Defense Plant Conversion and Leading Sector Industrial Development in the Postwar South: The Slow Take-off of the Space Program in New Orleans

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Despite President Roosevelt's identification of the South as "the nation's number one economic problem" during the Great Depression, New Deal programs brought little industry to the paupered province. Pearl Harbor proved to be the needed catalyst. Allied victory rested on the rapid increase of defense production beyond what traditional industry could achieve. Southerners eagerly rolled-up their sleeves to bolster the expanding Arsenal of Democracy and to boost their own region's future fortunes. Defense officials underwrote new plants in the South and West and even turned to relative newcomers like Andrew Jackson Higgins in New Orleans and Henry J. Kaiser in California in an attempt to meet defense requirements. The process, however, was to prove neither smooth nor continuous.

Entrepreneurial Opportunities

Higgins Shipbuilding in New Orleans is perhaps the best example of not only the opportunities presented, but also the problems that would be encountered. Historically the South's major city and one of the world's great ports, New Orleans was a commercial center in the grand southern tradition. Like most of the region, it boasted little in the way of industry. It was neither Detroit nor Birmingham.

Nearly everyone familiar with World War II has seen films of Allied troops landing on beachheads, and has heard of the craft that made the D-Day landings possible. Many, however, are not aware that these and other wooden craft of unparalleled performance capabilities–including PT boats–were designed, developed and manufactured in New Orleans by A. J. Higgins. In a region where entrepreneurial talent and industry was in short supply, Higgins proved to be an innovative and bold industrial entrepreneur. He was no Old South cotton broker. Out of this considerable experience, he developed an innovative

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assembly line construction method that could be used to produce larger craft [*New York Times,* 19 July 1942].

The U.S. Maritime Commission had followed the practice of expanding existing yards and building some new yards under the aegis of old-line shipbuilding firms. When faced with President Roosevelt's "terrific directive" of February 19, 1942, which set a 24,000,000 ton production quota for 1942-43, the Maritime Commission was abruptly forced to abandon its policy and, instead, contract with rising industrialists like A. J. Higgins in the South and Henry J. Kaiser in the West [Lane, 1951, pp. 143-149; Rein, 1981, 1997].

Kaiser, a successful construction contractor without shipbuilding experience, had begun a small yard in Richmond, California where in 1940 where he developed and produced the famed Liberty Ship. Kaiser introduced innovative mass production methods to counter the traditional methods then employed by the shipbuilding industry and set new records for speed in turning out the desperately needed merchant ships. Under pressure from the President's "terrific directive," Kaiser was given new ways and yards on the West Coast [Nash, 1960, pp. 43-54].

Less than a month after the "terrific directive", the Commission awarded Higgins Shipbuilding a contract to build two hundred Liberty Ships–the largest shipbuilding contract awarded up to that time. Higgins chose the old Micheaud (Michoud) plantation site on the Intracoastal Canal ten miles east of downtown New Orleans for the construction of his revolutionary assembly line shipyard. Higgins claimed the Michoud Shipyard would turn out twenty-four ships per month–half of then total national output. The project was an immediate stimulus to area economy. The City of New Orleans whirled with activities related to task of constructing the forty-four-way-equivalent shipyard with all due speed. Within three short months the entire facility was half completed.

Problems In Defense Dispersal

Apparently, the immense amounts of money and human effort poured into the grand project was of no concern to the Maritime Commission which suddenly and unexpectedly canceled the project citing a shortage of steel as the reason. Higgins went to Washington to fight the cancellation, but to no avail. Later Congressional investigations revealed the underlying story behind the cancellation.

Kaiser earlier experienced difficulty obtaining enough steel from established eastern steel interests (which also largely controlled shipbuilding) to meet the demands of his more productive and efficient new yards on the West Coast. Kaiser countered this opposition by eventually entering steel production himself after Pearl Harbor at Fontana, California. The Reconstruction Finance Corporation, however, prohibited Kaiser from producing more structural and plate steel than his own shipbuilding required [Nash, 1960, pp. 130-135].

Kaiser and Higgins were well-acquainted and had earlier shared ideas on production methods. Higgins felt that established interests, frightened by

Kaiser's record-setting production on the West Coast, decided to block his own advance. Higgins told the House Committee On Merchant Marine And Fisheries in a special executive session called to investigate the matter how Bethelem Steel shipped two hundred ship nameplates by express to arrive before the steel. The nameplates were inscribed with the names of high steel company officials. Higgins' top assistant claimed a former steel executive, then managing the Navy's shipbuilding program as a "dollar-a year man," told him that no new shipyards would be opened in the United States if not under the direct control of the existing shipbuilding companies [*Higgins Contracts,* 1942, pp. 1-10, 46-98].

Alabama Representative Boykin's own congressional subcommittee had hired an economist to study the nation's steel allocation and production programs. The subcommittee found old line shipyards (subsidiaries of the old steel trust) had disproportionate inventories and concluded that, with proper allocation and distribution, there would have been sufficient steel to complete the entire 1942 and 1943 programs including the Higgins contract. Interestingly, the newer, more efficient, low-cost yards experienced the critical shortages [*New York Times,* 28 July 1942].

Despite the findings, it appeared the facility would be scrapped and with it the whole industrial future of a nonindustrial city. But Higgins still hoped that Henry Kaiser's proposal to convert several shipyards to cargo plane construction might save what was left.

An Uncertain Rescue

President Roosevelt toured Higgins Industries' City Park Plant in late September, 1942. After observing Higgins' assembly lines work at full speed turning out motor torpedo boats, antisubmarine boats, and landing craft, he and Higgins discussed producing wooden cargo planes or "flying boats" at Michoud [*New York Times,* 2 October 1942]. By October 29, Higgins and the War Production Board had concluded preliminary contract negotiations to build C-76 Curtis Caravans, a molded plywood version of the metal C-46 Commando cargo plane, for the Army Air Force. Production of this craft would achieve three objectives: the conservation of scarce metals, utilization of Higgins' proven expertise in wood construction, and an increase in cargo plane production without disrupting existing aircraft industry activities [*Aero Digest,* December, 1942, p. 369].

On October 30, the national press reported the imminent award of a 1,200 plane contract. Marking optimism over the prospect, Colonel John H. Jouett resigned his presidency of the Aeronautical Chamber of Commerce to head Higgins Industries' new aviation division. Shooting for a six-month initial production date, Higgins requested a halt to the demolition of a $1,000,000 steel loft at Michoud needed to house Caravan production.

FDR told reporters he had earlier instructed the WPB, the Maritime Commission, and the Army and Navy to find some defense use for Michoud. The promise seemed good. On November 6, 1942, the Army Air Corporation

approved a letter of intent for a 1,200 plane contract. Thirty million dollars of the $180 million contract was earmarked for the completion of Michoud's construction and tooling. Moreover, the Maritime Commission had to halt demolition of the incomplete $11 million facility and vacate the premises. WPB chief Donald Nelson also told Higgins to stand ready to produce other plane parts needed to end any "bottlenecks" in aircraft defense production. By December 9, the Defense Plant Corporation leased Michoud to Higgins Aircraft for $1 per year, and the Army approved a fixed fee contract in an official signing at the Army Air Force Matériel Center in Dayton, Ohio [*New York Times,* 31 October 1942].

But reliance on defense production again proved hazardous. In August, 1943 the War Department, citing increased aluminum production, canceled contracts for the more expensive, less efficient, wood-alloy C-76 Curtiss Caravan planes at both Higgins Aircraft and Curtis-Wright Aircraft in Louisville. Higgins did not react negatively to the shift of production to the Douglas C-47 Skytrain and C-54 Skymaster, or the Curtiss C-46 Commando because he claimed a right to build the metal C-46 Commando. Higgins proceeded to tool-up for its production along with outer wing panels for the C-46 production at Curtiss-Wright. In early October his Michoud plant had already begun constructing sub-assembly parts for Curtiss-Wright [*New York Times,* 4 August, 1943, 17 October 1943].

The Michoud Aircraft Plant was officially dedicated on October 24, 1943. The public gathered in the huge forty-three acre main assembly building second only in floor-space to Ford's Willow Run plant. After they viewed the last of 7,000 landing craft produced at Higgins' City Park and Industrial Canal boatworks, Higgins, federal officials, and Louisiana governor Sam Jones all delivered speeches. Governor Jones spoke of the "turning of an economic corner in the life of the State," and called the plant "the fulfillment of a great dream of a great builder . . . of one individual who refused to accept defeat." Jones capped his address by proclaiming "a new day for New Orleans for Louisiana and for the South." Jones felt that the aircraft factory held great promise for the economic future of the state if "not taken away by men of small minds" [*Times Picayune,* 25 October, 1943; *New York Times,* 25 October 1943].

But sometimes the exigencies of war determined defense production decisions. When the War Department shifted its emphasis in the air war requiring more superbombers and larger, long-range troop transports, it made drastic cuts in the production of B-24 Liberator bombers, C-46 cargo planes, and P-47 Thunderbolt fighters releasing over 100,000 aircraft workers, supposedly to other war-related industries. Higgins' contract for the C-46 cargo planes was canceled in August, 1944.

The grand hopes for Michoud and the aircraft industry in New Orleans were dashed. Defense officials maintained Higgins' subcontract for Curtiss-Wright C-46 wing panels. Curtiss-Wright plants, already in full production, would complete already commissioned C-46 transports [*New York Times,* 11

August, 1944]. The net result: only two C-46 cargo planes were ever produced by Higgins Aircraft and the Michoud facility joined the ranks of other "boom or bust" industrial plants [Holly, 1964, p. 577].

War Surplus and Civilian Conversion

Michoud, like most southern defense plants, was constructed after Pearl Harbor. Of the 296 new defense plants built in the South during the war, some 193 or 65% had been declared surplus by April, 1948 representing 47% of the total $1.5 billion expended. Most surviving plants were in ordnance and chemical production—primarily synthetic rubber. Standby petroleum refining, ship, aircraft, and nonferrous metals production plants continued. Many operated under short term leases. Petroleum plants proved best suited to peacetime operation [Deming & Stein, n.d., pp. 34-40].

Whatever the ultimate disposition of individual plants, leading sector industrial development had, indeed, crossed the Mason-Dixon line. Postwar local boosters and industrial recruiters would continue to probe the extension of this developmental beachhead. Unfortunately, Michoud was registered as surplus in April, 1946. The War Assets Administration described the plant as 21 modern buildings encompassing more than 2,000,000 square feet of floor area filled with machinery. Deemed too large for any one company, WAA recommended subdivision of the mammoth White Elephant for use by various smaller industries [*New York Times,* 1 April, 1946].

New Orleans business leaders stepped forward to take advantage of the apparent opportunity. On November 28, 1947, the New Orleans Port Commission signed an agreement to purchase Michoud. Higgins himself purchased the sawmill and veneer plant at Michoud for $800,000 and leased 400,000 square feet of the plant for his own postwar ventures in lumber and construction activities [*New York Times,* 29 August 1947]. The Port Commission's actions appeared to promise a move by traditional local commercial leaders to attract industry to the area, but portions of the now subdivided facility were leased to local small businesses. The Port Commission did push forward in September, 1950 with plans to levee the twenty square miles of land surrounding the plant to protect the area from inundation during hurricanes such as had occurred in 1947 [*New Orleans Port Record,* December 1947, p. 369].

Defense Reconversion

The improvements were timely. President Truman called, in his 1951 "State of the Union Message," for an "urgent and intense" defense production drive to counter Communist aggression in Korea. He specifically called for annual construction of some 50,000 military airplanes and 35,000 tanks. Even before the President's message, Chrysler Corporation had already constructed a new tank plant in Delaware and been awarded a tank production contract. General Motors had also already contracted to tool a Cleveland plant for tank pro-

duction. Auto industry officials geared-up to produce the 35,000 tanks per year Truman had demanded [*New York Times,* 9 January 1951].

In mid January, the Army Ordnance Procurement Agency served a thirty-day notice to vacate on Michoud tenants. At this juncture, Chrysler announced a $100 million tank engine contract under license of Continental Motors Corporation of Muskegon, Michigan. Chrysler also obtained a $30 million contract to tool Michoud for tank engine production. The Army apparently had won out over the Air Force proposal to assemble air frames at Michoud. [*New York Times,* 15 February 1951; *Times Picayune,* 20 January 1951, 3 February 1951].

Chrysler engineers wasted little time. They saved $1,000,000 in construction costs by utilizing some 20,000 pilings originally driven by Higgins to prevent them from rotting unused after his ship contract was canceled. In eleven months they completed the transition to tank engine production and shipped the first carload of New Orleans-built tank engines on schedule for installation at Delaware. Most of the Michoud Ordnance Plant's engineering staff were trained on the job following automobile engine assembly line production methods. Unfortunately, the successful program ended when the last shipment of tank engines left Michoud in March, 1954 [*New Orleans Engines For Defense; Times Picayune,* 21 August 1953, 1 April 1954].

White Elephant

The Army kept the Michoud Ordnance Plant operational, spending about $550,000 annually to keep it on standby. The Army had surveyed Michoud for possible use in its missile program, but found the plant unsuitable. By 1958 the Army deemed the expenditure "a waste of money" [*Times Picayune,* 1 April 1954, 3 December 1958].

By October, 1959 the Defense Department transfered the plant to to the General Services Administration which, in turn, passed it on to the Department of Health, Education, and Welfare. HEW then made it available for the New Orleans Sewage and Water Board to use its as a sewage disposal facility in mid September, 1960 [*Times Picayune,* 13 September 1960].

Few public or private leaders looked to the facility with any enthusiasm. The Port Commission, for example, failed to obtain payment from the condemnation suit the Justice Department initialed back in 1952 [*States-Item,* 25 January 1961]. For them, it was a "White Elephant." Thus Michoud—originally designed as a shipyard, opened as an aircraft factory, used as a home for small industries, refitted and operated as a tank engine plant, left idle for seven years, and rejected by every possible governmental agency—had finally ended up as a sewage plant.

Enter The Space Program

The postwar era is perhaps best distinguished by the rapid development of science and technology and its application to defense purposes. All of these are reflected the space race that came to dominate most of the period. After Sputnik, Congress responded to Soviet advances in space technology by creat-

ing NASA in 1958 which proceeded to develop a fully integrated national space program. Within a year, the Goddard Space Flight Center in Maryland and a new field installation at Huntsville, Alabama were established. Goddard would plan and develop vehicles and payloads for manned space-flight operations, while Huntsville (formerly the Army's Redstone Missile Arsenal) would have administrative authority over the Saturn project and other large launch vehicles [Rosholt, 1966, pp. 3-17, 69-90].

Saturn booster development had begun earlier in October, 1958 with a government order to develop an eight-engine, clustered tank booster. Clustering of already proven tanks and engines from the Redstone and Jupiter missiles helped accelerate America's space program. Dr. Wernher von Braun favored the Saturn booster approach and had advocated its adoption. In mid-1960 he became Director of NASA' Huntsville facility which had been renamed the George C. Marshall Space Flight Center. Having acquired the Huntsville staff and facility, NASA also took over the Army's Missile Firing Laboratory at Cape Canaveral [Chrysler Space Division, 1964].

Thus, by the end of 1960, NASA had taken the important first steps toward the eventual centralization of its key operations in the South. As a result, seven of NASA's eleven field installations would be located in the South. Goddard Institute for Space Studies was, however, located in New York City in 1961 because of that area's vast intellectual and technical resources for space science research. The same reasons were behind the later location of the Electronics Research Center in Cambridge as it was a factor in the earlier establishment of both the Ames Research Center and the private Jet Propulsion Laboratory in California as well as the Lewis Research Center in Ohio [Wells, Whiteley, and Karegeannes, 1976, p. 136-155].

Newly inaugurated President John F. Kennedy quickly made the space program a top priority. Vice President Lyndon Johnson, having immersed himself in space matters as a Senator, sponsored creation of a Space Council to advise the President. Kennedy not only took advice from Johnson on space matters, he also gave Johnson a significant voice over them.

After the Russians' successful April 12, 1961 orbit of the first man in space, Kennedy responded in his May 25th "State Of The Union Message" by setting the nation "to achieving the goal, before this decade is out, of landing a man on the moon and returning him home safely to the earth." Kennedy directed the first major budget increase for the Apollo manned lunar flight project. A huge new $60 million Manned Spacecraft Center had to be constructed to develop the Apollo space craft. Everyone recognized that this would be an economic plum. An aura of expectancy filled the air as Kennedy's accelerated Apollo schedule forced NASA's facility planning into high priority status [Rosholt, 1966, pp. 120-124, 184-194].

Looking For A Few Good Facilities

Dr. von Braun inspected Michoud on June 6, 1961 after NASA had asked GSA to withhold its scheduled disposal for another 120 days. NASA spokesmen indicated their consideration of Michoud for the booster project under criteria that included transportation facilities, suitability of local labor markets, and estimated plant modification costs [*Times Picayune,* 14 June 1961, 18 June 1961]. But press attention focused on site selection for the new Manned Spacecraft Center which would house various operations begun at Langley Research Center in Virginia: manned spacecraft research and development, training astronauts, and the planning and conduct of manned flight missions. As the actual command post for all planned space operations, the center would play a major role in managing the future space program and contracts with American industry for technical hardware [Rosholt, 1966, p. 214; Oates, 1964, p. 354].

Houston leaders had aggressively campaigned for the facility early-on. Backed-up by the staggering political muscle of powerful Texans like Lyndon B. Johnson and Houston Congressman Albert Thomas, chairman of the House Independent Offices Appropriations Subcommittee which handled NASA appropriations, Houston was, indeed, favored to win. On September 1, scarcely more than one week after a four-man NASA survey team had visited Louisiana to inspect Baton Rouge as a possible location, a decision was made. On September 19, NASA announced it was Houston [Times-Picayune, 24 August 1961; Oates, 1964, pp. 350-375]. New Orleans had not even made the list of considered locations.

A Bird In Hand

Despite the apparent acquiescence of its local public and private leaders in Houston's selection (perhaps for political reasons?), New Orleans did not come up empty-handed. Michoud was a fine facility. Not only did its large size facilitate NASA supervision of program operations, but only slight physical modifications would get the operation up and running.

These advantages also assisted in the eventual settlement of a festering technical dispute among rocket scientists over booster technology. Some favored the NOVA solid rocket, but Dr. von Braun supported and then led a group which favored the Saturn liquid booster. Michoud was ideally suited to produce the Saturn booster with little physical modification. The NOVA would require a completely new and expensive facility that would take perhaps years to construct, while Michoud was already available as surplus. Its selection would advance the space program to meet President Kennedy's deadline [Rosholt, 1966, pp. 213-215; Hansen, 1995, pp. 256-269].

Michoud's location on the Intracoastal Canal permitted easy eventual barging of finished boosters to Cape Canaveral, which had been officially selected as the Saturn launch site on August 25. Before going to Canaveral, however, the boosters would have to be barged to a nearby location for static

test firing. NASA facility planners scouted tracts of sparsely inhabited land east of Michoud to support such a facility [Rosholt, 1966, pp. 214-215; *The Michoud Assembly Facility,* n.d., n.p.].

In early September, NASA announced the takeover of Michoud. Under the administrative control of the George C. Marshall Space Flight Center in Huntsville, it was tentatively called "Michoud Operations." Later that month, NASA officials discussed plans to activate the facility with Mayor Schiro and other New Orleans leaders in Huntsville. After selecting Hancock County, Mississippi for the static test firing facility, NASA held a bidders' conference in New Orleans.

In mid-November, NASA Administrator James Webb announced Chrysler Corporation's prime contract award to build twenty S-I boosters at Michoud Operations. Chrysler officials then announced its hiring of 2,000 skilled laborers "from across the board," and the transfer of 300 highly skilled technical personnel to Michoud. Chrysler vowed, however, to institute local training programs at all skill levels [*Times Picayune,* 18 November 1961, 19 November 1961, 17 September 1962].

On December 11, NASA Associate Administrator Dr. Robert C. Seamans, Jr. told a New Orleans Chamber of Commerce banquet crowd to "expect many industrial concerns to move to this area to be close to these major facilities," and that the" total economic impact on this region thus will be much greater than the direct effect of employment and service requirements created by Michoud contractors." Seamans stressed the importance of a positive educational climate to industries choosing locations, citing as examples the tremendous growth of electronics and other modern industries in the Boston area and Southern California. Seamans told the audience: "In time, I expect there will be a similar growth in the entire region served by our Gulf of Mexico." NASA expanded the program in December, awarding Boeing Corporation a five-year $300 million contract to develop, produce, and test 24 S-IC Saturn advanced stage boosters at Michoud [*Times Picayune,* 12 December 1961, 1 December 1961; Akens, n.d., p. 33].

Economic Boon With Diminishing Returns

The space program came to a New Orleans locked in the grip of a recession that had deepened a long period of economic decline and stagnation. Employment at Michoud increased an average 360 jobs per month between 1961 and 1964. This was a massive spurt for the city; indeed, between 1950 and 1960, total employment for the entire New Orleans Metropolitan Area had increased only an average 425 jobs per month. The largest industrial employer in the state with a combined civil service and contractor payroll of nearly $80 million, Michoud's average salary (1966) of $8,000 exceeded that for all manufacturing employment in New Orleans by almost $1,200 [Konkel, 1968, pp. 51-53].

Impacts such as these illustrate how a leading sector industry could affect a nonmanufacturing city like New Orleans, kicking-off a tremendous and

unprecedented five-year economic boom. Between Korea and the advent of the space program (1953-1961) manufacturing employment had declined by nearly 14,300 jobs. In 1964 alone, Michoud generated about 16,650 new secondary jobs: 1,650 in construction, 5,000 in direct support, and 10,000 in services. The $80 million in additional payrolls boosted consumer spending power with retail sales rising over 10%. Construction employment rose 72.9% between 1961 and 1966 [Bobo, 1975, pp. 9-10].

Operations at the (renamed) Michoud Assembly Facility had set-off the greatest period of economic growth in the city's recent history, but completion of Saturn booster development in 1964 meant employment cutbacks. By 1966, employment dropped 31% from its 1964 peak level of 13,400. The Manned Spacecraft Center in Houston fared much better with 13,000 employees in 1967, and that operation increased Houston's employment with the Apollo program [Konkel, 1968, pp. 51-53, 122]. By contrast, New Orleans employment declined in all sectors after 1965 with the slowdown of the Saturn project.

Saved By The Shuttle

President Nixon officially proposed the reusable shuttle program on January 5, 1972. NASA had earlier in March, 1971 selected the Mississippi Test Facility (now Stennis) for level testing of the shuttle main engines. As MTF was already testing Michoud Saturn boosters, most informed observers also expected Michoud would build the shuttle external tank. NASA confirmed the fact in July, 1972 when it named Martin Marietta, Inc. (now Martin-Lockheed) the tank contractor. Unlike the dramatic events of 1961, this *fait accompli* for New Orleans was acknowledged without much fanfare nationally or locally [George C. Marshall Spaceflight Center; *Aviation Week And Space Technology,* 31 July 1972].

Net Impacts

Despite having stalled on the runway for twenty years, Michoud finally succeeded in providing enough thrust to launch the space program and permit high technology, leading sector activities to take-off in New Orleans. External tanks are still being built at Michoud with great success, but little in the way of "spin-offs" have come from the space program. Unlike the pattern in Houston, no new high technology firms in electronics, aerospace, and computer technology moved into the area to continue industrial and economic development. The Manned Spacecraft Center (later Johnson Space Center) had a far greater absolute impact than the Michoud Assembly Center with its more specialized task. But New Orleans and Louisiana, long accustomed to consolation prizes, did well in relative terms.

Higgins' sketch of the Michoud Shipyard assembly lines now graces the wall of the NASA Administrator's office at the George C. Marshall Space Flight Center's Michoud Assembly Facility as a sole reminder of his original dream that made the space program in New Orleans possible. Even if their legacies have remained with us, the type of New Deal entrepreneur that both

Higgins and Kaiser represented was to fade in the postwar era, where prime defense and space contracts increasingly would go to a rather small (and currently dwindling) number of major corporate defense contractors supported by massive research and development funding. Individual entrepreneurs like Higgins and Kaiser, however, played an important transitional role not only in changing the nature of public-private sector relationships, but in assisting the geographical dispersal of leading sector industrial activities. The problems encountered by Higgins and perhaps, more importantly, the difficulties encountered in converting Michoud to long-term viability in the postwar era demonstrates that this process was neither a smooth nor continuous one.

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