GREEK SPONGE BOATS IN FLORIDA

H. RUSSEL BERNARD
University of Illinois

This is the story of the cultural crisis of the Kaliope, a sponge boat operating out of the Greek sponge fishing community at Tarpon Springs, Florida. Data for this study was gathered during a summer field trip in 1963, and in two weeks which were spent at sea with the craft. Essentially, we are dealing here with the social structure of the boat, especially the division of labor and the main principle of organization which I have chosen to call "specialization sets."

The Kaliope is one of thirteen diving boats now operating out of Tarpon Springs, Florida. It is part of a fleet which today represents a remnant of a fleet of sponging craft once numbering eighty-five; a fleet which represented an extension in a borrowed home of two millenia of Greek sponge fishing in the islands of the Aegean; and a fleet which now flounders in its new home, as it does in Greece, against the reef of technological progress, the synthetic sponge.

The development of the sponge fishing industry in Tarpon Springs began when one John K. Cheyney, a Philadelphia banker with large land interests in the then new town on the Gulf coast of Florida, decided that sponging would be a good way to put Tarpon Springs on the map, economically. He had noticed the spearing and hooking of sponges going on around Key West and thought that Tarpon Springs, with its proximity to northern commercial routes and outlets, and its naturally protected river harbor would be ideal for the creation of a sponge fishing center to supplant the Key West center. His efforts failed, however, for fully nine years until the outbreak of the Spanish-American War at which time the boats around the Keys and in the Caribbean began working out of Tarpon as a precaution against meeting the Spanish war fleet.

The first Greek in Tarpon Springs, John Cocoris, arrived in 1896 as a sponge buyer for a firm of sponge merchants in New York. Support for this research was provided by the University of Illinois and under Fellowships from the Social Science Research Council and National Defense Education Act. I am grateful to all these sources.
York. By 1901 he had returned to Greece to marry and had come back to the U. S. with his three brothers. Cocoris worked for Cheyney for the next few years, bleaching small sponges chemically in order to make them more appealing to the market and by 1904, records show that Corcoris had decided to try and introduce the traditional methods of Aegean sponge fishing into this continent. Until that time only the "hooking" method was employed, a process whereby waters up to four fathoms are fished for sponge by means of a hook (up to forty feet in length) wielded from a dinghy. The dinghy is towed out to sea behind a mother craft on which the men sleep and eat and in which the catch is stored until such time as enough sponge has been gathered to warrant going inshore for a sale. The Aegean method employed the use of deep sea diving equipment which permitted the boats great freedom of movement at depths up to thirty-five fathoms. The introduction of deep sea diving methods increased the possible area for gathering the sponge by almost 9,000 square miles.

John Cocoris imported an entire crew from Greece for the venture; he purchased a hook boat and converted it for the diving engine and the use of the diving suit, and set sail for the open Gulf of Mexico on June 18, 1905. The venture was an immediate success. The deeper water sponges were plentiful (sponge bar beyond four fathoms was all virgin territory at that time) and the quality was far superior to the hookers' catch. The deeper water sponges are, naturally, resistant to great pressure and are consequently far more solid and durable than the average shallow water variety. Moreover, whereas the hooking of sponge from a dinghy can be mastered to a high degree so as not to destroy the sponge in picking it, the diver plucking the sponge off the bottom at close range hardly ever leaves even a hook mark on the sponge; this too, rendered the diving boat sponge more marketable. The result, of course, was the equivalent of a range war, and before the Greeks were solidly entrenched more than one boat was to be burned at the docks. The Corcoris brothers were a great success, however; John Cheyney, who now had a large sponge packing house, bought all the sponge Cocoris could bring in. And within the next two years the brothers had bought five more boats which they converted, imported five more
crews from the Greek islands of Aegina, Hydra and Spetse, and introduced the Greek mother ship system. Large, two masted schooners, called "deposita" accompanied a small fleet of sponge boats in the Mediterranean, picking up the catch from each of the boats and supplying the smaller craft with food, fresh water, mail, and the security of having a fast ship around in case of emergency. During the same two years Cocoris bought two such schooners. The Greek industry of sponge fishing in this country had gotten off to a phenomenal start.

The original crews, imported from Greece by Cocoris, wrote home. Greek-American newspapers in the large urban areas of the United States began running features on the new "Hellenic Colony" and newspapers in Greece did the same. The letters written to the homeland had a great and almost immediate effect. They told of the great wealth of sponges lining the bottom of the Gulf of Mexico, of the high quality of these sponges, of the ready markets on this continent for the product, and above all, of the relative ease with which these sponges were to be obtained. The Mediterranean sponge is caught regularly in depths reaching thirty-five fathoms. The time a man can stay down working in those depths is very short, only a few minutes even with a full diving suit on; and there is always the constant danger of the crippling bends and nitrogen narcosis. The Gulf sponge, of equal and superior quality could be found at depths not to exceed ten fathoms. At these lesser depths, a man can stay down from one to two hours at a time with very little danger. Much later, in the late thirties and early forties divers would go down to twenty-two fathoms when the demand and the number of boats fishing the Gulf skyrocketed. But the depths worked never approached those of the Mediterranean.

The news of the great economic prospects and the comparative safety of Gulf of Mexico sponge fishing spread rapidly through the Greek islands of the Aegean. On the Dodecanese islands of Halki, Symi, and Kalymnos, where sponge fishing was the economic mainstay, the news was particularly encouraging and, in 1905, some five hundred men arrived from these islands as well as from Aegina, Hydra, and Spetse. The Greeks were the last of the major ethnic groups to arrive in this country from Europe during the great migrations of the nineteenth and early
twentieth centuries, and they were beginning to settle in all parts
of the United States. As many of them heard of the growth of
Tarpon Springs, its Greek community, and its Greek sponge in-
dustry, they moved there to establish restaurants, bakeries, coffee-
houses, hotels, barber shops, ship chandlerys, and other service
businesses. By 1907 there were approximately 800 Greeks in Tar-
pon, nearly all males. Many of the men began sending home for
their families to join them while the single men began bringing
brides over from the homeland.

The year 1909 marks the official beginning of the Tarpon
Springs Greek Community. The Community was organized, a
charter was filed in Hillsborough County, Florida, and a frame
Church was built and named after Saint Nicholas, the patron
saint of mariners.

The charter of the Greek Community and its by-laws stood
until 1940, when they were amended in their entirety. Today,
the Community, a non-profit organization organized under
Florida state law, is run by a board of trustees numbering four-
teen. Election of this board takes place in January each year,
at the after school "Greek-school" and all paid up members are
eligible to vote. Any paid up male member over twenty-one may
apply to have his name put on the ballot in one of five categories
representing the various island interests in the community. Three
Kalymni are elected, two Halkite, two Aeginite, two Symaioi,
four mixti (representing those from all other parts of Greece),
and one representative from Clearwater, a neighboring resort
city with no Greek Orthodox Church of its own. While many
members running for election to the board are second gener-
ation Americans, the island affiliations are still recognized since
factionalism among the various island groups represented in
Tarpon is still rampant. The breakdown in the board of trustees
is supposed to give proportional representation to the members
of the Community. Some members of the Community feel that
the system of elections only furthers this factionalism while serv-
ing no real beneficial function to the Community. A move is cur-
tently on to change the system and elect fifteen members at
large to the Board of Directors. Such moves have been tried in
the past and have failed, once causing a near riot at a general
assembly of the Community, according to some informants. Se-
vere opposition is expected to the current movement as well.
The Greek Community of Tarpon Springs, through the board, administers the running of the church and the Greek-school (with a combined salary outlay alone of $1200 per month), the Sunday school and various social and religious functions throughout the year such as fund raising dances, picnics, etc., and the famous Epiphany celebrations each year on January 6, which this year attracted 15,000 people.

The Greek Community of Tarpon Springs remains the largest organized group in the town. Other societies, formed over the years, serve other purposes and interests. The Halki and Kalymni societies may be termed self-help groups. Their dues and funds raised from dances and picnics go exclusively to helping people on their respective home islands. The Saint Nicholas Church women work for the community by helping the church independently of the board of trustees. The Philoptoxos, a branch of a nationwide Greek women's mutual aid society, distributes food and money to needy families in the community with no official regard to homeland affiliation.

Within this framework of a tightly knit ethnic community (marriages and lesser social relationships are still predominantly along ethnic lines as are economic activities such as purchasing of groceries and patronage of service businesses) the sponge fishing industry grew to its apogee in 1946, when $3,000,000 changed hands at the auction market. The end of the war allowed chemical companies freedom to develop and market the synthetic sponge and the community industry of Tarpon Springs was powerless against the advertising power of the synthetic manufacturers. The largest blow, however, from which the industry has never recovered, was the great blight of 1947 in the Gulf, know as the Red Tide. A rampaging micro organism, it swept the Gulf coast in that year, killing almost everything in its path. Thousands of pounds of dead fish were washed up on St. Petersburg beach. The shrimp fleet was in desperate straits, and the sponge beds were reduced to nothing. By the time the beds were again prolific, seven or eight years later, the city of Tarpon Springs was left with only a few boats and fewer competent divers. During this time the market for sponges was almost completely taken over by synthetics and imports from the Mediterranean. In 1948, the market produced $400,000 at
auction and, by 1954, only $125,000. Today the figure approaches the half million mark and efforts are underway by local sponge workers to build up the volume. Two diving boats are now owned by Americans of non-Greek descent, although they carry a predominantly Greek crew. Technical innovations are being introduced into the traditionally Greek industry by these American captains and it is to some of the repercussions of this influx and change that we now turn.

The sponge boat as it operates today, is manned by six men, each of whom has a particular set of duties to perform. The engineer runs the boat during the sponge fishing operation. The cook prepares the meals for the crew. The deck hand watches the diver's air hose to keep it from tangling, cleans the sponge catch, and does other jobs on the boat. Two divers alternate in two hour shifts underwater, gathering sponges by means of a short handled rake and a rope basket which is filled with sponge, hauled aboard the boat and replaced as many times in two hours as necessary. Finally, the life-line tender mans a line attached to the submerged diver and keeps in constant communication contact with the man below by means of a system of pulls and jerks on the line. At present there are thirteen boats in the Tarpon Springs sponge fleet. Thus there are at least thirteen engineers, thirteen life-line tenders, thirteen cooks, thirteen deck hands, and twenty-six divers. Each of these groups forms a specialization set, within which each man strives to attain a reputation of technical excellence. Such a reputation then carries over into the larger sponge fishing community. More directly put, in a system which clearly recognizes a labor status hierarchy of diver, engineer, life-line tender, cook, deck hand, in that order, no cook aspires to be an engineer, but rather a good cook. Being a deck hand is not a stepping stone for doing something else, but rather a highly specialized field in itself. And once a man has established a reputation for being an excellent life-line tender, it would be extremely difficult for him to become an engineer or a diver because it would be thought unlikely that he would be able to master two highly specialized fields.

We shall examine here, some of the evidence for the operation of the principle of organization I have called specialization sets and see what happens when technological innovation threatens this principle.
A sponging trip lasts for five months, with a month in between for repairs, recrewing if necessary, and relaxing. Each trip is broken into a number of gazas, which range from one to three weeks each before the boat returns to Tarpon Springs to refuel, puts the sponge in storage and takes a day or two of rest. If time permits, or if finances demand, sponge will be sold during these intervals between gazas, on the auction floor of the Tarpon Springs Sponge Exchange, Inc., a Greek owned and operated organization which is the largest sponge market in the world.

Before each trip, the crew is "signed on," although written contracts are absent, being considered poor form, and showing a lack of faith in a man's filotimo or "pride," "honor," "self-esteem." A man may demand a sum of money in advance, known as platica, which will tide his family over while he is at sea. The sum of platica functions openly as a marker of recognition of excellence. The platica received by one diver is compared with that received by other divers; and owners offer as much platica as they can to attract the crew members of their choice.

The boat is a profit sharing organization, running on a fiscal period of five months. When the trip is over, the profits are divided into twelve shares and divided among the men as follows: Captain-diver, 2½ shares; second diver, 2 shares; engineer, 1¼ shares; life-line tender, 1¼ shares; cook, 1 share; deck hand, 1 share; owner, 3 shares. This system of division is somewhat flexible, however. The engineer and life-line tender may receive 1½ shares each, and the two divers may receive 2½ shares each; then the owner only takes 2 shares. The owner may give up part of his profits in order to attract the best crew members he can. Status competition runs within each specialization group and may be initially validated by platica or share size, or both. It is established, maintained, and periodically revalidated in any case by each man's performance of that rigorously defined set of duties which constitutes the title "engineer," "cook," etc.

Specialization is reinforced aboard the boat by rigid spatial definition of tasks. Diagrams were presented to a number of informants. Letters were read off and the informant was asked to comment. In every single case, the response consisted, initially, of which man occupied the space during working hours and what work would be likely to be seen in that space. The actual distribution of labor may be presented here briefly.
The life-line tender works in the prow, standing in a hole in the deck three feet deep which prevents his being thrown from the boat in rough weather. Holding a strong, lightweight line, the other end of which is attached to the diver's suit or weight belt, he maintains communication with the man below by means of a system of pulls and counter pulls. Various combinations of pulls and short jerks on the line by the diver tell the life-line tender to send more air, less air, a knife, a new sponge basket, more or less hose slack, that a school of good eating fish is about, or to throw out a small or large buoy for marking specially good sponge bars. If the diver calls for a knife or a sponge basket, the life-line tender attaches it to the life line and sends it down. The diver removes the basket, for example, leaving a slip knot in the line at the basket's place, pulls the line and sends up the slack. The short time when something is being sent down to the diver and the line is slacked is the only time when communication is lost with the man below.

All other commands from the diver are relayed to the proper quarter by the life-line tender: to the deck hand for slacking the hose, throwing out buoys, and pulling up full sponge baskets; to the cook when a school of fish is sighted; to the engineer for adjusting air pressure. The theory that the diver is in command of the operation when he is down is supported by the conspicuous lack of signals on the life line initiated by the life-line tender. The only signal he initiates is "time to ascend"; and in this case the diver has the prerogative of answering: "Give me ten more minutes, I'm working good bar." The major criterion for excellence as a life-line tender is the ability to "read" the diver's signals and respond accordingly for the most efficient satisfaction of the diver's needs.

The engineer works at the helm, standing in a shallow, square area. This permits freedom of movement for manipulation of the tiller which sits very close to the deck, and of the engine controls which rise from the engine below deck. From this vantage point, he can also watch the compass on the deck in front of the entrance to the engine room when the boat runs long distances, keep his eye on the life-line tender should the latter signal for air feed adjustment, and follow the diver's bubbles off the starboard bow. By standing partially below deck, he, too, is protected from the pitching and rolling of the round bottom craft.
By manipulating the engine controls from fast to slow ahead, neutral or reverse, and by working the tiller, the engineer can always keep the diver’s bubbles in sight and bring the boat around so as to keep the arc of the air hose as small as possible, and prevent fouling of the life line. In order to ensure proper slack, the hose is let out so that it runs as much as 200 feet aft before doubling back and descending to the diver. The smaller the arc of the hose, the less the resistance for the diver pulling the hose with him as he paces the floor of the Gulf of Mexico in search of sponge. The value of the engineer as a specialist, then, is measured not only by his skill in keeping the engine, pumps, compressor and other mechanical equipment in working condition but also in detecting faults in these before they become serious matters at sea. He must also be able to follow the diver by the bubbles he makes and keep the boat in the safest and most efficient working relationship with the man below. Here, as with the life-line tender, a predictable range of actions by the diver initiates an equally predictable set of responses topside.

Aside from tending the air hose, the deck hand’s main job is the curing and cleaning of sponge. The sponge, in its natural state, is covered with a gelatinous black epiderm and filled with a tan fluid called gurry. The curing of sponge entails the removal of the epiderm, the gurry, and any small sea creatures living in it such as shrimp, crabs, coral, snail, etc. When hauled aboard, the sponges are laid out on the starboard after deck covered with burlap and wetted down. The heat created by the proximity of the organisms to each other in a close, covered area, facilitates the killing of the sponge and the subsequent decomposition of the epiderm. As the black skin rots and the organism dies, the gurry runs out of the sponge. At around five in the evening the sponges are transferred by the deck hand to the port after deck and are “turned” in the process. That is, they are set down so that they touch each other in different positions then when they lay on the starboard side. This facilitates the even decomposition of the skin and prevents too much heat on any one area of a sponge from turning the organism red and spotty. Such sponges are almost unmarketable. The deck hand prevents this situation from occurring by turning the sponges at proper intervals and wetting down the burlap which covers them.
At around three in the afternoon, the day after the sponges are caught, the deck hand performs the final cleaning of the sponge. Sitting on a short stool, he squeezes out any remaining gurry, rinsing the sponge over and over again in a large bucket of frequently changed water. Any remaining skin, and foreign matter is removed by means of a short handled knife with a sharp five-inch blade. When fully cleaned, the sponges are rinsed out, wrung dry and tossed aft to the engineer’s area. During the short intervals between dives, the engineer strings the sponge on seven fathom lines, using an eighteen inch brass needle which lies near him on the deck under two leather thongs. These lines are strung out along the main beam to dry in the sun after which they will be stored in the forecastle. The deck hand’s technical excellence is judged, then, on two major points: 1) the skill with which he cures and cleans sponge. The better the job, the better the price on the market; 2) the skill with which he handles the air hose, adjusting the slack for most efficient operation of the diver.

The cook’s day begins earliest. He rises at around 4:30 in the morning, makes coffee for the crew, and prepares to make breakfast. He serves three meals a day at eight, noon, and seven in the evening. Before each trip he furnishes a list of victuals and equipment to the owner which he will require for his work and submits supplementary lists as the trip proceeds from gaza to gaza. When the diver signals that there are fish about, he throws out one or more lines and tries to supply fresh food thereby. His specialization status is marked by his ability to prepare the greatest variety of meals at the least expense, and his ability to catch and prepare numerous kinds of fresh sea foods, including urchins, conches, squid, octopus, and various varieties of fish and lampreys. Every dollar saved by the cook is a dollar which will go towards the final share of each man on the boat. And he cannot sacrifice satisfying meals for thrift!

The man for whose benefit the well organized system of tasks and responses is geared (as much as it is directed towards the goal of common remuneration) is the diver. Today, becoming a diver and making a reputation at it is done in three major steps. A potential diver convinces a boat owner to let him work as kopeli, literally “boy servant.” A kopeli receives the earnings
of one half of the sponge he brings up, the other half going to the boat. A kopeli receives no other share and makes only two dives per day on the average, working in deeper and deeper water until he is deemed qualified to start in the number two diving position. Going from number two to number one diving position, or diver-captain is achieved in the same way as going from kopeli to number two diver: a reputation is established for skill in working a sponge bar in consistent patterns; ability to work under adverse current and light conditions, ability to work for long periods under water, and ability to select the best sponge available when good and poor quality grades are found in the same area.

Where more than one task overlapped, overlapping of the title of the performer was almost non-existent. Informants volunteered that if jobs were not kept separated, people would be bumping into one another on the small craft, the diver’s life would be endangered, the efficiency of the operation would fall and all would lose, both in terms of money and in terms of symfonia, the harmony which results from synergia or cooperation. This is entirely compatible with our suggestion that spatial definition of tasks is evidence for a very real premium placed upon specialization.

We may now summarize the evidence for the principle of organization on a sponge boat, which I have called “specialization sets.” 1) While the status hierarchy of titles from diver to deck hand remains unquestioned, each man aspires to excellence within his job, vis à vis other like specialists in the fleet. 2) Informants explain that specialization is necessary so that people won’t get in each other’s way and “foul up” the operation. 3) This specialization is reinforced aboard the boat by rigid spatial definition of tasks. When one thinks of the possible ways to organize a boat, such strict division of labor is compatible with informants’ statements that specialization is important for the survival of all men at sea. (The importance of specialization per se may also have historical precedent as described by Friedl for Greek mainland villages.) 4) Status within the sponge fishing community is established and periodically validated by platica, share size, and technical competence. It is this system into which innovation made its dramatic entrance during July of 1963. The
final evidence to be presented here on the importance of specializa-
tion as an organization principle of the sponge boat, is the im-
portance of a technical innovation which threatened this very
principle.

A Greek boat owner "signed on" a young American diver as
captain-first diver, and a number two diver—also American.
The new captain installed a citizens band radio in the sleeping
quarters, a fathometer, and both divers elected to scrap the
traditional "hard-hat" diving rig (the familiar deep sea diving
suit and brass-globe helmet) in favor of "desco" gear. "Desco"
is the brand name of a diving mask which has come to be used
in a generic sense (like "victrola" or "frigidaire") for any under-
water diving masks which take the place of deep sea diving suits.
The diver wears the mask, to which is attached the air hose,
rough clothing including heavy shoes as protection against coral,
and optionally a rubber foam "wet jacket" familiar to all SCUBA
enthusiasts. Also introduced on this trip was a floating neoprene
hose in place of the thick, heavy, rubber hose. It is this last in-
novation which we shall discuss briefly here.

The important thing about the neoprene hose is that it does
not have to be adjusted for slack while the diver is down; more-
over, it can be left out for the day once it is let out on the first
dive of the morning. The old hose must be constantly watched
and adjusted for slack, as it has a tendency to sink and "drag."
It must also be recoiled after each dive and let out with each new
descent of the diver. These tasks belong to the deck hand who
maintains his vigilance over the hose.

The effects of this innovation on the deck hand's position are
obvious: the greatest part of the tasks which define his speciali-
zation are eliminated. With all tasks neatly divided, this leaves
the deck hand conspicuously idle for a great part of the day. It
was suggested that the deck hand stand at the rail and watch the
hose anyway, but this was vetoed by the captain as unnecessary.
The strained situation resulted in discussion ashore on whether
or not the job of deck hand should be eliminated and it became
apparent to all concerned that at least three choices were
possible. 1) The deck hand would cease to be of service to boats
which used "desco" equipment and would be dropped from the
ship's complement. 2) Ways would be found to fill up the deck
hand's time. 3) The deck hand's new found free time would be-
come legitimate in itself. A fourth choice was advocated long before the above three were discussed: the elimination of "desco" diving entirely and a return to the traditional hard-hat rig and the heavy rubber hose. Only three boats in the fleet of thirteen use "desco" gear and even then they return to hard-hat diving in the winter when the water temperature is too cold for diving without the protective deep sea diving suit. One of these is captained by a fourth generation American, one by an American of German descent, and the third by a second generation Greek who is considered deviant. Numerous charges of petty thievery, bordering on witchcraft, are leveled secretly against this last man. Engineers are vituperatively against the neoprene hose on the grounds that it is difficult to see in the water. And numerous individuals in the fleet are openly against the use of "desco" gear altogether. The use of the diving mask alone, in place of the complex hard-hat rig, has affected the life-line tender's job tremendously; for it is he who is responsible for dressing the diver and making sure all the fittings are secure before the diver jumps overboard. The three pound face mask in place of the 150 pound suit, steel boots, and brass helmet has eliminated an important way for the life-line tender to attain competence within his specialization set.

In the case of the deck hand, however, it is the hose which is important and any of the solutions suggested above, with the exception of a return to the old rubber hose presents difficulties given the principle of organization which places a great premium on specialization.

The first solution, that the deck hand would be dropped from the roster, is intolerable given the accepted hierarchy of specialists. No one else on the boat has the time to do the job of cleaning sponge well. And doing the job well has its immediate reflection in the market, aside from any inherent value it may have. The fact that the deck hand holds the least prestigeful position on the boat in no way detracts from his ability to realize a reputation for being a great deck hand. It does mitigate strongly, however, against anyone else on the boat taking over the onerous task of sponge cleaning.

The second choice, that ways would be found to fill up the deck hand's time, presents its own difficulties. For new duties to be made up is clearly absurd to any sponge fisherman who
overtly eschews the wasting of time for its own sake. Our own logic should yield the question, “If the deck hand now has free time on his hands, why isn’t that a good thing? He should be free to help others perform their work better and contribute to the more efficient operation of the boat in general, shouldn’t he?” It is the fact that sponge fishermen in Tarpon are militantly against this occurrence which lends support to our suggestion that specialization sets are the organizing principle of sponging. For if the deck hand were to wander out of his appointed area amidship to help, say, the cook, he would be “interfering” with another man’s job, robbing him of the ability to excel in his prescribed duties by himself, as well as just plain “getting in the way,” and “making life at sea dangerous.” And if he were to be given certain tasks, such as stringing the cleaned sponge, now performed by the engineer (even in his own area of the boat), the deck hand would likewise be robbing others of part of their specialized duties.

We have already seen that the only precedent for true “free time” on the boat is that of the diver. Thus, the third choice, making the deck hand’s new periods of idleness legitimate in itself, also presents an antithesis to the traditional system, given the difference in status between the specialization diver and that of deck hand.

In conclusion, the introduction of impersonal technological innovations have drastically affected the traditional operation of sponge fishing in Tarpon Springs. The result is a cultural crisis marked by ambivalence, apprehension, and struggle. The struggle is one of cultural adaptation: the adaptation to an impersonal technology change by modification of what I submit is a very real principle of social organization—the “specialization set.”