

- percent of this area is cultivable, then  $C_s = (2120.57 \text{ km}^2)/(1 \times .005 \text{ km}^2)$ , or  $C_s = 424,145 \text{ km}^2$ .
48. The term "collapse" refers to the decline and eventual abandonment of the ceremonial centers in the southern and central lowlands from A.D. 790 to 950 (see 14).
  49. This theory, which is alluded to throughout Mayan literature, was perhaps first discussed by O. F. Cook, *Smithson. Inst. Annu. Rep. 1919* (1921), p. 314.
  50. First suggested by biologists from the Department of Agriculture, the grassland theory received considerable attention from S. G. Morley (3).
  51. Terracing and raised fields are constructed throughout the tropics by "digging stick" farmers. Perhaps most impressive are the raised-field cultivators of highland New Guinea [see K. Heider, *Viking Fund Publ. Anthropol.* 49 (1970)].

52. The Petén remains the principal central lowland region in which relics of intensive agriculture have yet to be reported in abundance. This is, perhaps, largely the result of inadequate field research. I noted relic terraces along the main road from Flores to Ciudad Melchor de Mencos (about 35 km southeast of Tikal) on a reconnaissance of the Petén in January 1974. A series of five terraces was constructed across a ravine which was about 30 meters wide. Embankments were composed entirely of stone rubble and dirt. Informants indicated that stone-faced terraces are common on hillsides that are inland from the main road.
53. For similar assessment, see G. R. Willey and D. Shimkin, in *The Classic Maya Collapse*, T. P. Culbert, Ed. (Univ. of New Mexico Press, Albuquerque, 1973).
54. A similar assessment has been adopted by T. P. Culbert [*The Lost Civilization: The*

- Story of the Classic Maya* (Harper & Row, New York, 1974), pp. 46-49].
55. I thank R. E. W. Adams, Donald D. Brand, and William M. Denevan for criticisms and consultation; Joseph Ball for ceramic analysis; and the 1973 National Geographic Society Río Bec Project members for aiding and encouraging this research. I am indebted to Guillermo Bonfil Batalla, director general of the Instituto Nacional de Antropología e Historia (INAH), Mexico City; Ignacio Marquina, director of the Departamento de Monumentos Prehispánicos, INAH; Miquel Mesmacher, former representative of the INAH in the Yucatán archeological area; and Carlos Sansores Perez, former governor of Campeche, Mexico. Financial aid was provided by the National Science Foundation and the Ibero-American Studies Program of the University of Wisconsin, Madison. Maps were prepared by Bruce Van Roy.

## NEWS AND COMMENT

# Watergate: 1972 Campaigners Tried to Use R & D Agencies

A report by the staff of the Senate Watergate committee describes in detail a White House plan, in 1972, to manipulate grants, contracts, and appointments throughout the government, including agencies concerned with R & D and education, to the benefit of those who might be friendly to the Nixon campaign. The report, obtained by *Science* in draft form, is a chapter of the committee's final report and is due to be published along with the final report later this month. The committee launched congressional inquiry into the Watergate scandals last year.

The White House plan was known as the "responsiveness program," and its "chief architect" was Frederic V. Malek, then special assistant to the President and now deputy director of the Office of Management and Budget (OMB). Among the agencies to be involved in the responsiveness program were, according to the draft Senate report, the National Science Foundation (NSF), the National Oceanic and Atmospheric Administration (NOAA), the Urban Mass Transportation Administration (UMTA), the National Institute for Occupational Safety and Health (NIOSH), and some education jobs. Other research-oriented agencies mentioned in the White House memorandums obtained by the Senate committee are the National Institute of Education (NIE) and the Consumer Product Safety Commission (CPSC). In addition, the Malek subordinates who executed the

responsiveness program wanted to have a career employee of the Equal Employment Opportunity Commission (EEOC) fired after he appeared to be sympathetic to Democratic candidate George McGovern. But the employee stayed on, and there is scant evidence in the other instances cited in the report that the Malek team had much success in bending the federal bureaucracy to their aims.

Senate Watergate investigators, during the limited time they could give to the responsiveness program inquiry, focused on White House attempts to win the Spanish-speaking vote through use of grants, contracts, and appointments. These findings are the focus of the draft report and have already been reported in the *New York Times*. The committee, to a lesser extent, looked into responsiveness efforts for the black vote, but the attempts to use the research grants and the education appointments receive only passing scrutiny. Although investigators found what looked like evidence of violation of the Hatch Act and other federal laws in the Spanish-speaking campaign, they did not specifically investigate possible criminal activity in these other instances. Said one staffer, "This is an area which obviously deserves further inquiry. . . . This is something which we hope will be investigated further by other committees."

The responsiveness program originated as a result of a feeling by some White House aides that the executive branch was being underused

as a source of help in the campaign. Typical of this sentiment was a memo by Jeb S. Magruder, then on the White House staff, who eventually directed the Committee for the Re-Election of the President (CRP). Magruder wrote then—Attorney General John Mitchell in January 1971, according to the Senate report,

[O]ur administration has not made effective political use of the resources of the Federal government, the RNC [Republican National Committee], the White House, and outside groups and corporations. In developing the structure for the campaign, proper use of these resources should be of preliminary concern at the outset of the planning.

Subsequently, Magruder, according to the Senate report, "at the Attorney General's request began an examination of utilization of federal resources by others in presidential campaigns." Magruder concluded, the report says, that, while President Eisenhower did not, President Johnson and Vice President Humphrey did use their White House staffs for their campaigns. Peter Millspaugh, a White House aide, urged in May 1971 that an inventory be taken of federal resources to be used "with perhaps the federal grants area broken out for priority treatment." And in a 23 June 1971 memo, Millspaugh included the NSF on his list of likely targets.

### "The Basic Types of Patronage"

- 1) Jobs (full time, part time, retainers, consultancies, etc.)
- 2) Revenue
  - Contracts (Federal government as purchaser—GSA [General Services Administration])
  - Grants (do-good programs, EDA [Economic Development Administration], model cities, NSF research, etc.)
  - Subsidies (needy industries—airlines, etc.)
  - Bank Deposits (all Federal accounts)
  - Social Need Programs (direct benefit to citizens, i.e., social security, welfare, etc.)
  - Public Works Projects.

Other types of patronage listed include "execution of the federal law," public relations, and travel to international conferences and foreign countries.

Malek and his staff refined the responsiveness program in a series of memos dating from June 1971 through March 1972, which the Senate draft report reproduces at length because of their sweeping implications. In the following one, Malek cited approximately \$1.4 billion in federal funds in the Department of Commerce which should be "rechanneled."

Present efforts tap only a fraction of the total potential. . . .

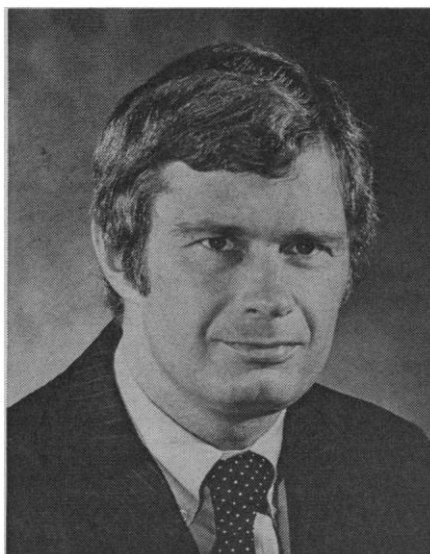
The Department of Commerce provides a good example. To date Gifford [Robert Gifford] has made some 35 requests. Most of these involved expediting the normal grant reviewing process and securing the release of information. Approximately a dozen of these requests resulted in favorable grant decisions (*which otherwise would not have been made*) involving roughly \$1 million. Politically, these actions have been most beneficial.

Nevertheless, in spite of this achievement, the potential is much greater. In the Commerce Department, for example, there is nearly \$700 million in funds remaining in this fiscal year and over \$700 million in [the] next fiscal year which could be redirected in some manner. The major areas of potential for fiscal year 1973 are: Economic Development Administration, \$275 million; Regional Action Planning Commissions, \$40 million; Minority Business Enterprises, \$38 million; National Oceanographic and Atmospheric Administration [sic], \$100 million; and the Maritime Administration, \$230 million. Even if only 5% of this amount can be rechanneled to impact on target groups or geographic areas, it would be a substantial increase over the current efforts. . . .

The reference to NOAA, and in the previous memo to NSF, are the only references to these science agencies contained in the Senate draft report. The committee did not investigate whether NSF or NOAA was in fact approached by the White House concerning their forthcoming grants. However, some of the other agencies mentioned in these memos—such as the Office of Minority Business Enterprise—had a role in the well-documented campaign to win members of the Spanish-speaking community.

The responsiveness program's planners seemed to be aware that much of the federal bureaucracy could not be trusted with knowledge of the responsiveness program's aims and ends. Secrecy was directed by Malek, as the above memo states further on:

The most significant drawback of the program is, of course, the risk of adverse publicity. Naturally, steps would be taken (1) to ensure that information about the



Frederic V. Malek

program itself and the Departmental plans would not be leaked and (2) [to] keep the President and the White House disassociated with the program in the event of a leak.

First, written communications would be kept to a minimum. There would be no written communications from the White House to the Departments—all information about the program would be transmitted verbally. . . . Progress reports would be verbal. . . .

[O]ral and written communications concerning the program within the Department would be structured to give the impression that the program was initiated by the Department Head without the knowledge of the White House.

#### President's Knowledge?

Whether the President was aware of any of the possibly illegal activities that were carried out in the campaign is, of course, the main issue raised in the Watergate scandals, and the Senate committee, naturally, asked whether the President knew about the responsiveness program. Malek states at the end of the above memo that the departments

must be given a clear understanding [that] the program [has] the President's full backing.

But the committee draft report adds that H. R. Haldeman, former presidential adviser, told the committee that "he does not recall discussing the specifics of the program with the President." Further on, the draft report mentions that former domestic affairs adviser John Ehrlichman "professed scant knowledge" of the program, and economic affairs adviser George Shultz "claimed only passing knowledge" of it.

Perhaps the most striking of the attempts to make science-related agen-

cies "responsive" to the needs of the campaign concerns the Occupational Safety and Health Administration (OSHA), which promulgates standards for industry based on information developed by NIOSH. OSHA's activities, as well as the findings of NIOSH which are publicized in statements of fact called criteria documents, can be highly embarrassing and expensive to industry. However, in 1972, George C. Guenther, then assistant secretary of labor for OSHA, outlined in a memo how, during the campaign, OSHA could be "a sales point for fund raising and general support by employers." Guenther proposed in the memo to his boss, then Undersecretary of Labor Lawrence Silberman, what actions the agencies would, and would not, take during the campaign to help win industry support.

While promulgation and modification activity must continue, no highly controversial standards (i.e. cotton dust, etc.) will be proposed by OSHA or by NIOSH. A thorough review with NIOSH indicates that while some criteria documents, such as on noise, will be transmitted to us during this period neither the contents of these documents nor our handling of them here will generate any substantial controversy.

Mr. Silberman, who is now deputy attorney general of the United States told the Senate Watergate committee investigators that "he did not instruct Mr. Guenther to discontinue the plan set forth in this paragraph and that publication of certain safety standards was withheld until after the election."

Thus, Guenther may have actually implemented his plan to use OSHA as a "sales point"; and, in fact, NIOSH did not during that summer issue a "criteria document" on cotton dust hazards. Cotton dust is the cause of brown lung disease, to which an estimated 800,000 workers are exposed. It has often been said that, if NIOSH and OSHA were to make the industry protect its workers from cotton dust, many textile companies, most of which are in the South, would be forced out of business. Hence the importance of the cotton dust standard as a sales point to the Republican campaign in the South.

Except for its questioning of Silberman, the Senate draft report makes no further mention of a holdup of the occupational health and safety standards to please employers during the campaign. *Science*, however, contacted Marcus M. Key, director of NIOSH, concerning the Guenther memo. Key said he could find no record of his

former boss, Guenther, having told him to handle matters such as the cotton dust findings in a noncontroversial way during the campaign. He added that the cotton dust document was not issued that summer because of unexpected technical problems which arose in early 1972. In fact, he noted, the document has not yet been issued by NIOSH. Key also said that, from June until October 1972, NIOSH published some of its most controversial findings, including statements about hazards from carcinogens, heat, and noise in the work environment.

#### Transportation Research

The aim of the responsiveness program was to make federal grants and contracts sensitive to political needs. In this regard, it appears that the agency which sponsors much federal mass transit research, UMTA, was approached by activists in the responsiveness program. UMTA Administrator Carlos V. Villarreal was also one of Nixon's highest ranking Spanish-speaking political appointees; in the many memos in which he is named, he emerges as a key presidential surrogate speaker who campaigned actively during the summer. In early 1973, Villarreal was appointed to the Postal Rate Commission.

According to memos in the draft Senate report and in the appendix to the committee's hearings on the campaign\*, activists in the responsiveness program, particularly one named Antonio F. Rodriguez who was in the White House, met frequently with Villarreal to discuss grants. According to a "Weekly Report for the Brown Mafia" for 20 to 24 March 1972, from the responsiveness group to presidential aide Charles S. Colson,

Rodriguez met with UMTA Administrator, Carlos Villarreal and his deputy to set aside \$300,000 for one of our Spanish-speaking contractors. . . .

The report also indicates that some people in the White House wanted UMTA to be responsive to J. A. Reyes Associates, a local firm that was considered friendly. According to the findings in the Senate draft report, the firm found its business doubling in 1972 to approximately \$1 million. A weekly report for 1 to 5 May to Colson and Malek states:

b. Department of Transportation: working with UMTA re a \$70,000 grant to J. A. Reyes Associates of Washington, D.C. He is the Chairman of the D.C., Maryland, and Virginia section of the National Hispanic Finance Committee.

There are other references to officials' contacts with the Reyes firm, but the draft report does not state whether any of the UMTA money was actually awarded to it. It does however, trace the fact that the firm won contracts during that time from other agencies.

#### University of Texas

Malek had conceived of the responsiveness program, according to the draft report, as including "legal or regulatory actions" by the federal government, or restraint of such actions. An example occurred when the White House responsiveness officials tried to arrange for the firing of a middle level EEOC official who recommended implementing federal equal opportunity laws at the University of Texas. A "Confidential Eyes Only" memo from Malek to Haldeman, part of which was actually written by Malek staffer Rob Davison, says:

Senator Tower was informed by Vice Chairman Holcomb [of the EEOC] that Ed Pena, Director of Compliance, had recommended to Bill Brown [William H. Brown, III, Chairman of EEOC] that EEOC sue the University of Texas. Brown appeared to agree. If such a suit took place, it would be a serious negative impact in a key state. Brown denies that the suit is under consideration. This should be followed carefully.

\* \* \*

We garnered from reliable sources in the Equal Employment Opportunity Commission that the Commission was preparing to sue the University of Texas for discrimination in the hiring of faculty. This could be disastrous in Texas. When queried, Bill Brown, Chairman of EEOC, agreed not to pursue it. I will continue to follow this situation closely.

Senate investigators state that Malek later told them he had been "puffing," in his phrase, in this particular memo, and that he had not kept as close track of the University of Texas problem as he had claimed. In an affidavit to the Senate investigators, chairman Brown also said that no one had pressured him to "forego an EEOC proceeding." However, Haldeman, questioned by Senate investigators about the above memo, which Malek had addressed to him, "did not express disapproval of this action or instruct Malek to cease endeavoring to influence proceedings before regulatory agencies."

It is clear, however, that the White House regarded EEOC official Ed Pena as a liability. A subsequent memo states that the White House is "developing a case" about Pena, and when officials learned that Pena had appeared to be currying favor with associates of McGovern, one of them concluded:

It is my belief that it would be wise to terminate Ed Pena from his position as a GS-18 at EEOC.

Nevertheless, according to the draft report, Pena kept his job.

The responsiveness program included not only retaliation against alleged foes but rewards sought for those whom one memo described as "Administration friendlies." According to the Senate draft report, a Texas judge who headed Spanish-Speaking Democrats for Nixon, Alfred Hernandez, was offered a post on the CPSC after the election, which he declined. A related memo by one of the lower ranking White House staff says:

If any vacancies come up for the federal bench in Texas, 1701 [1701 Pennsylvania Avenue, the address of the reelection committee] and our operation would like to see Judge Hernandez appointed.

"All participants deny a quid pro quo arrangement" was involved in mentioning Hernandez for these jobs after his effort on behalf of the campaign, says the draft report.

Malek wanted the responsiveness program, says the draft report, "to ensure that personnel placements within the government were made to benefit the President's re-election campaign." Or, as Ehrlichman told the investigators, there was an "itch on our part, to get friends in the Departments rather than the people we found there." Memos obtained by the investigators and published separately in the hearing's record show that education and advisory committee jobs in the Department of Health, Education, and Welfare were considered fair game. Senate investigators did not track down all these specific instances, but limited themselves to a general discussion of the propriety of such actions.

The responsiveness program died out in the fall of 1972, according to the statement of Frank Herringer, a former Malek staffer, to the Senate committee. Herringer, now administrator of UMTA, said that, as he scanned one report:

I recall that I was generally disturbed by the descriptions in the report and of some

\* *Presidential Campaign Activities of 1972*, Hearings before the Select Committee on Presidential Campaign Activities of the U.S. Senate (U.S. Government Printing Office, Washington, D.C., 1973), Book 13.

of the individual actions that supposedly had occurred in the responsiveness project. While I did not believe that anything inappropriate had actually occurred, I felt that the exaggerated tone of the report . . . could cause someone not familiar with the general staff practice of exaggerated writing to think that inappropriate activities were being carried on.

Malek by that time had moved out of the White House to work with the campaign directly, but his successor, Dan Kingsley, had Herringer's files on the responsiveness program collected. "It appears that all responsiveness documents collected by Kingsley were burned or otherwise destroyed because of their politically sensitive nature," concludes the report.

It was not the Watergate committee's job to try cases of alleged criminal activity or to charge anyone with such crimes. Hence the draft report does not pass judgment on whether any of the responsiveness activities were in fact illegal. But the report's conclusion comes down hard on the program.

It notes that the conspiratorial, secret nature of all the "eyes only" memos and injunctions not to write things down could constitute a conspiracy to defraud the United States which is punishable under Title 18 of the U.S. Code. As for the meetings with "friendlies" and government officials and talk of possible appointments, grants, or contracts, these could violate another

part of Title 18 which bars a government employee from using "his official authority for the purpose of interfering with, or affecting, the nomination or election of any candidate for the office of President. . . ." Still other parts of Title 18 are cited, and the draft Watergate report concludes, "The conduct planned and engaged in . . . not only contravenes the fundamental notions that our nation's citizens are entitled to equal treatment under the laws and that federal awards supported by taxpayers funds should be allotted solely on the basis of merit and need, but also appears to violate numerous federal civil and criminal laws."

—DEBORAH SHAPLEY

## Oil and Gas Resources: Did USGS Gush Too High?

If the U.S. Geological Survey is right, the United States is at least a decade away from seriously depleting its domestic oil and gas resources. But if several distinguished disbelievers of the Geological Survey are right, the United States is running out of oil and gas right now.

In a dispute that a committee of the National Academy of Sciences is trying to mediate, the Survey is striving to defend its oil and gas estimates and protect its century-old reputation as the nation's most authoritative mapper and measurer of natural resources. A lot more than the reputation of a government agency hangs in the balance, though. If the critics—who include top exploration authorities in two major oil companies and one of the Survey's own resource experts—are right, the outlook for increased domestic oil production based on new discoveries is dim, and President Nixon's Project Independence could be in deep trouble.

The controversy does not involve "proved reserves"—the amounts of oil and gas the industry knows it has found and can produce at current prices. At issue instead are estimates of the "unknowns"—the undiscovered oil and gas that may eventually be found and produced.

Both sides in the controversy think there is still a great deal of oil and gas left in the ground. The question is whether these resources are plentiful enough for the economists' rule of price-supply elasticity to operate—for prices to drive up production significantly—or whether the United States is already bumping up against the physical limits of rapidly diminishing fossil fuel resources.

Among those challenging the Survey's resource estimates is John D. Moody, the Mobil Oil Corporation's senior vice president for exploration and producing. Moody says that Mobil researchers have calculated national oil and gas resources by three different methods, all of which lead to the conclusion that the Geological Survey's estimates are far too high. On the strength of Mobil's research, Moody contends that the United States has already dug so deeply into its petroleum and gas resources that the industry will be lucky to maintain oil production at its present level of 8.9 million barrels a day. This is 375,000 barrels a day behind the U.S. output at the same time last year.

As for the possibility of increasing production enough to reduce reliance on foreign oil, Moody says, "There's just no way. . . . We're going to have

to conserve wherever we can, and make the necessary political accommodations with the producing countries."

If his attitude seems uncharacteristically pessimistic for an oilman, Moody says it's simply realism. Moreover, in a day-long meeting organized on 5 June by the Academy's Committee on Mineral Resources and Environment (of which Moody is a member), two other well-respected researchers presented the results of their own independent studies that appear to corroborate Mobil's conclusions.

The two researchers were Richard Jodry, a senior scientist with the Sun Oil Company, and M. King Hubbert, a former president of the Geological Society of America and a research geophysicist with the Geological Survey. For more than a decade, Hubbert has maintained that the Survey's oil and gas estimates were erroneously high, and he now appears to have gained influential support.

In addition, Hubbert believes that he has found a crucial error in the Survey's method of estimation that could account for the differences currently in contention; Moody and Jodry think Hubbert is right.

The Survey, for its part, is standing by its numbers, but is leaving open the possibility that it might revise them later this year. In an interview, Vincent E. McKelvey, the USGS director, said that from what he understands of Mobil's method of analysis, its results may not fully account for many small reservoirs of oil and gas. As for the error alleged by Hubbert, McKelvey says he's "mulling it over."