BUREAUCRACY, ENTREPRENEURSHIP, AND NATURAL RESOURCES: Witless Policy and the Barrier Islands

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There are about 1,605,000 acres in about 300 barrier islands and spits in the United States.[1] They rim the Atlantic and Gulf coasts from Cape Cod to the Mexican border and vary from small units of 50 acres or less to islands of more than 100,000 acres. Some are little more than elevated sand bars. Others are complex structures made up of sand dunes with prolific vegetation. There are also mangrove islands and some remnants of an earlier coastal plain.

These spits and islands are some of the most significant topographic features of the east coast and constitute the longest and most elaborate chain of barrier islands in the world. The typical island is a long, narrow landform made up of unconsolidated and shifting sand and marked by a dynamic beach system, sand dunes, and very low elevations. Many of these islands are impressively unstable; their shorelines and even their locations are constantly shifting.[2]

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[1] Much of the following descriptive data are from U.S. Department of Interior, *Alternative Policies for Protecting Barrier Islands along the Atlantic and Gulf Coasts of the United States and Draft Environmental Statement* (Washington, D.C.: Government Printing Office, December 1979).

[2] Shoreline changes over fifteen years or more have been studied for a 630 km.

The islands are economically and environmentally important. Many protect estuaries that are the breeding grounds of commercial and sport fish species. In 1976, the offshore fishing industry of the Gulf states produced nearly one-third of the value generated by U.S. fisheries; 97.5 percent of that catch was composed of estuarine-dependent species.[3] About two-thirds of the most valuable commercial fish species found along the Atlantic and Gulf coasts depend directly on estuaries; and barrier islands are vital parts of the relevant estuarial systems.[4]

These breeding grounds are relatively fragile. When a causeway was built between the mainland and Sanibel Island on the Florida Gulf coast, it wiped out a $1.5 million-a-year scallop industry, which has not recovered after seventeen years.[5] When an artificial opening to the sea was made through the barrier islands screening Apalachicola Bay on the Florida Gulf coast, the bay's productivity was quickly reduced by 6 to 8 percent. The Apalachicola Bay estuary is the source of 10 percent of the nation's oysters and is a nursery for the Florida shrimp industry.[6]

The barrier islands offer little protection to their inhabitants against great storms and hurricanes. They do help reduce the impact of these natural forces on the shorelines that they shelter. In 1900, six thousand people were killed when a hurricane struck Galveston, Texas, located on a barrier island off the Texas coast. All the barrier islands are found in places that have been swept by hurricanes or "northeasters," winter storms along the mid-Atlantic coast.

About seventy of the islands contain urban settlements, including Atlantic City, Ocean City, Md., Virginia Beach, Miami Beach, and Galveston. By 1980, about one hundred were in federal, state, or local parks or refuges. Approximately one hundred and twenty islands are privately owned and largely undeveloped. Rapid urbanization and commercialization have been occurring on several of the

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stretch of barrier islands on the mid-Atlantic coast. An overall erosion rate of 1.5 m/yr. was found. It understates the situation. Generally, these islands are moving west at variable rates, while the continental shorelines behind them are also changing. See R. Dolan, B. Hayden, and H. Lins, "Barrier Islands," *American Scientist* 68 (January-February 1980): 20-21.

[3]U.S. Department of Interior, *Alternative Policies,* p. 123.

[4]Ibid.

[5]Porter J. Goss, in *Hearings on H.R. 5981 to Establish a Barrier Islands Protection System, Before the Subcommittee on National Parks and Insular Affairs,* 96th Cong., 2nd sess., March 1980, p. 480.

[6]Dr. Robert Livingston, in *Hearings on H.R. 5981,* pp. 113-14.

barrier islands. Between 1945 and 1973, the barrier-island land used for urban development increased by 140,000 acres, or 153 percent.[7] These islands are urbanizing at least three to four times faster than the mainland. "Every day, over 25 acres of fragile and vulnerable dunes, beaches and wetlands on the barrier islands are being converted into concrete jungles and condo rows for homesites. Almost 500 people are moved to live in these hazardous places."[8]

By 1975, 14 percent of the land on 282 of the islands was in urban use, compared to only 3 percent of the total land area of the United States. One of those islands is Hilton Head, South Carolina. It has been almost completely inundated by storms in the historic past.[9] In the late 1970s, private developers began constructing condominiums on Hilton Head, a four-lane highway and bridge were being built to accommodate an increasing population, local sewage processing facilities were overloaded, and an important shellfish industry was being threatened.

Settlement of these islands is a significant concern. It may also be a problem. If so, that problem can be formulated in several ways by emphasizing different dimensions of the situation. One can stress the degradation of marine environments with the consequent loss of important resources, or emphasize the risk of life and property inherent in the location of settlements in unstable and precarious environments. According to the National Hurricane Center, twenty-seven hurricanes hit barrier islands and moved inland between 1900 and 1979, doing a total of $12.9 billion worth of damage and killing more than twelve thousand persons. It might be held that rapidly growing settlement on the barrier islands is undesirable because these islands are public goods, and they ought not be preempted by small numbers of individuals. It might be emphasized that settlement generates large economic costs, such as the recent $65 million beach reconstruction project intended to "save" Miami Beach at the taxpayers' expense.

What seems to be causing this surge of settlement? What is the role of bureaucracy in the process?

Many people want to live at the ocean's edge and can afford to buy land and housing on the barrier islands – under existing conditions. Those conditions have largely been created by the concatenating effects of a number of federal programs. None of these bureaucratic enterprises were intended primarily to foster and pro-

[7]Dolan et al., "Barrier Islands," p. 23.

[8]*Dinesh Sharma, environmental consultant,* in *Hearings on H.R. 5981,* p. 133.

[9]Based on data for 1886-1970.

mote barrier-island settlement. Some of the most important were established with no attention to their effects on the islands. But at least one may have been created with some awareness that it would encourage urban settlement on flood plains and other vulnerable locations: the Federal Flood Insurance Program.

"Insurance makes all the difference in the world in a place this prone to hurricane damage [South Padre Island, Texas]. The boom began in 1971 when we started getting mortgage money. And when you get that, you get development."[10] More than 90 percent of the dwellings on South Padre Island had been rendered uninhabitable by Hurricane Beulah in 1967. By 1978, federally subsidized flood insurance for Port Aransas and South Padre, with a total population of 2,000 permanent residents, totaled $464 million.[11]

Federal Flood Insurance

About one out of every ten American homes is eligible for coverage by the Federal Flood Insurance Program. As of March 1980, 1.8 million of those dwellings were covered. Of these policies, 50,197 apply to structures in what is known as the V or Velocity zone, where they are subject to potential damage by storm waves moving at considerable velocity. Insured structures in V-zones include those on barrier islands and spits. In 1978 and 1979, the insurance program paid out about $17 million in response to V-zone damage claims.[12]

The Federal Flood Insurance Program was created to cover risks that are unacceptable in the regular insurance market, except at prohibitive premium rates. A carrot-and-stick program, it offers protection to established residents and places controls on new structures and those requiring reconstruction as a result of flooding. To be eligible for insurance, new and renovated structures must comply with flood protection standards. The federal government requires that V-zone buildings be elevated above the estimated wave level produced by a 100-year storm.[13] But other requirements are determined by local codes, and the interplay of flood insurance and local forces is complex. Testifying in March

[10]The former mayor of the city of South Padre Island, quoted by Crane Miller, in *Hearings on H.R. 5981*, p. 99.

[11]H. Crane Miller, vice president of an engineering firm engaged in coastal management consulting, in *Hearings on H.R. 5981*, p. 99.

[12]Ibid., p. 24. The subsidy involved in the agency's V-zone policies in 1980 is estimated at about $14 million.

[13]The "one-hundred-year storm" is the strongest that has occurred, on average, at least once every hundred years of recorded history.

1980 on H.R. 5981, Gloria Jimenez, administrator of the Federal Insurance Administration, speculated that "without the flood insurance program there probably would be no land-use controls in any of these places."[14]

Jimenez also estimated that an actuarially sound property insurance program in V-zones might require premiums of as much as $14,000 a year on private residences. She noted that Congress had made the decision to subsidize the risk to these properties and that "if you told people that they now have to pay a $14,000 premium, and they are required to purchase it . . . , the banks require that as a condition of getting a mortgage . . . , the uproar will be horrendous."[15] She went on to state that "as minimal as our standards are, they are fought vociferously by builders and developers. We have a situation in one community in Florida where it is not safe for some of our people to go into the town; so we go from one extreme where the builders and developers are really giving us a very difficult time, to the other extreme where we know that as minimal as they are, [the insurance eligibility standards] are really inadequate."[16]

The flood insurance program eliminates a major constraint on the development of vulnerable barrier islands by subsidizing property loss risks with hundreds of millions of dollars. It possesses nominal discretion over building standards and premium rates, but it is intentionally incapable of operating on an actuarially sound basis. It is vulnerable to intense political pressure if its eligibility standards are set too high.

When the program was established, its potential impact on barrier-island development was not clearly anticipated. To eliminate this incentive to development would require a major change in federal policy, a change that would withdraw generous subsidies from thousands of well-to-do welfare recipients and the local business interests that profit from barrier-island development.

The Witless System

The Federal Flood Insurance Program is crop insurance for real estate brokers and mortgage lenders. Created to remedy earlier errors in siting structures in flood plains and to reduce future errors by authorizing new construction standards, it opened new markets for barrier-island housing. The inadvertence of that effect is suggested by the fact that the program does not maintain precise

[14] *Hearings on H.R. 5981*, p. 37.
[15] Ibid., pp. 44–45.
[16] Ibid., p. 45.

records on whether the structures they insure are located on barrier islands. The agency's stance is reflected in its premium levels. In 1980, structures subject to storm wave damage paid a premium only 50 percent more than structures located on inland flood plains.

Nominally, the agency has discretion over its premiums. In reality, it is politically blocked from using those premiums to deter settlement. It cannot appeal to the principle of actuarial soundness, because it was created to cover actuarially untenable risks. It operates in a twilight zone, and there is no clear and unambiguous principle on which it can anchor its rate policies. It is product of a one-sided interest politics, in which one powerful claim is neither checked nor balanced by opposing forces. The only potential opposition to the flood insurance program might come from diffuse and unorganized opponents to federal subsidies, forces analogous in some ways to consumers, but even less focused than the representatives of that sometimes voluble group.

The Federal Flood Insurance Program is the capstone of a whole bureaucratic system. This system consists of a set of programs that cumulatively stimulate barrier-island development. Each program in this system operates according to a plausible rationale. Politically, each makes some kind of sense and serves some effective need. But there are secondary effects: unconsidered consequences for barrier islands. *In the aggregate* these agency programs comprise an undesigned and unintended bureaucratic system, a system that largely explains the state of American settlement and development on the barrier islands.

A draft of a policy study and environmental impact statement on these islands was completed in December 1979 by the Heritage Conservation and Recreation Service in conjunction with the National Park Service, the Fish and Wildlife Service, the Office of Coastal Zone Management, and the Council on Environmental Quality. It identifies nineteen federal agencies whose programs directly affect the barrier islands. A number of them stimulate development and settlement.

The Environmental Protection Agency

Ironically, one such agency is the Environmental Protection Agency (EPA). Under the 1972 amendments to the Federal Water Pollution Control Act and the Clean Water Act of 1977, the EPA funds 75 percent (in some cases 85 percent) of the capital costs of public wastewater treatment works. The EPA does consider potential impacts on wetlands and floodplains, but its grants are among the catalysts for expanding barrier-island settlement. The EPA

funds between $3 billion and $4 billion worth of construction grants annually. Between 1975 and 1980, the agency funded about $459 million worth of wastewater treatment construction grants, which it described as "potentially impacting barrier island environments."[17] Ninety-eight projects in thirteen states were involved. These numbers are more impressive than indicative, but some of the projects are located on vulnerable barrier islands, including Hilton Head and South Padre.

The EPA will not underwrite construction of collector sewers for communities that did not exist before October 18, 1972. But according to the Department of Interior's *Alternative Policies* study of December 1979, "there is no special significance attached to a wastewater treatment facility proposal on, or serving, a barrier island community." EPA regulations for areawide planning grants do not specifically address barrier islands. As a consequence, regional plans for water quality management, part of the basis for EPA funding, may not be detailed enough to permit analysis of planned or potential impacts on individual islands.[18] After Hurricane Frederick pounded the Alabama-Mississippi coast in 1979, mauling Dauphin Island in the process, the EPA approved a grant to upgrade the island's sewage treatment plant to support 2,000 new houses—on an island with a population of about 1,200 persons.[19]

The Economic Development Administration

From 1977 through March 1980, the Economic Development Administration (EDA) funded about 150 projects on barrier islands through grants totaling $81,203,000. Created in 1965 during the War on Poverty, EDA's mission is to provide development grants and technical assistance to distressed areas. Its grants can cover 75 percent of the cost of planning and managing economic development programs and up to 50 percent of the costs of water and sewer systems, harbors, roads to industrial areas, flood control projects, and other works justified by their contribution to economic growth.

In September 1978, the EDA approved a $155,000 grant to Sea Bright, New Jersey, for seawall reconstruction. According to geology professor Orrin Pilkey of Duke University:

> Sea Bright, N.J. is a classic example ... of the 100-to-150-year result of shoreline stabilization. Sea Bright ... is ... fronted by a very tall seawall. The beach now is totally missing, even at low

[17]Ibid., pp. 285–89.

[18]U.S. Department of Interior, *Alternative Policies*, p. A-28.

[19]*Hearings on H.R. 5981*, p. 523.

> tide, and it has been replaced by a line of rubble from previously destroyed seawalls and groins.
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> Over the years the entire Continental Shelf [at Sea Bright] has deepened to the point that there is no more possibility of beach replenishment, because the sand would disappear very rapidly.... The shoreline at Sea Bright is steep enough that sustained 25 knot winds will produce waves that will top the seawall.... Sea Bright has reached a point of no return. It is not even possible to remove the seawall and let nature take her course, because the natural shoreline or where the beach wants to be, is now hundreds of feet behind where the seawall is.... New Jerseyization is not only a New Jersey phenomenon: many American beaches are approaching the same state. To name a few, I can include Rehoboth Beach, Del.; Ocean City, Md.; Wrightsville Beach, N.C.; Folly Beach, S.C.; Tybee Island, Ga.; numerous south Florida islands; Grand Isle, La.; and South Padre Island, Tex.[20]

Between 1977 and 1980 the EDA apparently financed no other seawall reconstruction. But dozens of its projects contribute to the urban development of barrier islands.

The Army Corps of Engineers

On March 24, 1980, Major General E. R. Heiberg III, the Army Corps of Engineers' director of civil works, testified that between 1974 and 1980 the corps had spent $6,540,000 on five emergency operations to restore or protect federal projects through beach erosion control or hurricane protection. The corps also spent about $25 million on barrier-island beach erosion projects from fiscal year 1975 through fiscal year 1980 (counting the latter year's appropriation), plus somewhat less than $15 million on barrier-island flood control.

Heiberg's testimony did not mention the corps's contribution to the cleanup job resulting from Hurricane Frederick in September 1979. The Mobile *Press-Register* estimated that by April 19, 1980, the corps had spent $80 million to help clean away hurricane debris. What share of that sum was spent on Dauphin Island is unknown.

The corps is inextricably involved in activities affecting barrier islands. It dredges harbors, navigation channels, and the intercoastal waterway. It regulates private dredging, replenishes beaches, and provides bail-out help to storm-struck states and localities, repairing flood damage and shore protection works. Shoreline stabilization projects manipulate flows of sand and can have significant effects on natural processes.

[20]Ibid., p. 107.

The corps has been criticized for a "lack or inadequacy of early coordination" with agencies responsible for safeguarding barrier islands. "All too often the first notice of a proposed project has been the issuance of a draft environmental statement. Unfortunately, by this time there is often a substantial commitment to the project and a general reluctance to modify conditions compatible to the long-term maintenance of barrier islands."[21]

This restrained comment refers to an agency that has a reputation for insistent autonomy and complex involvements with local political interests. The corps pursues its own mission. Part of that mission is to help pick up the pieces and restore physical order in the wake of storms. The agency's autonomy is in considerable measure a product of its subservience, some of it to political forces committed to barrier-island development.

Transportation: The Coast Guard and the Federal Highway Administration

Hurricane Frederick destroyed a bridge linking Dauphin Island to the Alabama mainland. Less than six months later, the Coast Guard had granted a permit for a new bridge, and the Federal Highway Administration (FHWA) had authorized $33 million for its construction. For about $7 million, Dauphin Island could have been purchased by the federal government and its 1,200 residents relocated.

Bridges have been described as the *sine qua non* of barrier-island development.[22] The Coast Guard acts under an unambiguous policy: Bridge permits are granted unless proposed bridges would interfere with navigation.

The FHWA administers the federal-aid highway program, generally making funds available on a 70 percent federal, 30 percent state matching basis. Technically, the FHWA is bound by the Department of Transportation statute that protects significant and publicly owned recreational areas, wildlife and waterfowl refuges, and parks against new highway building. The statutory stricture is frequently discounted by findings that there are no feasible and prudent alternatives to the proposed roads and bridges.

The impact of the FHWA lies in its effects, not in its power. It dispenses funds according to formulas that respond to state-set priorities. In the case of Dauphin Island, a ranking official in the Department of Transportation testified that reconstruction of the Dauphin Island bridge was a high priority of the state of Alabama.

[21] U.S. Department of Interior, *Alternative Policies*, p. A-37.
[22] Ibid., p. A-55.

And a bureaucratic resource transfer was routinely triggered by the application of established procedures. The state was not even required to match the federal contribution to cost of the new bridge.[23]

In the FHWA program, the possession of federal resources is separated from the command of policy. As a result, significant influence over barrier-island development is placed in the hands of states and localities, even when the funds involved come from the federal fisc.

Other Agencies in the Undesigned System

The *Farmers Home Administration* (FmHA) is a misleadingly labeled rural community support organization. It makes low-cost loans for water and waste disposal systems, housing, and emergencies. It funds area development planning in rural areas. From the beginning of fiscal year 1976 through March 1, 1980, FmHA insured or guaranteed loans totaling $7,296,000 and made grants of $6,682,000 for projects on barrier islands, including twenty-four wastewater disposal projects.

The *Small Business Administration* (SBA) operates a loan and loan-guarantee program to assist businesses injured by disasters and to restore disaster-damaged physical property to predisaster conditions. Churches, businesses, schools, hospitals, and individuals may borrow at low interest rates for property restoration. Within nine months after Hurricane Frederick, the SBA had reportedly disbursed more than $50 million in disaster loans in the Alabama-Mississippi coastal area.

When the president declares a disaster area, the *Federal Emergency Management Agency* (FEMA) goes into action under the Disaster Relief Act of 1974. If a disaster victim lacks flood insurance, FEMA can buy that individual (or family) a one-year flood insurance policy for a premium of $25. FEMA can grant disaster victims up to $5,000 and provide them with temporary housing for up to a year. From 1975 through 1979, the agency spent $11 million for disaster relief on barrier islands under its public assistance program to restore damaged public facilities. In addition, FEMA can require that damaged or destroyed buildings be relocated if their sites are dangerous and alternative locations are available.

The Coastal Zone Management Act of 1972 provides funds to coastal states to encourage and enable them to develop and implement coastal management programs. The aim is to "assure ap-

[23] *Hearings on H.R. 5981*, p. 508.

propriate protection of valuable natural coastal resources such as barrier islands." The law invites states to develop and administer land-use controls and construction regulations designed to guard against storm damage. States are offered federal matching funds for establishing and operating estuarine sanctuaries, several of which contain barrier islands.[24] In March 1980, the head of the *Office of Coastal Zone Management* (OCZM) testified that "we do have States that are working on barrier island policies through the Coastal Zone Management Act."[25] He went on to support the act's concept of a federal-state partnership in coastal zone management, a partnership in which primary responsibilities are assigned to the states.

In 1976 and 1980, the General Accounting Office (GAO) reviewed the coastal zone program. In the 1976 report, GAO found the responsible agency "long on encouraging States but short on effective monitoring and problem solving."[26] Four years later GAO noted that many of the same problems remained.

The noble purpose of the Coastal Zone Management Act is "to encourage States to develop and implement programs that insure effective management of coastal resources."[27] This encouragement is backed by money. From 1974 through fiscal year 1980, OCZM dispensed $69 million in planning grants and another $80 million in administration grants. Since 1977, OCZM has provided Coastal Energy Impact Program (CEIP) grants and credit assistance in the amount of $154.5 million. CEIP funds aim to help states deal with the social, economic, and environmental disruptions resulting from "coastal energy activities," particularly drilling for petroleum. One CEIP grant is helping fund a $958,000 water system on Grande Isle, a Louisiana barrier island classified as undergoing "New Jerseyization."

[24]Ibid., pp. 66-68.

[25]Ibid., p. 69.

[26]U.S. General Accounting Office, *Problems Continue in the Federal Management of the Coastal Zone Management Program,* Report to the Secretary of Commerce, CED-80-103 (Washington, D.C.: General Accounting Office, 1980), p. i.

[27]A study by John R. Sheaffer and Lee Rozaklis projects a federal expenditure of $11.2 billion in 1980 dollars to continue to fund current programs affecting barrier islands – 5.6 times the cost of purchasing the undeveloped 480,000 acres. This study assumes that 240,000 of these acres will be developed by the end of the century under present trends and policies. The $11.2 billion of project costs is derived from assumptions about the development of 480,000 acres. It can be argued that they overstate the prospects by half. Even so, the evidence suggests that purchase would be cheaper than the present pattern. See John R. Sheaffer and Lee Rozaklis, "Barrier Islands Purchase: A Cost-Effective Approach to Management," reported in *Hearings on H.R. 5981,* pp. 392-402.

What Does All This Mean?

In 1980, the National Park Service estimated that about 480,000 undeveloped acres of barrier island had the potential for development. At $4,000 per acre, these lands—about 30 percent of the barrier-islands land area—could be purchased for $2.02 billion. This is about twice the amount spent during a recent five-year period in the federal programs mentioned above.

The comparison suggests the magnitudes involved in alternative approaches to the barrier islands. But the figure can easily be misleading. A large share of federal expenditures for barrier islands is directed to heavily populated areas like Atlantic City and Galveston. Yet, the potential disaster-insurance liability of the federal government for dwellings in areas subject to wave damage ($40,000 x 50,000 policies) is $2 billion and the amount is growing. The costs of a federal purchase program would not be grossly out of line with the expenditures likely to be incurred in a short time under continued development.

In November 1979, legislation (H.R. 5981) was introduced proposing to incorporate the undeveloped areas of the barrier islands within the national park system. The proposal has been supported by a number of conservation groups and was subjected to qualified criticism by representatives of the Department of Interior. The Carter administration's approach to the barrier islands during the "Year of the Coast" emphasized an alternative approach, decentralization: federal funds and standards plus state and local action. This perspective is consistent with the unplanned "system" of bureaucratic activities now affecting the islands and the nation's coast.

The GAO's 1980 review of the Coastal Zone Management Program found its impact limited. The states "had been least successful in establishing and controlling coastal zone activities at the local level . . . , such as [determining] areas suitable for development or areas necessary for maintaining economical systems."[28]

In the rather charming vision of the Coastal Zone Management Act, individual states were to develop comprehensive plans for the management and development of their coastal areas. These plans would not only govern local activities but would also compel federal programs and activities. State plans were to shape local action and coordinate the efforts of federal agencies. It hasn't worked that way.

The arrangement locates responsibility at the weakest point in

[28] General Accounting Office, *Problems Continue*, p. 4.

the system. It does have the potentially useful effect of surfacing conflicts in policies and practices that may become the raw materials of legislative action. For example, it has become clear that some federal program goals are inconsistent with the OCZM aims: "Federally built sea walls, jetties, and bulkheads, designed to protect property and shorelines from tidal waves, floods, etc., promote residential and commercial development in hazard-prone areas in which the States ... would not wish to develop.... Federally-supported flood insurance regulations ... stimulated shore-front development ... in high hazard coastal areas."[29]

Under the CZM Act, the secretary of commerce and the Department of Commerce's National Oceanic and Atmospheric Administration are charged with making rules and regulations, coordinating program activities of relevant federal agencies, and continually reviewing state performance. In May 1980, nineteen of the thirty-five relevant states and American Samoa had federally approved coastal management programs. But paper plans are no more forceful in resisting political claims than Sea Bright, New Jersey's seawall or Miami Beach's augmentation project have been in defying nature.

Some people see the problem of barrier-island development as a growing and avoidable risk of lives and property. "A hurricane will kill hundreds, if not thousands, of Americans, and cause billions of dollars of property damage sometime soon.... I do not know precisely when or where; but it will happen."[30] Much of the damage and some of the deaths will occur on one or more of the barrier islands. Continuing to develop those islands for human settlement may be the problem.

For others the problem is the development effects on fragile lands and estuaries. It is a problem of pollution, environmental degradation, and the destruction of productive natural habitats.

From yet another view, waste and the stupid squandering of the national treasure are the crux of the problem. As the director of legislative policy for the National Taxpayers Union put it, "The development of barrier islands is hazardous to human life and property." Yet, the federal government has subsidized their development, making them more inviting places to live. "We believe that private citizens who build in these hazardous areas have a right to do so. But the Federal government should not subsidize them."[31]

Another view perceives federal encroachment on local autonomy

[29]Ibid., p. 10.

[30]Richard A. Frank, National Oceanic and Atmospheric Administration, quoted in Dolan et al., "Barrier Islands," p. 16.

[31]*Statement of David L. Keating*, in *Hearings on H.R. 5981*, pp. 515–16.

as the problem. To the Louisiana state government, H.R. 5981 threatens to intrude on established authorities. At the local level in many of the barrier-island states, lively clashes persist between conservationists and real estate interests. What is the problem?

The answer is: "It depends." It depends not only on the unfolding array of facts about barrier islands; it also depends on values, preferences, goals, and even ideologies. But there is an interesting bureaucratic dimension to the problem situation. Empirically, a *de facto* bureaucratic system is involved, no matter how you define the problem.

First, important parts of that bureaucratic system consist of agencies with mandates, resources, and programs rooted in purposes and concerns quite remote from barrier-island issues. The justifications of those programs do not turn on their barrier-island impacts. A prime example is the federal highway program. Another is the promotional work of the FmHA. A third is the EDA. And there are more.

Other elements in the system reflect some awareness of their barrier-island impacts. The federal insurance program is an example. Even so, the chief impetus to that program was the aim of alleviating some of the costs of floodplain settlement. Coastal and barrier-island structures subject to wave damage comprise only about 3 percent of those it currently insures.

There is the civil works program of the Army Corps of Engineers, one of the most potent of the "positive" bureaucratic instruments of American national government. It *engineers* things: harbors, channels, and waterways. It operates within a tradition whose antecedents trace beyond the nation's origins. It is a hard-headed organization, imbued with professional pride and a technological view of the world. To the engineers, shifting inlets, such as Oregon Inlet in the Hatteras area, have been challenges, not inexorable forces of nature. And the corps is the enthusiastic tool of local development-oriented interests.

In the aggregate, these and other bureaucratic organizations are a powerful set of forces. They nurture and promote barrier-island development and become the components as well as the instruments of a real policy. It is not specified in any single place, nor does it stem from deliberate coordination and intelligent, systemic management. It is a relatively coherent consequence of a set of interactive forces, none of them established on the basis of a rationale of deliberately promoting barrier-island development.

In more ways than one, this bureaucratic system is driven by entrepreneurship. Bureaucratic entrepreneurs seek to maintain their

mandates and protect the budgets of their agencies. Programmatic agencies must do things in order to continue to exist. If doing things is funding projects, they will seek and promote projects to fund. They will comply with unavoidable constraints and slide around those that can be slighted. The wit and the thrust within the bureaucratic system being considered here are not located at the system level; they are dispersed among its subsystemic components. Protecting the barrier islands is not among the mandated concerns of the most powerful of these components.

There are other entrepreneurs as well. These are primarily local development interests which view barrier islands as potentially profitable resources. For them, various elements of the bureaucracy are benevolent means for helping turn sand into gold. Here is where various parts and pieces of the bureaucracy are pulled together to get bridges built, water systems funded, sanitary facilities approved and financed, and other bureaucratic things necessary to barrier-island development. Note that this private entrepreneurship does not operate at the systemic level. It is directed to particular spits and islands, to particular bits of the aggregate acreage.

To explain is not necessarily to indict. Until recently, agencies and realtors alike had reason to believe that nature could be commanded, that technology could order beaches and defy great storms. The ecological consequences of barrier-island settlements were not well known until only a few years ago. More has come to be known, but not enough to dispel the ancient truth that "where one stands depends upon where one sits." Many persons and organizations sit in places where particular instances of barrier-island development look good.

The aggregating effects of focused local entrepreneurship, responding to a market demand to live by the sea, and the sensible impulses of bureaucratic entrepreneurs to thrive, "explain" the system. But no one manages it. Until recently, no one monitored it. And the countervailing forces that affect this developmental system are relatively feeble.

Second, this witless system of policy and action is significant to any definition of barrier-island problems. Say the problem is defined as getting people off those islands. Put it more mildly and make it more complex: Say the problem is to impose restraint and order on future barrier-island settlement and to relocate the costs of development, placing them more squarely on the settlers. What, then, is involved in closing the gap between the situation and the preference?

To answer such a question it is necessary to understand the bureaucratic system and its political environment. Such understanding may produce a distinct distaste for the coordinative approach represented by the Coastal Zone Management Program. Or it might lead to the judgment that such an approach, with its sorry compound of feebleness and hope, is as good as can be had at a particular time. It might also be possible to conclude that a feeble federal intervention is desirable. It helps blunt the claims of those who want more radical action. The coordination approach also generates resources for local use and makes it easy for development interests to capture them.

Third, the dispassionate analyst will conclude that the deep-rooted and powerfully inertial bureaucratic system will not be changed greatly by tinkering with incremental interventions. He or she may then turn to another interesting question: Under what, if any, conditions might major policy transformations occur? H.R. 5981 proposes such a change and presents an interesting strategy: Remove much of the territory from the target zone of potential development by buying it up. This solution is compatible with systemic reality. It may even be politically feasible. It has not yet proved to be.

The Free Market Option

What would happen in the hypothetical absence of the witless system that supports the development of the barrier islands? The evidence invites speculation. Galveston, Atlantic City, and Miami Beach, the three most urbanized barrier islands, were settled before the present nexus of programs evolved and long before our knowledge of barrier islands reached its present level. But a recent example suggests the likely pattern of action under a free market approach.

Gulf Shores, on the Alabama coast, was devastated by Hurricane Frederick in 1969. A fifteen-foot storm surge washed completely over portions of the island. Damage was estimated at $2.3 billion, but there were no deaths. Seven months later along the shore front, pilings were being driven into the sand. Nearly $20 million worth of building permits had been issued. Property values had not faltered. "People are going to live on the coast," said Mayor (and realtor) Mixon Jones, "and they're not making any more coast."[32]

Given a large population, with many people whose wealth per-

[32] William H. MacLeish, "Our Barrier Islands Are the Key Issue in 1980," *Smithsonian* (September 1980), p. 53.

mits choice and minimizes the economic significance of risk, a *laissez faire* approach to the use of the barrier islands is certain to stimulate their development, with at least two significant consequences: First, some economic externalities now borne by the larger public would be relocated to become costs for those who choose to invest in barrier-island development. Second, other significant externalities would result. They are illustrated by the Appalachicola Bay case and the Sanibel Island causeway, where only modest artificial interventions produced notable adverse impacts on fishery resources. A completely unrestricted stance, that is, the absence of any policy, is itself a policy. It distributes large costs to those who receive economic benefits from fishery resources. Noneconomic values are also involved, insofar as unrestricted barrier-island development would modify natural conditions highly valued by some persons.

In an unrestricted system of market-force decision making, it is impossible to monetize certain significant costs. Inasmuch as there is no such thing as a nonpolitical market system, political commitments in favor of market-based decision making with regard to barrier-island use would generate large economic losses. Estuarian productivity is basically a "free common good." It is not directly capitalized, although it is a capital good, the indirect source of valuable commodities.

The Local Regulatory Option

The current approach to the management of barrier-island resources has all the charm of irony. A witless and implicit policy, the derivative of federal programs based on a variety of differing rationales, stimulates barrier-island development. Strong economic incentives (including Arab oil wealth as well as indigenous real estate interests) support and respond to the federal policy. A planning-and-regulation arrangement, presumably intended to restrain if not reverse the combined national and local thrust, is located at the state level, the weakest point in the existing system of forces. It is endowed with the feeblest tools of action: limited monetary incentives to encourage local planning and regulation.

Within this framework of forces, the pattern of local outcomes is ambiguous. To this point, the general trend has been a strong local thrust to develop. Sanibel Island, on the Gulf coast of Florida, is the interesting exception, interesting not so much as evidence of what is likely but of what is uncommon.

When the local level of decision making affecting Sanibel and Captiva Islands was the county, zoning regulations permitted a

population of 90,000 persons on Sanibel.[33] The island community incorporated in 1974, spent $500,000 for a growth-control plan, and restricted settlement to 15,000 persons. The Sanibel approach stemmed from a combination of interests: the powerful and wealthy people who live there and allies in the field of conservation politics. Their joint efforts were informed by recent developments in technological knowledge. The result is a showpiece model now being used to support political claims. The influence of this model remains to be seen.

Regulation is a response to the play of political forces. While many of them are rooted in economic self-interest, not all of them are (one source of the impetus to regulate activities is, in fact, counter-economic). Insofar as the efforts of barrier-island development are local, there is the basis for an argument in favor of creating the conditions that permit the play of local political forces over the issues of land-use regulation. But it must be noted that not all of the significant effects of barrier-island use are local, particularly when development affects estuarial fishery resources.

Conclusion: The Nature of Bureaucracy

The case of the barrier islands is not unique. Practically any important issue or concern with natural resources and their management is affected by an unpremeditated bureaucratic system operating in a complex political setting. If you want to define natural resource problems and to strategize against them, you will be wise to map that bureaucratic system, to understand that there is a positive field of related forces, related not by explicit policies so much as by an aggregation of innate tendencies. A gross, simple, and extreme example is provided by the Pick-Sloan plan. Innate tendencies faced by an external challenge produced a deliberate coalition, a treaty, and a program whose rationality lies in its contribution to maintaining a bureaucratic system. Pick-Sloan moved this particular system beyond the level of inadvertence.

If this perspective is not particularly profound, it is not without its utility. It demonstrates the ineptness and near impotence of problem definitions and solution strategies based on preachment and that echoing term "coordination." As Pressman and Wildavsky observed, "Coordination means wanting something you don't have."[34] I would

[33] Ibid., p. 54.

[34] J. Pressman and A. Wildavsky, *Implementation* (Berkeley, Calif.: University of California Press, 1973), p. 132.

add, "And are not likely to get, unless you can bring real power to bear upon the existing bureaucratic system."

Few, if any, significant natural resources are not directly affected by a bureaucratic system. The nation has become bureaucratically mature. Few societal concerns lie outside the province of bureaucratic agencies. On the occasion of a serious flood in the mountains of North Carolina in 1977, forty-two federal and state agencies converged on the scene, each wthe some jurisdictional concern.[35]

Yet, the fact of this common and compelling systemic bureaucratic reality is often ignored in efforts to define natural resource problems and their solutions. Trying to map the bureaucratic system particular to a problem complicates the understanding of that problem and the estimation of the possibilities. It is costly in time and effort, but it is also necessary.

[35] *Hearings on H.R. 5981*, p. 50.