battle was as close to an even match as the Modocs and the U.S. Army ever got: twenty-four Modocs against nearly seventy, and the result was twenty-four dead and many wounded soldiers, no Modoc casualties, and Scarfaced Charley shouting, "All you fellows that ain't dead had better go home. We don't want to kill you all in one day."

It was his own men who finally did in Captain Jack. Black Jim and Hooker Jim argued with him so bitterly that they could not proceed together, and the renegade Modocs split into two bands. The army found Hooker Jim's band first, the Modoc women negotiated a surrender, and Hooker Jim, who would otherwise have been hung for his Lost River murder rampage, made a pact. In exchange for amnesty, he and three others would deliver Captain Jack. They led the army to his encampment. Jack was furious that the men who had refused to let him negotiate when there was more to gain in April had capitulated at his expense and threatened to shoot them like dogs. But the uncaptured Modocs were exhausted and hungry after weeks on the run. In the end, Captain Jack walked out onto a ledge holding his rifle, and the lieutenant in command of the scouting expedition climbed up to receive it. "Jack's legs gave out," he said and handed over his gun, and that was the end of the war. It was June 1.

THE PRICE OF DEFEAT

Afterward, the photographer Louis Heller took Hooker Jim's picture: it shows a youth with a beaded collar whose face is made up of smoothly curving planes and elegantly delineated lines of eyes, nostrils, mouth, a face

more graceful than one expects for violence and treachery, though it is a little masklike. Captain Jack, in Heller's portrait, was a tired man in his prime with the same clearly delineated features, high cheekbones, and thick hair cropped at his ears; wearing blue jeans in another portrait, he looks very modern. At ten-twenty in the morning of October 3, after a farce of a trial, Captain Jack, Schonchin John, and two others were hung at Fort Klamath. Two of the Modoc rebels were pardoned from the scaffold and sent to the grim prison on Alcatraz Island in San Francisco Bay. The executed four were buried there on the reservation they had fled, though some stories suggest their heads were sent east as scientific specimens or that Captain Jack's body was preserved and turned into a sideshow attraction.

For the rest of the Modocs the price was not death or prison, but a long ride far beyond the horizon of their native land, to Indian Territory in what is now Oklahoma. Their belief system included a world with a center and places that were irreplaceable, tied to the sacred time of the beginning of the world and perhaps to its end; their war had been against being assimilated into the industrialized world, against the annihilation of this sense of place, this sense of time. The price of their defeat was a ride on the very emblem of the changed world, the transcontinental railroad, shuttling them beyond everything they had known. For the first riders of the railroad the speed of the trains had seemed to annihilate the landscape, drawing them into a limbo that was something new in the world, a being nowhere; the Modocs were now delivered into this limbo. A contemporary Modoc from that eastern Oklahoma territory, Cheewa James, writes on her Web site, "It is doubtful that any of them had even been on a train before. This, coupled with the fact that no one, prisoner or the general public, was to know the destination of the Modocs, must have been a frightening and depressing experience to the subdued group. The Modocs, taken to Baxter Springs, Kansas, were exhausted when they disembarked on November 16, 1873. Records are clouded as to their exact condition. Accounts state that the Modocs arrived half-starved in boxcars." Wodzibob had stated, "What I said was that a train was coming from the east," and it was going back east too. Instead of the glorious end of the world in a spate of resurrections and erasures, there was the quiet end of a world. Most of the Modocs outlived the end of their world, which they must have found harder to imagine than the dead coming back, and more painful. "The lava beds," wrote the historian Hubert Howe Bancroft not long afterward, "which can never be removed or

changed, will ever be inseparably connected in men's minds with Captain Jack and the Modocs in their brave and stubborn fight for their native land and liberty—a war in some respects the most remarkable that ever occurred in the history of aboriginal extermination.”

The whites who administered Native American subjugation claimed to be recruiting the Indians to join them in a truer, more coherent world-view—but whether it was about spirituality and the afterlife, the role of women, the nature of glaciers, the age of the world, or the theory of evolution, these white Victorians were in a world topsy-turvy with change, uncertainty, and controversy. Deference was paid to Christianity and honest agricultural toil, but more than a few questioned the former, and most, as the gold rushes, confidence men, and lionized millionaires proved, would gladly escape the latter. So the attempt to make Indians into Christian agriculturalists was akin to those contemporary efforts whereby charities send cast-off clothing to impoverished regions: the Indians were being handed a system that was worn out, and it is no surprise that they had trouble wearing this cultural certainty so full of holes. Though the whites were trying to destroy the Indians, by killing them and their culture and by displacing them from the sites for which their skills and beliefs shaped them, the Indians and the whites were ultimately united as, so to speak, passengers on the railroad heading to an unknown destination, to doubt, to destabilization, to our time.

In Europe this state of affairs is called modernism, the cultural reaction to modernization. “Modernization,” writes the visual theorist Jonathan Crary, “is a process by which capitalism uproots and makes mobile that which is grounded, clears away or obliterates that which impedes circulation, and makes exchangeable that which is singular.” Out west, the complex responses to industrialization and its transformation of time and space include things never dealt with by the impressionist painters and avant-garde poets usually talked of as modernist, include Indian wars and identity shifts, a landscape being claimed and named, photography as art, and a comic literature. But perhaps they were all, cowboys and Indians and impressionists, on the same train anyway. Muybridge was photographing the journey to modernization, for this is what his series of pictures—of the mysteries of movement, of remote landscape, of an Indian war, of an instant city, of the transcontinental railroad line, and other developments of the West add up to. His Modoc pictures are not great expressive works of

art; what is important in them is his act of witness and how it connects this history to the other histories he was tied to: the transformation of a world of presences into a world of images. It's usual to talk about artists standing aside, to talk about them being neutral because they observe rather than act directly on what they see. Muybridge's relationship to the history that came through his camera is more complex. He was working for railroads and armies, for tourists and easterners. But he gave them imagery that called their attention to what was just out of reach: the landscapes they wouldn't explore, the cultures they wouldn't encounter, the lives they wouldn't live, the motions they couldn't see, the questions they couldn't answer. Muybridge wasn't neutral. He was independent. He was complicating the record as he made it, inviting doubt into the house.

What was being lost as the real thing was returning as imagery: thus nature was almost the dominant subject of the nature-conquering nineteenth century, and Indians who were chased out of their homeland were finding a shadow home in art and entertainment. The Modocs survived on their reservation, or enough of them did to convert to the Quakers' pacifist version of Christianity. Early in the twentieth century some came back to the Oregon reservation. Few if any seemed to find a home in the northeasternmost corner of California now called Modoc County. Meacham survived his assassination attempt to write a book about the Modoc War and go on a speaking tour with the Riddles, Shacknasty Jim, Steamboat Frank, and Scarface Charlie. He got them to wear face paint and dress up in more “Indian” clothes than they had worn, and he adorned Toby Riddle with the name “Winema, the Woman Chief.” Everything spectacular in the West was always being sent east for exhibition: cowboys, Indians, and herds of buffalo in the traveling circuses, stories of the peculiar society of the mining camps, great loads of gold and silver, furs and hides, photographs of Yosemite Valley, the 1878 motion studies that went straight to France.

In the heyday of the gold rush, the immigrants were busy building California's physical infrastructure: dams, roads, cities, farms. At the same time, a more subtle project of construction was launched, of California as a distinct culture. Immigrants bent the place's meanings to suit their needs and dreams, and when they were done, something entirely new had been invented, something that would change the world, a kind of headstrong, rootless sense of heroic possibilities and glamour still summed up by the word *California*. And much that was ancient had been lost, including the

way that Modoc culture was tied, with a thousand threads of food and story and name and knowledge, to the place where the Modocs had been as long as they remembered. There are at most two or three speakers of the Modoc language left in the world, and a language is itself a world, creating distinctions and connections, describing time, kinship, place in a unique way. Does something have to come to an end for something else to be born? Did the Modocs make way not only for settlers and miners, but for a new idea of California? Was there room for both a world with a center and California as the center of technological and cultural innovation, or did the latter require a kind of decenteredness and the annihilation of what had come before? To ask this is to ask if there could have been another history, a parallel universe—but the history we have is the history in which the center was uprooted and the machines evolved.

A DAY IN THE LIFE, TWO DEATHS, MORE PHOTOGRAPHS

Family Pictures ■ *A Hand of Cards* ■ *The Trial* ■
Flora's Conclusion ■ *Laundresses and Ruins*

