

ECOLOGIES

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THE DAVID AND ALFRED SMART MUSEUM OF ART
THE UNIVERSITY OF CHICAGO

F E N D

CHINA BASIN PLANS:
THE RIVER DRAGON
BREATHES FIRE

ARTIST'S STATEMENT

PETER FEND

"Art is that by which nature makes more nature" — Edmund Spenser

STATEMENT ONE: FOR THE UNITED STATES AUDIENCE

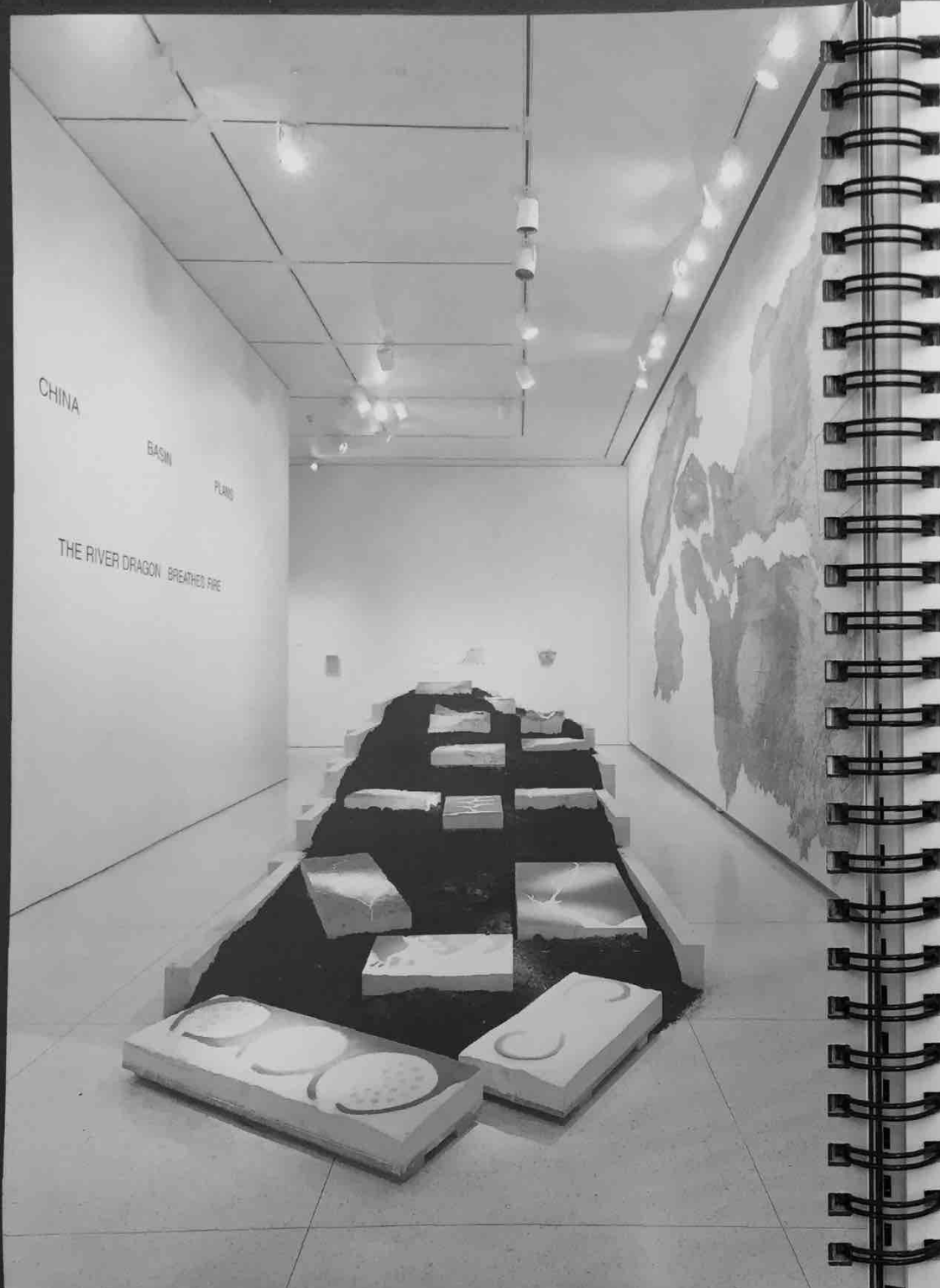
If art is that by which nature makes more nature, then what shall be done with that feature of nature called: a valley. What shall be done with a valley and what runs through it: a river. Can an artist speak on, or initiate action for, the engineering of a river with structures by which the river makes more river, and the valley makes more valley?

We in the United States stand now at a question point. A trade deal is pending with China. This deal is less about China than about an emerging contest between the United States and Europe. The U.S., representing the "new world," is up against the European Union and Russia, representing the "old world," in a struggle for influence and market share in China. At present, Europe, including Russia, is the favored power in China. They dominate the field. They also dominate the geopolitical decisions. They decide, for example, that China will become a conduit for fossil fuels across Eurasia from the Caspian/Gulf area both east to Korea and Japan and

west to Western Europe. The British and the Russians, along with Italians, Germans, French and Koreans, are all playing this game of building a giant Eurasian mineral-fuel web. Such countries also endorse another aspect of the game: building capital-intensive projects with questionable ecological but giant debt-structure effects, like the Three Gorges Dam.

The United States is alone among the world's powers in opposing the Three Gorges Dam. The U.S. is therefore opposed, alone among the world's powers, to a policy inside China which was initiated by its NAFTA neighbor Canada, which is heartily endorsed and invested in by its rivals in the European Union, which is strategically backed even by its sometime ally Switzerland, and which is not spoken of one way or another by the chief counterweight to China in the Far East, Japan. This isolation is not the only difficulty for the United States. There's also the problem, a staggering problem if one looks at the charts, of having almost nothing to sell.

Trade with China is primarily of exports from China to the United States, not from the United States to China. There is very little that China



AT LEFT:

PETER FEND,

CHINA BASIN PLANS: THE RIVER DRAGON BREATHES FIRE,

DETAIL, INSTALLATION VIEW, SMART MUSEUM OF ART, 2000.



ABOVE:
PETER FEND BUILDS THE RETAINING WALL FOR HIS TERRAIN MODEL,
JULY 2009.

wants from the U.S., and there will soon be very much less. Given present trends, the United States, hemmed in even by its alleged allies like Canada and Great Britain, will lose the race for market share in China. Opposing the Three Gorges Dam, regardless of how sound the reasons might be, and attaching human-rights codicils to the trade bill, will only help further in making sure the race for market share is lost.

In the battle for market share in China, the technological future of the planet will emerge. Either the planet continues with its mineral-fuel paradigms, backed up by other giant

one of few areas of innovation and growth, one of the few wellsprings of intellectual property by which the United States could re-assert its strength as an exporter to China and as a ground-breaking player in the evolution of technology, is that area long considered to be "only art." Earth Art, as developed in the 1960s and 70s by artists like Robert Smithson, Dennis Oppenheim, and Walter de Maria. If the artists in the U.S. play their cards right, and if they find ways of raising capital to effect earthworks on the scale with which they were imagined, affecting all the terrain, then we could see Earth Art being the number one

{ EITHER THE PLANET CONTINUES WITH ITS SELF-DESTRUCTIVE TECHNOLOGIES OF THE PETROLEUM AND NUCLEAR ERA, OR BECOMES REPLETE WITH THE TECHNOLOGIES OF RENEWABLE ENERGY PRODUCTION }

construction fantasies like the Three Gorges Dam, or the planet moves towards "that by which nature makes more nature." Either the planet continues with its self-destructive technologies of the petroleum and nuclear era, worsened with giant civil structures that destroy rivers as bloodstreams on terrain, or the planet becomes replete with technologies of renewable energy production, coupled with the harnessing and shaping of rivers which foster a "variety theater" of fish, birds and other wildlife.

One of the few sources for recovery,

U.S. export to China. The only major rival in any race to export advanced terrain engineering, or what has been embodied in Earth Art, is that country which carried out such engineering on a military scale: Russia. Artists in the United States should be relied upon for paradigms of territorial and energy-resource development that go beyond the twentieth century, beyond what most of the powers that be embrace as "normal," towards that which is—we all know the word—"sustainable." The technologies to apply are known. They have been prefigured, and some-



times even manifested physically, in Earth Art. And they can be immediately effective.

In 1994, when first dealing with the challenge of the Yangtze River, I supposed, with my imagination and my knowledge of American earthworks, that a giant meander should be constructed east of Chungking. I supposed that this meander would reduce much of the floodwater pressure on narrowing corridors such as that of Three Gorges. I exhibited this model, along with others, at a London gallery run by a wealthy man from Switzerland. The wealthy man from Switzerland, home of an engineering firm (ABB) that stands to make much money from the Three Gorges Dam project, was decidedly unhappy with my exhibition. He was even more unhappy, to the point of prohibiting my further action on this, with any attempts by me to communicate my ideas to the Chinese Embassy in London. Art critics after-

wards followed suit, saying that it was rude and stupid of me, a lowly artist, to become so absorbed in megalomania as to propose giant, billion-dollar Earth-Art-type constructions in a faraway country.

Four years later, in 1998, in part due to the global warming that has been accelerating runoff from the Himalayas, China suffered devastating floods. These floods caused a mass of people equal to the population of the United States, altogether 250 million, to be evacuated. In one area where the flooding was most acute, over 1,000 people lost their lives, according to official sources. This area was precisely the zone east of Chungking where I had proposed a giant series of meanders, following the sculptural logic of artists like Robert Smithson. If my megalomaniacal idea had been applied in or soon after 1994, the destruction and death that occurred in 1998 would have been minimized. Indeed, if all the

Yangtze Valley had been engineered as I was proposing, in actions somewhat like (but of course not exactly as) I proposed, with the logic and scale of American Earth Art in its greatest imagining, then the historical results would be staggeringly different. China would not have the floods it has now. China would have far more sustainable hydroelectric power than it would gain from a massive single dam like

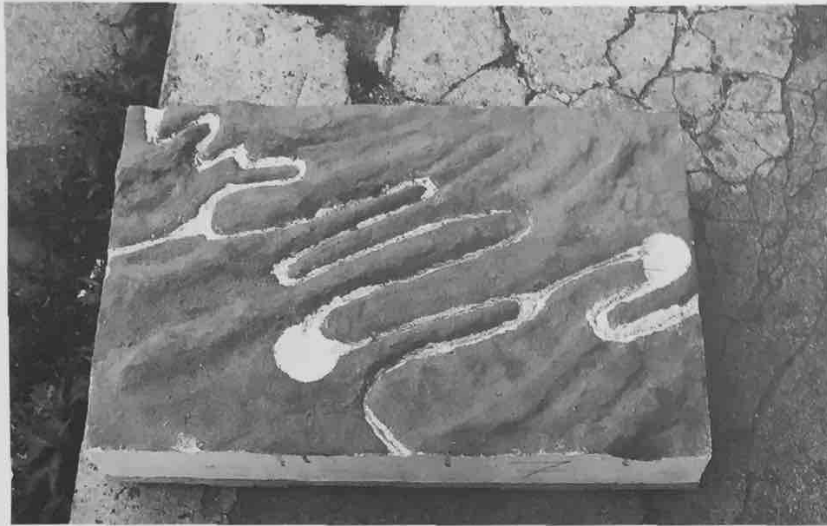
fashioned language: more natural? American innovations, being free from old technologies, can serve China, like any other outside authority and market, better than these rivals who offer China gigantic versions of conventional technologies.

The task in China, as in any new market on the planet, is for Americans, armed with their Earth Art and wilderness fantasies, to build structures

THE TASK IN CHINA, AS IN ANY NEW MARKET ON THE PLANET, IS FOR AMERICANS, ARMED WITH THEIR EARTH ART AND WILDERNESS FANTASIES, TO BUILD STRUCTURES IN THE RIVER VALLEYS SO THAT THE RIVERS CAN MAKE MORE RIVER, WITH MORE NUTRIENTS AND MORE FISH AND BIRDS, AND SO THAT THE VALLEYS CAN MAKE MORE OF WHAT THEY GENERATE: FERTILITY

Three Gorges. China would also be able to rely on its ocean waters for a large supply of renewable biogas, envisioned to be the long-term replacement to mineral fuels. In this shift to offshore biomass for biogas, China could build on the technology which it has already been researching together with American scientists. The European Union, with British initiatives, has ruled such offshore technology to be illegal. Well: shall the U.S. encourage its Chinese scientific colleagues in marine biology to defy the EU rules and aim for something more sustainable? Or, to put it in more old-

in the river valleys so that the rivers can make more river, with more nutrients and more fish and birds, and so that the valleys can make more of what they generate: fertility. Regardless of how much the Three Gorges project is completed, regardless of how much that already-costly scheme is carried out, there will be room for Earth Art to enter the valley and shape it with an architectural program that yields more life throughout the valley—and that survives long beyond whenever (not far in the future) any dam now built would no longer work.



**STATEMENT TWO:
FOR THE WORLD AUDIENCE**

The Three Gorges Dam in China has often been described as the modern-day counterpart to the other giant project built there: the Great Wall. The two projects serve different practical and symbolic purposes, but their differences do not consist only, or even chiefly, in the Three Gorges' goal of producing vast amounts of electricity.

The differences consist in the scope of their impact.

The Great Wall has been a frontier barrier for China so much that, even in this century, when an enemy force could breach its walls with ease, that act would promptly start a war of national defense. This function is internal. It is not turned outward,

towards China's neighbors.

The Three Gorges Dam, though deep inside the country, is an international event. Most of the controversy around the dam is raised by foreign countries and outside global bodies, like the US Export-Import Bank and international ecological policy groups. The formal proposal to build the dam came not from within China, but from Canada. Most of the technology and engineering come from foreign countries, now joining an inner circle of favored trading nations. The Three Gorges Dam, along with the many other dams now envisioned or underway, is thus part of an internationally-conceived effort to bring China's power-generating capacity in one or two great leaps up into the twenty-first century. And this effort involves China

ABOVE:

ONE OF PETER FEND'S TERRAIN MODELS,

IN TRANSIT BETWEEN FEND'S TEMPORARY HOME/STUDIO AT 61ST STREET (DAN PETERMAN'S BUILDING) AND THE SMART MUSEUM, JUNE 2000.

PETER FEND: ARTIST'S STATEMENT

in the international community in particular ways: in debt; in technological exchange, often one-way; and in an obligation to export goods and import technology to overcome that debt. In addition, since this dam (and the other dams) would reduce nutrient outflow, much of its impact may fall on neighbors like Japan. Quite possibly the dam would alter a major ocean current (the Kuroshio), with consequences for the entire Pacific Ocean.

How to respond to this situation?

The Great Wall of China has yet to be completed. It happens to align with the edge of the watershed of the Yellow River, to the north. Attending to this watershed limit, where the Wall generally takes its course, has not become a standard administrative and industrial practice. This I propose to remedy. While some talk of the Great Wall being superseded by Three Gorges, I would rather have Three Gorges and such projects be superseded by China's several great walls: the great mountain walls that encircle China in its river-valley parts. I suggest that any such giant river projects should be subordinated to the requirements of the saltwater bodies towards which they drain.

For the project at the Smart Museum, I address four saltwater basins: the Tsaidan basin, a high plateau that may serve almost like a water tower; the basin of the Tarim

River, which drains into an interior salt lake; the Yellow Sea basin; and the East China Sea basin, which centers on the Yangtze River. In each case, I am as interested in these saltwater bodies as in the rivers and their surroundings. In each case, their impact is or can be enormous. In all three cases, their impact has been decreasingly fruitful. The rivers are becoming less and less providers to their seas. In the first case, the impact is on some now-drying salt lakes. In the second, it's on a Yellow Sea so full of sediments that drastic means must be found for their removal. In the third, it's on the East China Sea, with flow passing on to the two coasts of Japan, to the west, and to the east, along the Kuroshio. I propose to adopt a United Nations Regional Seas Program procedure and mark out the walls of China, the high ridges of China separating one salt-collecting sea from another. And I propose that with this marking China adopt an outward policy in several directions. In the Tarim Basin, towards the hydrological organization of Central Asia. In the Yellow Sea basin, towards a renewable-resource policy to share with Korea. In the East China Sea basin, or slope, a comprehensive biota survey and extraction program for not just that Sea but also the Sea of Japan and Kuroshio Current. That is, for most of Japan and Korea, China's neighbors, as well.

Generally, the models presented in *China Basin Plans* follow designs made by American earth artists in the 1960s and 70s or by Russian military engineers in the Iran/Iraq war zone in the 80s. They constitute new thought about dynamic systems in nature. For this project, I consulted with a number of experts—in geography, in history, in oceanography, in engineering—to draw up scenarios, with over a dozen site-focused construction plans for the sustainable development of three basins and three regional seas. A presiding organization can be the United Nations Environment Program, which started the Regional Seas Program. The initiator can be found in Yugoslavia, a country long respected by China, in the person of a marine biologist named Stjepan Keckes.

I make these proposals mindful of how they might resonate within current and historical debates around these issues. A few countries, most prominently the United States, have opposed the construction of the Three Gorges Dam. They have done so not for selfish reasons, but for curiously selfless ones. They have done so because they think it's ecologically and socially harmful. They look at what happened with the Aswan Dam in

Egypt, with its negative impact on the eastern Mediterranean, and they say, *Not again, not like this*. This might seem to be meddling. In some senses it is, for the United States, unlike other, older nations, often acts as if every policy must have a principle. It cannot act simply in self-interest, or for what looks like good business; it repeatedly asks, *What is in the better interests of mankind?* So, there's this nagging attitude towards China, on many issues, and there's this decision, based on quite standard environmentalism, that building dams like Three Gorges will be harmful to China, to its neighbors, and to nature. These moralistic attitudes end up running the U.S. afoul of China. We would do better to offer an alternative, to make a proposal. I suggest a more vigorous return to the Great Walls, the great mountain walls of China.

One can, with such a statement, think of an idealized landscape. But one can also, using United Nations Regional Seas mandates and new renewable-energy technology, put that landscape to work. A generation ago, for example, Chinese and American scientists cooperated closely in ways to produce methane, or even hydrogen, with large algae. The experimental work fizzled out. It was considered by

AT RIGHT:
PETER FEND'S TEMPORARY HOME/STUDIO
 AT 61ST STREET (DAN PETERMAN'S BUILDING), JUNE 2000.

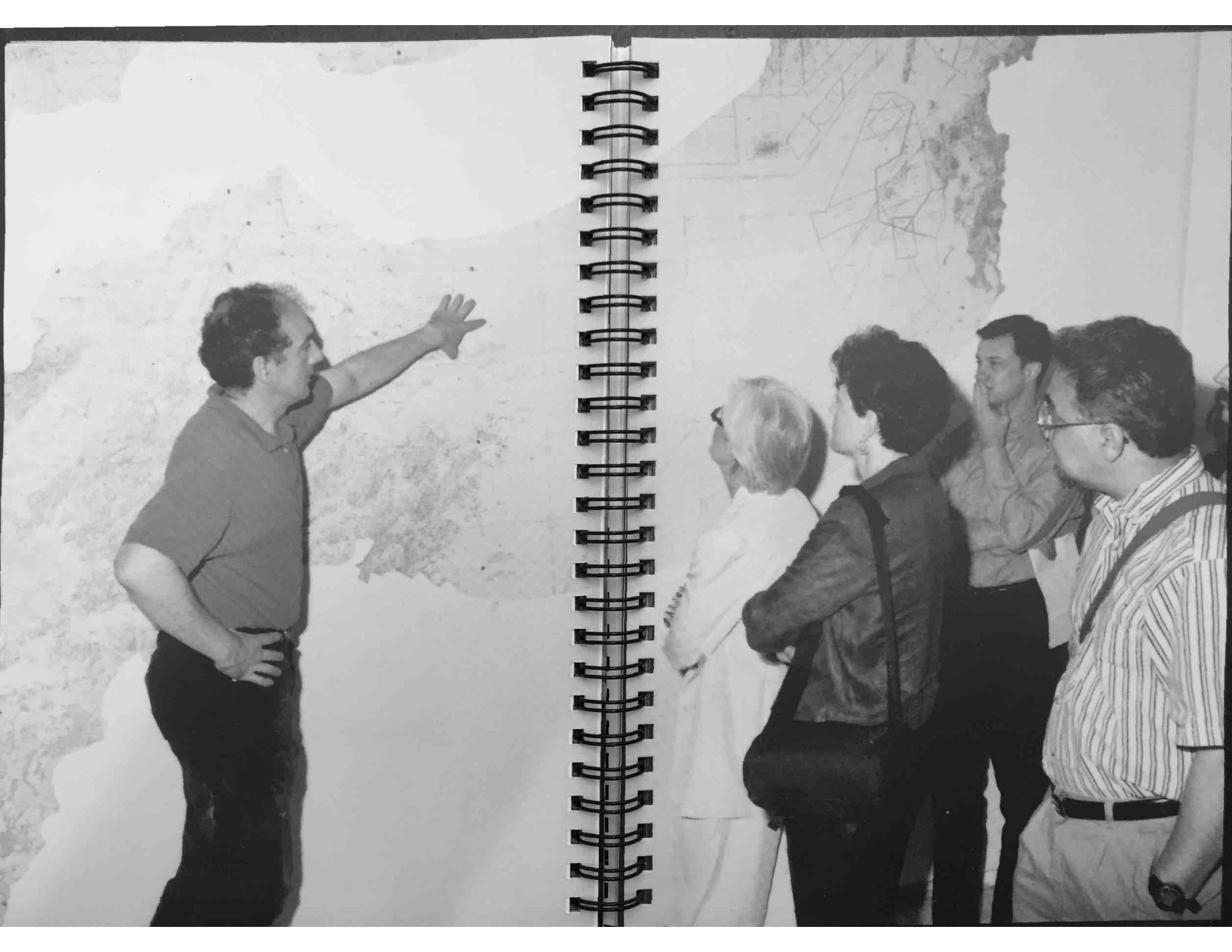
many to be too radical, too threatening to the oil companies, or maybe just too much in the way of naval vessels for the ease of gunboat diplomats. But now, in the salt seas of China (we show only three in this work; there are others, like the South China Sea), the marine-biology teamwork can be resumed towards systematic harvesting. The harvest, in the form of *Laminaria* or *Macrocystis* kelp, can yield far more renewable energy, with better ecology-cycle effect, at least over the long term, than simply a dam on the rivers flowing in.

We speak here not of American "leadership." The one country in the world openly defying European rules

against research into exploitation of the world's fastest growing and largest giant kelp, *Macrocystis*, has been . . . China. Why not encourage this defiance? Towards a self-reliance not just on the land of China but also in the respective seas, ringed by great mountain walls? *

—JUNE 2000





PROJECT OVERVIEW

STEPHANIE SMITH

Peter Fend bases his practice on the twin assumptions that artistic research can generate productive dialogues about global ecological problems and that it can be used to develop effective solutions. His project for the Smart Museum, *China Basin Plans: The River Dragon Breathes Fire*, proposed a functional role for visual art in the development of environmental structures that could be built instead of, or in addition to, the controversial Three Gorges Dam currently under construction on the Yangtze River in China. The project was propelled by Fend's concern over the potential geopolitical, economic, and ecological impact of this giant dam and others like it, a concern that was manifested both in the texts he wrote for the exhibition and in his proposals for a series of interventions at particular sites along the course of the Yangtze River.

This project developed out of Fend's previous solo projects and his ongoing collaborations with various groups. Since the late 1970s, he has worked with shifting collectives of artists, architects, engineers, and scientists to develop ecologically sound land-use projects and renewable energy technologies, as well as a host of related projects. Many of these activities have taken place under the auspices of Ocean Earth, a company Fend co-founded in 1980 to research, develop, and promote alternative energy sources. The company also uses satellite imaging to monitor and analyze global ecological and geopolitical hot spots, largely for media clients.¹ Ocean Earth's slogan "How far can art go?" is classic Fend, a polemical and inspired call-to-arms that informs much of his work. He has directed that question to the American land art of the late 1960s and 1970s, for instance, by investigating how some of those famous shapes (spiral jetties, double negative cuts) might function if they were carefully placed and manipulated to address particular environmental issues, from bird migratory patterns to river flow.

PREVIOUS PAGES:

PETER FEND DESCRIBES HIS WORK IN PROGRESS

TO PARTICIPANTS AT A POINTS OF CONTACT DISCUSSION, JUNE 2000.

AT LEFT:

PETER FEND'S WORK IN PROGRESS.





Fend's project for the Smart Museum brought together various strands of his previous research. Although not technically an Ocean Earth work, *China Basin Plans* shared many of that group's premises: the proposed use of forms inspired by American land art, the insistence that poor management of salt-water basins can have devastating consequences for the health of our oceans, the emphasis on exploring ways to manipulate land and water in order to create renewable energy sources. This project also expanded on a 1994 solo exhibition in which Fend first began to explore the Yangtze River as a potential site for ecological interventions.² In preparation for *China*

Basin Plans, he refined his understanding of the specific environmental, political, and economic issues currently swirling around the Three Gorges Dam through correspondence with scholars working in disciplines ranging from oceanography to modern Chinese history, and through use of the University of Chicago's extensive map collection.

Fend's research was manifested in an installation that focused on four salt-water basins: the Tsaidan basin, a high plateau; the Takla Makan basin, where the Tarim River drains into an interior salt lake; the Yellow Sea basin, fed by the

ABOVE:
PETER FEND'S WORK IN PROGRESS.

Yellow River; and the East China Sea basin, which includes the Yangtze River. He also depicted the Tibet basin, which is a high Himalayan plateau that may serve as the water reserve for the other four basins. To represent these geographic features, Fend pieced detailed terrain views into huge maps and cut along the undulating perimeters of various watersheds to create a separate map of each of the five basins. These huge basin-maps were then pinned to the gallery wall, creating a dramatic sweep of color, pattern, and information. They also made visible an unexpectedly poetic link between the sinuous forms of traditional Chinese dragons and the shapes of the basins that include the Yellow and Yangtze Rivers, which have been called China's "river dragons."

Running alongside these maps, a large terrain model followed the course of the Yangtze River from the Himalayas through the East China Sea basin to the ocean. The scale of Fend's proposals was reinforced by the sculptural mass of the model, with soil contained inside a structure of white concrete blocks that evoked both the Great Wall and the proposed dam. Within this abstracted slice of landscape, Fend displayed detailed models of giant earthworks and other structures that he believes could mitigate the potential damage of the Three Gorges Dam. These models depicted ways to shift water-flow, maintain productive ecologies downstream, and generate energy (the "fire" breathed by the "river dragons"). To help viewers understand the function and scale of these proposals and to pinpoint their locations within the saltwater basins, Fend drew outlines of the areas covered by each model on the corresponding map, and provided a brief description of each model's function. Fend was particularly interested in the Yangtze River's impact on the ocean because of the potential to harvest ocean algae and transform it into fuel, which might in turn minimize China's need for the proposed dam's massive hydroelectric capacity. Techniques for such renewable energy processes were depicted in three of the drawings pinned to an adjacent wall, along with a special type of waterwheel.

China Basin Plans reflected Fend's ambivalence about the art world and his own role within it. Commissions like this one sustain his ongoing research and allow him to disseminate provocative ideas, but Fend hopes that his strategies will resonate outside the precinct of the museum and actually be implemented. To that end he attends to the economic and geopolitical implications of his proposed interventions and looks for compelling ways to motivate businesses and governments to take up his proposals. His temporary affiliations with prestigious host institutions facilitate some of these efforts, but such mutually parasitic practices can only carry him so far. Although Fend's proposals have been validated by the art world, this success may paradoxically have undermined his credibility in

{ WHETHER OR NOT FEND'S IDEAS LEAD TO ACTUAL INTERVENTIONS IN THE LANDSCAPE, HIS PROPOSALS HELP US UNDERSTAND THE WORLD IN FRESH WAYS, AND RAISE CHALLENGING QUESTIONS }

arenas less open to the value of his amateur research. He has not yet been able to leverage cultural capital into the financial and political support necessary to test or enact any of his grand proposals.

Fend remains hopeful that gaps between research and implementation will one day be bridged. In the meantime, his situation offers an instructive comparison between contemporary art and much of the research that occurs in universities. Whether or not Fend's ideas lead to actual interventions in the landscape, his proposals help us understand the world in fresh ways, and raise challenging questions about topics that are of crucial importance to our planet's continued health. As he has noted, "either the planet continues with its self-destructive technologies of the petroleum and nuclear era, worsened with giant civil structures that destroy rivers as bloodstreams on terrain, or the planet becomes replete with technologies of renewable energy production."³ How far, he asks, can art go? *

NOTES ON THE TERRAIN MODEL

PETER FEND

The terrain model centers on the Yangtze River's path through the East China Sea Basin. Each yong-stone model, with a light brown earthen surface for terrain above water and off-white areas for terrain below water, represents a proposed Action. The proposed site of each of the models is marked by a rectangle on the appropriate map (except for the first model, as explained below). All but five models (1, 10, 12, 14, 15) are at 1:500,000 scale, the same as the basins displayed on the wall. Together, the Actions—or efforts like these Actions—could meet the needs of China in the administration and economic exploitation of its major saltwater basins. Numbering begins with the model on the left at the highest point of the display and continues down in rows from left to right.

1. General Action

Meanders and convex disc marshes at the bends on steeply-sloped lands. Flood control is far more effective if conducted systematically in the uplands as opposed to a quite literally last-ditch effort of damming back waters very far downstream at Three Gorges on the Yangtze or the Three

Gates Gorges on the Yellow. This Action would be effective in many areas of the Tibet basin, and so is not marked on the map.

2. Himalaya Stepdown

General Action throughout the highlands leading into this very sharp drop into the Takla Makan Desert, dropping from 17,000 to 7,000 feet, particularly in final stages. At those final stages, the steepest drop, construct meanders. Along the flatter parts of flow, on the straight-aways, install Poncelet undershot waterwheels to generate electricity and, by electrolysis using the energy plus water, hydrogen.

3. Desert Pierce

The rapidly descending waters, even if now slowed in new bogs and embankments, have been splattering over the desert flats in numerous directions. One can focus the flow. This prevents it from ending up petered out in rivulets and ponds somewhere amidst dunes, dried up. A multi-channel pathway, like that developed by Russians for Iraq to divert the Tigris through salt flats by the Persian Gulf, but similar in design to *Dead Furrow*

AT LEFT:
PETER FEND'S WORK IN PROGRESS.

by Dennis Oppenheim, can be dug out. The pathways converge on larger, wider pathways, like Oppenheim's *Cobalt Vectors*, all flowing with concentrated force towards the lowest points in the Takla Makan desert.

4. Salt Lake Spread

Make the salt lake inside the Takla Makan basin larger by (1) increasing freshwater flow in from all five vectors (and more) and (2) pulling the sediments out, in the form of *Macrocystis* or similar giant algae. Now in this region, China drills for oil. A larger industry, providing many more jobs and zero-pollution fuel, could be built by growing and harvesting colossal amounts of seaweed as fast as photosynthesis allows. Sediment upwelling tubes, coupled with the high-altitude sunlight, accelerates growth. The cobalt vectors from the northwest have been eased into a giant sinusoidal hourglass form, much like what Iraqi and Russian engineers attempted in the lower reaches of the Tigris-Euphrates in the 1980s. The reason has not to do with visual appeal, but with hydrodynamic efficiency.

5. Yangtze/Yellow Flow-Start

The headwaters of the Yangtze flow along long, flat plateaus. The northernmost can be blocked off from its

flow into the Yangtze, with the tributary diverted northwards from its current bed to then cut through a relatively low hump into the Yellow River headwaters. This could meet the current state demand for some way of diverting waters from the Yangtze into the Yellow. Here, we conduct the diversion from a tributary upstream even to the Yangtze. We extend the "tail" of the Yellow River dragon, with its many turns. In the plateaus of the Yangtze, marshes are built, with more sops for water and muck, to hold back more water. In the rapid downflows from one plateau to the next, Poncelet waterwheels provide local energy.

6. Tsaidam Fillup

A giant valley once settled by the people who emigrated, against their will, to Tibet could be restored to its old splendor with (1) no domesticated animal (particularly sheep) grazing (2) dispersal of wild grasses, (3) restoration of highland marshes, for birds and insects, and (4) continuous harvesting of marine algae. This harvesting occurs now in the form of oil and gas extraction—a boom industry. If the salt lake filled up to onetime levels, at 9,000 feet elevation, the basin, with its aquifers, could serve as the water-tower of northern China.

7. Diversion of part of the Yellow River away from the desert

After dropping below 11,500 feet elevation, the Yellow River enters a large plain and makes a giant "J" turn, to the north. This J path had been wider. With a few channel cuts, not unlike Oppenheim or Heizer incisions in mudflats, the flow can take the older, outer path. With a large *Double Negative* cut through a ridge rising several hundred feet, the flow can go into another tributary, downstream, of the Yellow, and on the way downward the flow can again be banked right, in an irrigation-canal-type incision along at 8500 feet elevation. Continue this for 30 kilometers, absorbing streams normally going quickly down the slope towards the Yellow River at Lunchow (5000 feet), until—still along this long valley at the base of a mountain range—the flow can spill into a stream flowing to the north and east, into an eastward tributary of the Yellow, meeting the Yellow long after it has lost so much of its water in a 1,000 kilometers loop through the desert. This diversion can also reduce sediment load in the Yellow River.

8. To offset the loss of flow in the Yellow River at 11,500 feet, and to add perhaps salt but not sediment content, at 8,000 feet we release waters from a

long-fabled salt lake, the much-covered Blue Lake, or Ching-hai Hu (10,400 feet). The salt inflow will be substantial at first, but will soon disappear. Blue Lake, at the southern edge of the Tsaidan Basin, connects with the watershed of the Yellow Sea/Bohai Basin. The cut is effected with a Heizer *Double Negative* over a low alluvial sill, a natural dam. Afterwards, erosion takes over. Meanders down the slope to the Yellow River, built in traverse, straddle a steep valley to break the force during the steep drop in elevation. To reduce salt content in the outflow, one installs Giant Algae System rigs, with *Macrocystis*. The yield, of course, can fuel nearby industrial/mining centers.

9. Chungking Meander

During the worst Yangtze flood of the last century, in 1998, the greatest damage was east of Chungking. A succession of lateral valleys allows for giant meanders to be constructed, with marsh discs at the turns. A flood flow gets sopped up, the sediments are laid down over a large area; the stream entering the narrow valley leading to Three Gorges will have already been controlled, with much of its excess sediment unloaded usefully. If the Three Gorges dam is built to just its first or second of three levels, this meander

can function. It can provide better flood control than the dam, and can also reduce sedimentation impact on the dam site without a loss of river vitality.

10. At the Three Gorges Dam site,

a sustainable scenario for the Yangtze could be: (1) the dam rises no higher than its first stage, at 87 meters, (2) the now-discovered massive influx of sediment is thus allowed to spill into valleys immediately upstream from the dam, and (3) once the sediment reaches the crest, within several decades, it is spilled into immediately downstream waters with the meander and convex disc step-down system shown in the General Action. The economic function of the dam will be redefined as transitional. It effects a transition from a conventional hydroelectric/mineral fuel mix in the national economy to the four energy systems here displayed. The Yangtze would probably become unnavigable upstream from Ychang. Conceivably, a series of dams, or at least these straddling meanders, could be built down the streambed from the initial damsite. The obsolescing of the dam is engineered into its construction. For

several decades, it will have produced a large quantity of electricity but nowhere near to the amounts of energy soon to be produced by more sustainable if somewhat less "efficient" forms, such as small-stream undershot waterwheels. This is less a proposal than a scenario. The dam is allowed to evolve into something more expressive of the Yangtze. In any case, the flow of nutrients to the sea are not sharply cut.

11. River Rifle

Downstream from the 1500 feet elevation, the Yellow River, having just passed through the desert and with much of its water replaced with silt, enters a depletive phase. It enters a broad valley in which several tributaries, along with its own flow, create a broad, diffuse riverbed. Tighten this up. Follow the header/multichannel canal device used by Russian engineers with Iraq in their territory-cutoff penetration of Iran, in the 1980s. The number of multiple channels filled, each less than 100 meters wide, can vary. The present sluggishness and diffusion of the Yellow, due partly to the backup from the Sanmenxia (Three Gate Gorges) Dam downstream, gets replaced with a more stable flow.

AT RIGHT:

ONE OF PETER FEND'S MODELS DEPICTING THE TRIPLE CONCAVE DISK SALT/MUD FLATS AND THE DOUBLE SPIRAL ESTUARINE RAMPS.

12. Chiang-Shan Cut

Since flooding on the Yangtze results usually from a combination of heavy rains downstream among the southern tributaries, along with heavy mountain runoff from upstream, an alternative path gets constructed for the southern tributaries furthest east. This reduces flows into the giant Poyan-Hu, shuttling them east along the 250 feet elevation line to a point just uphill from Chiang-Shan. A *Double Negative* cut into a backward bending tributary into Poyan-Hu allows waters to flow downhill quickly east and then—just before they would normally turn sharply towards the west—be shunted with a second *Double Negative* cut into a stream flowing ultimately east, towards Hangchow. Nutrient mixing and bioproductivity increases in the Gulf of Hangchow and East China Sea.

13. Yellow River Diversion

In anticipation of the reduction, up to half, of freshwater flow into the ocean, and in recognition of the near-zero flow of the Yellow River into the ocean along its current route (into the already-silted Gulf of Bohai, to the north), divert the Yellow River back to its course during most of the past millennium (up to 1852): just north of the estuary of the Yangtze. The diversion follows two well-established flood-overflow channels, straddled by levees.

They converge on an ancient dammed lake, the Hongze. This lake becomes a header, with 10 meters elevation, for what would soon be an outrush of waters into an excavated zone between two canals already built to the sea. In the middle of this zone is built a tidal-river salt/fresh mixing system, the double-spiral ramps. A substantial



incursion of saltwater occurs. Immediately, we start removing the accumulations of sediment with rigs for growth and harvesting of *Laminaria* or, better, *Macrocystis* marine algae.

14. Yangtze Estuary

After engineering for increased bioproductivity in the East China Sea—and consequently, following the Yangtze flow east, the Sea of Japan. This scenario is subordinate to an overriding need: that the combined Yangtze and Yellow River flows impact on the ocean eastwards enough to press water and sediment flows into

the Sea of Japan, and to keep out a substantial influx into that Sea of Japan from the main open-sea current of the region, the Kuroshio Current. If the Three Gorges Dam were to sharply reduce Yangtze impact on the ocean, and if compensatory changes were not also made with the Yellow outflow (as here proposed), then the East China Sea, hence the Sea of Japan, could be seriously invaded by the Kuroshio Current. The Current could consequently end up trapped and fail to proceed past the southeast coast of Japan across the Pacific to California. The oceanic consequences could be disastrous. Hence, a full enhancement of ocean vitality and evapotranspiration cycles east of Shanghai will be—certainly if the Three Gorges Dam proceeds—globally essential.

15. Triple Concave Disc Salt/Mud Flats

At times of lower volume, for example after any Three Gorges Dam is underway (with up to half the outflow gone, according to oceanographer Changsheng Chen), the Yangtze stream will tend to bear south and hug the coast. Not unlike the Danube at its outlet into the Black Sea, the stream will tend to dig into the coast. One can provide sites for invasion. Three mud disc marshes,

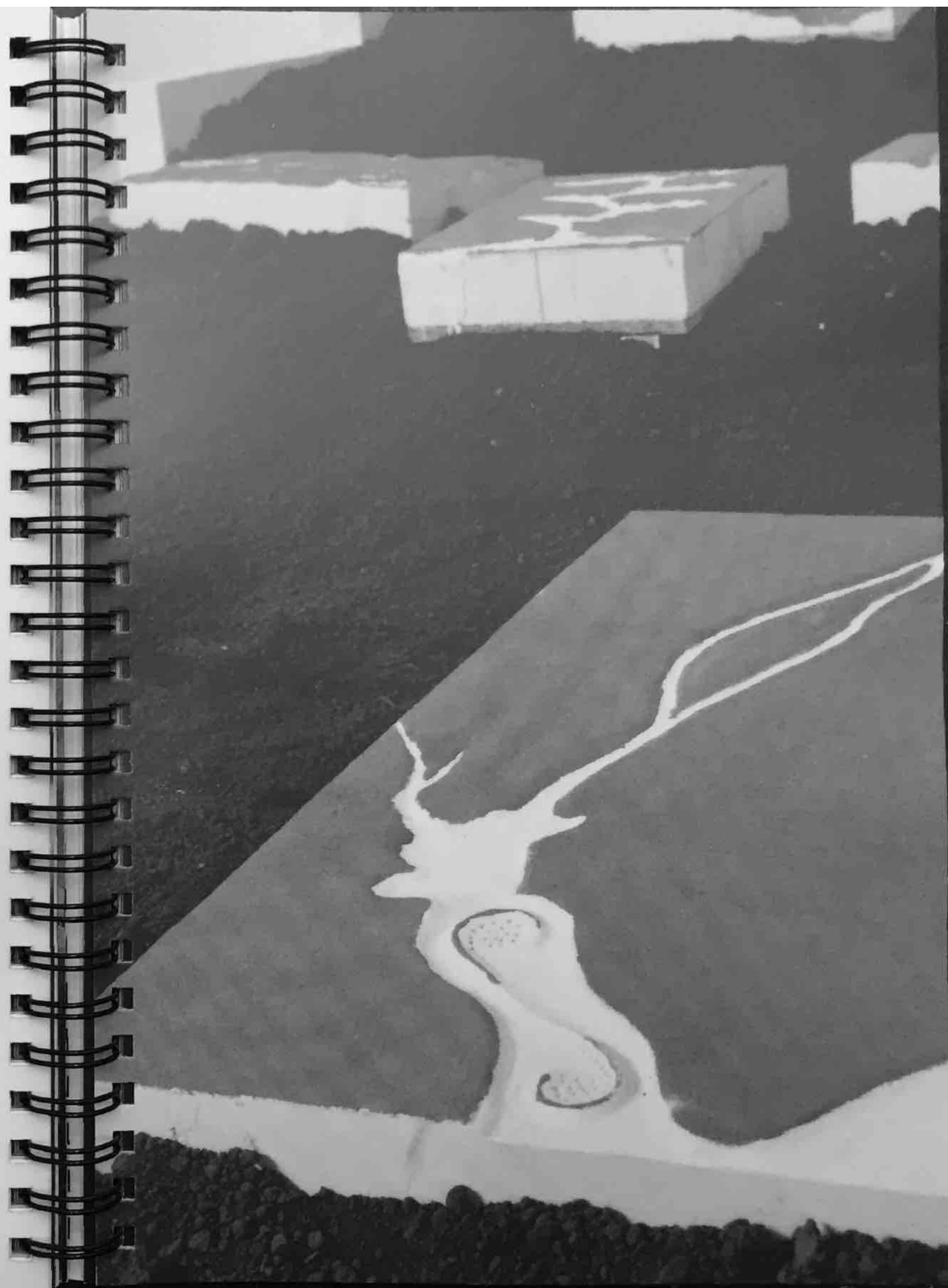
each with an inlet for intruding seawater and each with holes to increase small-scale mixing and gestation of salt-fresh waters, are built in succession just south of the mouth of the Yangtze. These become vast marine-life breeding grounds.

16. Double Spiral Estuarine Ramps

The Yangtze estuary changes dramatically to sharply increase mixing of outflowing freshwater and tidal-inflowing saltwater. The Chongming Dao island is hardened at both ends, then eroded along the middle. At each end, a ramp disc remains, pockmarked with holes for multi-site mixing and gestation of fresh- and saltwaters. *

—JUNE 2000

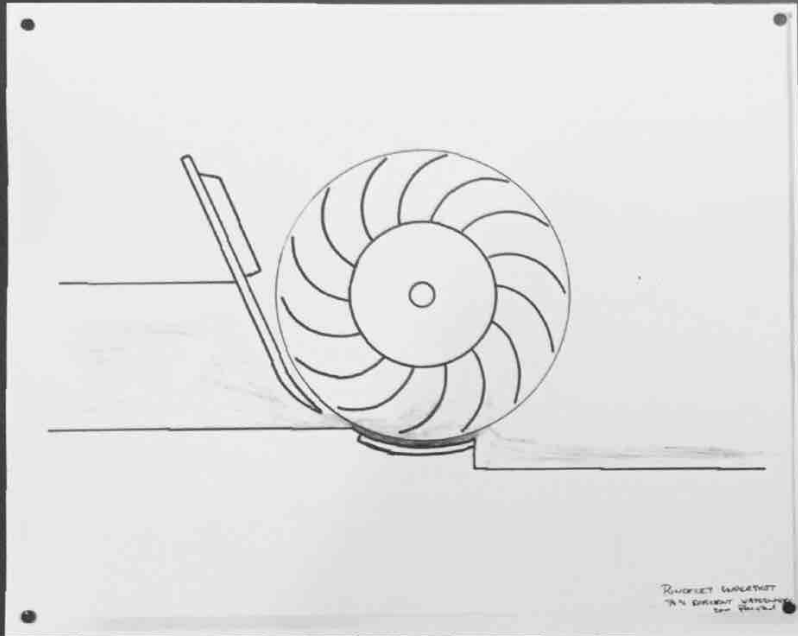
AT RIGHT:
SEVERAL OF PETER FEND'S MODELS;
IN FOREGROUND, THE DOUBLE SPIRAL ESTUARINE RAMPS.



NOTES

ON THE DRAWINGS: TECHNOLOGIES INSTEAD OF DAMS
(OR MINERAL FUELS)

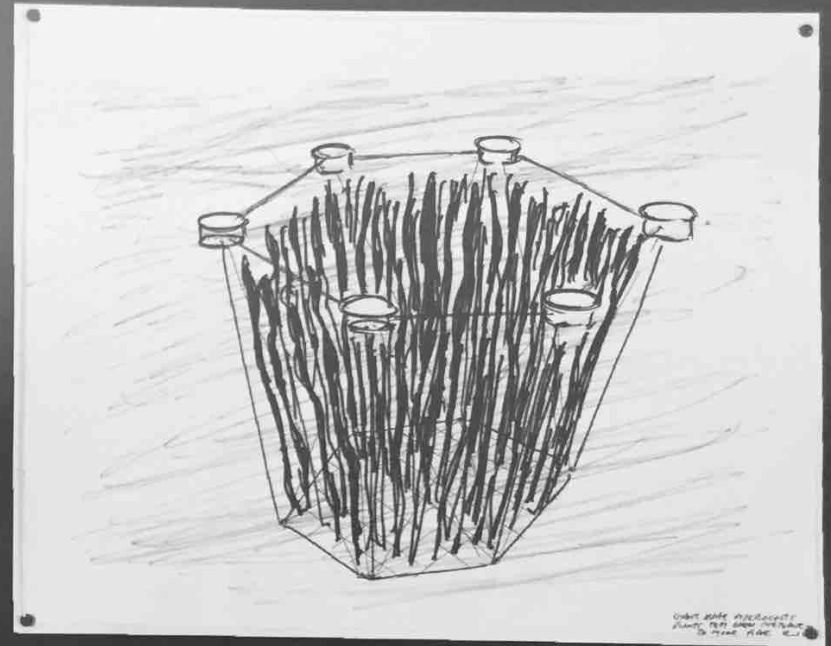
PETER FEND



Non-dam hydroelectric power, using the flow of the river, not a fall. 25% less efficient in electricity production than dams, it comes out ahead in letting sediments pass downstream and fish pass both ways. Applicable in any small stream. With hydrostatic storage

ABOVE:

PONCELET UNDERSHOT WATERWHEEL

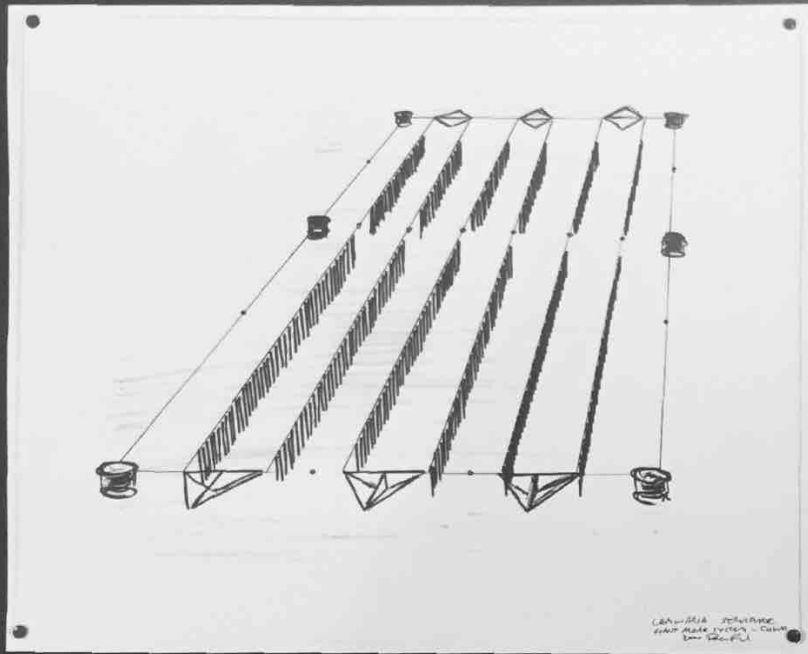


Salt-sea biomass collector, to yield gas. Design here by Ocean Earth Development Corporation, with Marc Lombard, French naval architect. Aim: to harvest the sediment runoff into salt seas or lakes as converted into kelp. Truly giant kelp—*Macrocystis*, up to 150 feet long, arguably the world's fastest growing plant—has been tested for economic use in the U.S. and France, but now is being tested at the national oceanographic center in . . .

China. Most questions center on the design of the rig. How does one make it storm-proof and ship-proof: submergibility with ballast tanks, along with flexibly-jointed buoys, appear to be solutions. Could the Ocean Earth design, and other types, be tested in China? This rig design, for example, calls for regular, perennial cropping of continuous growth, from below. The giant kelp can be fermented to yield methane fuel, or even hydrogen.

ABOVE:

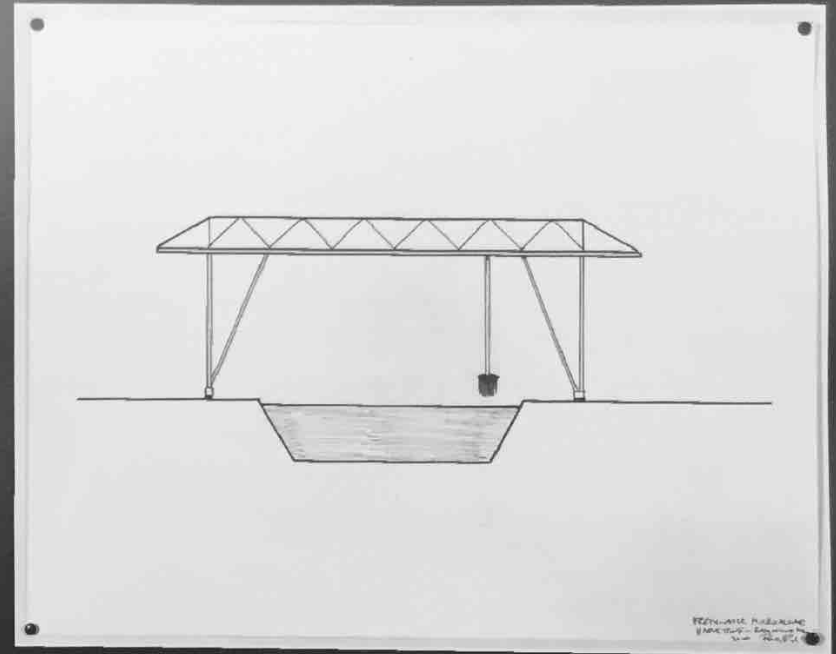
GIANT ALGAE SYSTEM CLEAN AIR RIG



Here, as developed by Japan Ocean Industries Association, combining recent discoveries with traditional Chinese/Japanese know-how. Useful in more shallow and silted waters, such

ABOVE:
LAMINARIA MARINE-ALGAE HARVESTING RIG

PETER FEND: NOTES ON THE DRAWINGS



With a particular culture (*Botryococcus braunii*) one can directly obtain kerosene, readily refined into jetfuel. Using calculations from the Australian Ministry of Defense, it appears that China could organize its many freshwater bodies to yield enough kerosene to ecologically fuel all its aircraft, civil and military. Other species or cultures could be grown and harvested, instead. In any case, simple technologies allow biofuels to be grown in China's freshwater bodies. Such practices, further, reduce evapotranspiration.

ABOVE:
FRESHWATER CANAL ALGAE HARVESTING RIG

PETER FEND*

Born 1950, New York, New York
Lives and works in New York, New York

EDUCATION

1973 B.A. Carleton College, Northfield, Minnesota

SELECTED SOLO AND COLLABORATIVE EXHIBITIONS

- 2000 *EURAFRICA/AMERICAS/MONDO*, Galeria Marta Cervera, Madrid, Spain ♣
NEWS ROOM NEW YORK, Roger Smith Gallery, New York ⚡
- 1999 *Global Warming: A Rapid Response Remark*, Nikolai Fine Art, New York ♣
Chase Scene, American Fine Arts, Co., New York ♣
- 1998 *NEWS ROOM GRAZ*, Kunst und Neue Medien, Graz, Austria ⚡
- 1996 *Chernobyl Solutions*, Steffany Martz, New York ♣/♣
- 1995 *Landkraft/Swiss Split*, Ars Futura, Zurich, Switzerland ♣
Landkraft, Künstlerhaus Thurn & Taxis, Bregenz, Austria ♣
Architecture for the 21st Century, Artspace, Sydney, Australia ♣

*The following abbreviations have been used to clarify whether Fend participated in an exhibition alone or as part of a collective:

⚡ : NEWS ROOM, begun in 1990 by George Chaikin, Fend, and Greg Lehmann.

♣ : Ocean Earth, founded in 1980 as Ocean Earth Construction and Development Corporation, a legally incorporated company, by Fend, Colleen Fitzgibbon, Wolfgang Staehle, and Taro Suzuki. Participants have changed over time, and the company's name was changed to Ocean Earth Development Corporation in 1994. Ocean Earth subsidiaries include City Bild, Space Force, and Beach Party.

♣ : Peter Fend

- 1994 *Eurasian Scenario*, Marc Jancou Gallery, London, United Kingdom ♣
Startbahn Oesterreich, Galerie Metropol, Vienna, Austria ♣
Global Spiral, installation at Global Forum, Manchester, United Kingdom ♣
NEWS ROOM COPENHAGEN, with Globe, Copenhagen, Denmark ⚡
Ocean Earth, Strauss & Adamopolous, Frankfurt, Germany ♣
- 1993 *Strategie Globale*, FRAC Poitou-Charentes, Angoulême, France ♣
Habitus, Galerie Anne de Villepoix, Paris, France ♣
OCEAN EARTH: FOR A WORLD WHICH WORKS, Neue Galerie am Landesmuseum Joanneum, Graz, Austria ♣
- 1992 *Site Simulator/Tivat Bay*, American Fine Arts, Co., New York ♣
Beach Party Deutschland, Galerie Esther Schipper, Cologne, Germany ♣
Beach Party Yugoslavia, Riverside Studios, London, United Kingdom ♣
Room Spin/Espace Circulant, Galerie Roger Pailhas, Paris, France ♣
Means to Wealth/Mittel zum Wohlstand, Galerie Tanja Grunert, Cologne, Germany ♣
- 1991 *Europa*, Kunstraum Daxer, Munich, Germany ♣
NEWS ROOM STOCKHOLM, Galerie Nordanstad-Skarstedt, Stockholm, Sweden ⚡
Beach Party, American Fine Arts, Co., New York ♣
Salle du Monde, long-term installation at the Hôpital Éphémère, Paris, France ♣
- 1990 *City of the Dead/Die Totenstadt*, Galerie Tanja Grunert, Cologne, Germany ♣
Cities as Bodies/Staedte als Koerper, Galerie Esther Schipper, Cologne, Germany ♣
NEWS ROOM FRANKFURT, Institut für Neue Medien/Pavilion Varisella, Frankfurt, Germany ⚡
NEWS ROOM NEW YORK/NEWS ROOM AMSTERDAM, American Fine Arts, Co., New York and Museum Fodor, Amsterdam, Netherlands ⚡
Progetto Adriatico, Le Case d'Arte, Milan, Italy ♣
Kleine Fragen, Galerie Christian Nagel, Cologne, Germany ♣/⚡
Einheiten, Galerie Ryszard Varisella, Frankfurt, Germany ♣
- 1989 *Completion of the War*, American Fine Arts, Co., New York ♣

- 1988 *BODY*, American Fine Arts, Co., New York ♣
Scott Hanson Gallery, New York ♣
- 1985 *Bacino Torbido*, Museo Santa Barbara, Calabria, Italy ♣
- 1982 *Art of the State*, The Kitchen, New York ♣
Space Force in Action, Kunsthalle Dusseldorf, Dusseldorf, Germany ♣
- 1979 *IRON LUNG: A ROOM DEFINED NOT BY ITS WALLS BUT BY A PUMP*,
Peter Nadin Gallery, New York ♣
World Space: Political Economies After Oil, Peter Nadin Gallery, New York ♣

SELECTED GROUP EXHIBITIONS

- 2000 *Dystopia*, Tribes Gallery, New York ♣
World Trade, Roebling Hall, Brooklyn, New York ♣
Carnival in the Eye of the Storm: Korovo, Pacific Northwest
College of Art, Portland, Oregon ♣
- 1998 *Your Utopia*, Momenta Art, Brooklyn, New York ♣
- 1997 *Venice Biennale*, French Pavilion, Venice, Italy ♣
The Experimenters, Lombard-Fried Fine Arts, New York ♣
- 1996 *Atopic Site*, Tokyo International Convention Center, organized by Tokyo
Metropolitan Government, Tokyo, Japan ♣
Art Meets Science, in conjunction with "Copenhagen, European City of
Culture," Charlottenborg, Copenhagen, Denmark ♣
- 1995 *Venice Biennale*, Aperto, Venice, Italy ♣
Mapping: A Response to MoMA, American Fine Arts, Co., New York
♣/♣/♣; CURATED BY ♣
Glaube, Hoffnung, Liebe, Tod, Kunsthalle Wien, Vienna, Austria ♣
Photography After Photography, Siemens Kulturprogramm, Munich, Germany ♣
Infrasound, Kunst im öffentlichen Raum, Hamburg, Germany ♣
- 1994 *Cloaca Maxima*, Stadtentwässerung, Zurich, Switzerland ♣

- 1993 *Venice Biennale*, Aperto, Venice, Italy ♣/♣
Fontanelle, Potsdam, Germany ♣
Kontext Kunst, Neue Galerie am Landesmuseum Joanneum, Graz,
Austria ♣/♣
Kunst in Weltmassstab, Kunsthalle zu Kiel, Kiel, Germany ♣
The Edge of Chaos: New Ways of Seeing, Louisiana Museum for Modern Art,
Humlebaek, Denmark ♣
Viennese Story, Wiener Secession, Vienna, Austria ♣
- 1992 *Documenta IX*, Kassel, Germany ♣
Floriade, The Hague, Netherlands ♣
Corse Divise, Assemblée Nationale, Paris, France ♣
Documatter, Andrea Rosen Gallery, New York ♣
Reconnaissance, Simon Watson Gallery, New York ♣/♣
Nippon International Contemporary Art Fair, Yokohama, Japan ♣
- 1991 *Teorici Americani*, Ottogano, Milan, Italy ♣
- 1990 *The Köln Show*, multi-gallery exhibition, Cologne, Germany ♣
California Project, Terrain Gallery, San Francisco, California ♣
- 1989 *Art at the End of the Social*, Rooseum, Malmö, Sweden ♣
Jet Lag, Turon Travel, New York ♣
- 1988 *The New Poverty II*, Meyers Bloom Gallery, Los Angeles, California ♣
International Landscape, Galerie XPO, Hamburg and Galerie Christoph
Duerr, Munich, Germany ♣
Computer Images of Architecture, NY Chapter, American Institute of
Architects, New York ♣
Competition Diomede, The Clocktower, New York ♣
Kunstrai, Amsterdam, Netherlands ♣
- 1987 *Documenta VIII*, Kassel, Germany ♣, ATTRIBUTED TO INGO GÜNTHER
The New Poverty, John Gibson Gallery, New York ♣
- 1986 *Surveillance*, Los Angeles Contemporary Exhibitions, Los Angeles, California ♣

- 1985 *German Art 1945–1985*, Nationalgalerie, Berlin, Germany
 ♣, ATTRIBUTED TO PETER FEND/INGO GÜNTHER
- 1984 *Kunst und Medien*, Kunsthalle Berlin, Berlin, Germany ♣
Via Satellite, Amerika Haus, Cologne, Germany ♣
- 1983 *Image/Process*, The Kitchen, New York ♣
1984 Show, Ronald Feldman Fine Arts, New York ♣
- 1982 *Natural History*, Grace de Borgenicht Gallery, New York ♣
- 1981 *New York/New Wave*, P.S. 1, Long Island City, New York ♣
Forrest Avenue Maze, Forrest Avenue School, New York ♣
- 1980 *The Real Estate Show*, New York ♣
The Times Square Show, New York ♣
- 1978 *Poetry of Systems*, Baxter Art Museum, California Institute of Technology,
 Pasadena, California ♣

SELECTED BIBLIOGRAPHY

- Aperto '93: emergency, emergenza: Flash Art International*. Milan: G. Politi, 1993.
- Beach Party*. Cologne: Daniel Buchholz, 1992.
- Bischoff, Daniel. "For Iraq, Oil and Water Do Mix." *Village Voice* (January 22, 1991). ♣ IMAGE
- Corris, Michael. "Peter Fend at Marc Jancou Gallery." *Artforum* 33 (September 1994): 116.
- Crary, Jonathan. "Peter Fend's Global Architecture." *Arts Magazine* 55 (June 1981): 152–153.
- De Portela, Ana, ed. *Video*, a special edition of *New Observations* 103 (November–December 1994): 1–31.
- Documenta VIII: Kassel June 12–September 20, 1987*. Kassel: Weber & Weidemeyer, 1987.
- Documenta IX: Kassel June 13–September 20, 1992*. Stuttgart: Edition Cantz, 1992.
- Drury, Stephen A. *A Guide to Remote Sensing: Interpreting Images of the Earth*. Oxford, England and New York: Oxford University Press, 1990.
 ♣ IMAGE
- Fend, Peter. "Administration of the Adriatic." *Flash Art* (November/December 1990): 130–131.
- . "Architecture for the Planet I: World War II Stragey, Space Force." *East Village Eye* (March 1983): 30.
- . "Architecture for the Planet II: Italian Military Action: Impossible Mission." *East Village Eye* (June 1983): 30.
- . "Architecture for the Planet III: Palestine Peace Plan." *East Village Eye* (September 1983): 31.
- . "Architecture of the 21st Century: Ocean Earth." *Issue* 3 (May 2000). Insert; subsequently published as a prospectus for Ocean Earth.
- . "Art of the State." In *Die Entfesselte Blick: Symposium, Workshops, Ausstellung*, edited by Gerhard Johann Lischka. Bern, Switzerland: Benteli, 1993.
- . "Chernobyl Solutions." *Grand Street* 60 (Spring 1997): 223–240.
- . "City of the Dead." *Heute Kunst* 11 (July 1979): 10–11.

This bibliography does not distinguish among Peter Fend's solo and collaborative work, but several books and articles that include reproductions of satellite images produced by Ocean Earth are listed here and marked as ♣ IMAGE.

- . "Mariculture Rig." *Art Journal* 51 (Summer 1992): 20.
- . "Ocean Basin Monitoring and Modeling: I: North Sea/Baltic Sea; Black Sea; II: Persian Gulf." In *Global Natural Resource Monitoring and Assessments: Preparing for the 21st Century: proceedings of the international conference and workshop, September 24–30, 1989, Fondazione G. Cini, Isle of San Giorgio Maggiore, Venice, Italy*. Bethesda, Maryland: American Society for Photogrammetry and Remote Sensing, 1989.
- . "Satellites, Video, and the News." In *Global Television*, edited by Cynthia Schneider and Brian Wallis. New York: Wedge Press and Cambridge, Mass., MIT Press, 1988.
- . "Spine, City, Form." In *Incorporations*, edited by Jonathan Crary and Sanford Kwinter, 478–479. (New York: Zone, 1992).
- . "The Unbelievable: Art & Advertising." *Mediamatic* 7 (Winter 1994): 256–60.
- . "Why New Worlds Conceived by Artists Do Not Get Built." *Unbuilt Roads: 107 Unrealized Projects*, edited by Hans-Ulrich Obrist, n.p. Ostfildern-Ruit Hatje, 1997.
- Fend, Peter and Ingo Gunther. "Iraq's Secret Weapon: Water." *New Scientist* 114 (January 17, 1985): 10–11.
- Fend, Peter and Jerome Sans. "The City as a Machine for Living In." *Grand Street* 50 (Fall 1994): 23–31.
- Fischetti, Mark A. "Nuclear Power: The Puzzle of Chernobyl." *IEEE Spectrum* (July 1986): 34–37. ♣ IMAGES, COVER
- Geissmar-Brandi, Christoph and Eleonora Louis. *Glaube, Hoffnung, Liebe, Tod*. Vienna: Kunsthalle Wien, 1996. CATALOGUE
- Jones, Alan and Jerome Sans. "Thinking Big: Peter Fend's World Beach Party." *Arts Magazine* 66 (October 1991): 52–57.
- Kastner, Jeffrey, ed. *Land and Environmental Art*. London: Phaidon Press, 1998.
- Larsen, Susan. *The Poetry of Systems*. Pasadena, California: California Institute of Technology, Baxter Art Gallery, 1978. CATALOGUE
- MacKenzie, Debora. "Fending off a Scandal in the Gulf." *New Scientist* 116 (5 November 1987): 29.
- Myerson, Clifford. "Marc Jancou Gallery, London; Installation." *Art Monthly* 178 (July–August 1994): 41–42.

- Oliveira, Nicolas de, Nicola Oxley, and Michael Petry, eds. *Installation Art*. London: Thames and Hudson, 1994.
- Photography After Photography: Memory and Representation in the Digital Age*. Amsterdam: G + B Arts, 1996. CATALOGUE
- Pocock, Philip. "Peter Fend." *Journal of Contemporary Art* 6 (Summer 1993): 20–38.
- Sans, Jerome. "Construction and Development." *Arts Magazine* 66 (October 1991): 55.
- Schmidt, Hans-Werner. *Kunst im Weltmassstab*. Kiel: Der Verein, 1993. CATALOGUE
- Trucco, Terry. "From Eyes in the Sky, Profitable Images." *International Herald Tribune* (February 26, 1986).
- Weibel, Peter, ed. *Kontext Kunst*. Köln: DuMont, 1994. CATALOGUE
- . *Ocean Earth*. Graz: Neue Galerie am Landesmuseum Joanneum, 1994.