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9. ABSTRACT A discussion of a fishermen's cooperative organization focusing on the benefits of collective action with respect to buffering, leveling, and anticipation of environmental impacts. At the empirical level the advantages that have accrued through organizational rationality can be documented readily. However, both economic cost and the countervailing power of competing organizations limit the effectiveness of the strategies used. The continuing prosperity of fishing is attributable to rising prices in the face of diminishing supply. If buffering were a pancea, the organization would be able to exclude foreign fishing fleets from their traditional fishing grounds. The fight by American fishermen for the establishment of a 200-mile limit is a buffering strategy probably doomed to failure because of the power of the competing groups. As for cost, the ownership of land transport equipment is too expensive, causing the organization to "debuffer" and turn to other transport arrangements. Leveling and anticipation also are limiting strategies. Holding fish off the market to control price fluctuations is a limited strategy when the diet of the population is "carnocentric" and when fishermen have no other sources of income. A welfare fund would entail prohibitive premiums and might encourage malingering. Hence the fishermen's cooperative is viewed not as an all-powered leviathan but as an aggregate with limited, though valuable, power.		
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A Fishermen's Co-operative: Open System Theory applied*

CARL GERSUNY

Associate Professor of Sociology, University of Rhode Island

AND

JOHN J. POGGIE, JUN.

Associate Professor of Anthropology, University of Rhode Island

'THE central problem of complex organizations', wrote Thompson, 'is to cope with uncertainty' [1]. Organizations are created whenever collectivities of individuals are more efficacious in dealing with uncertainty than unorganized individuals. Nowhere is this more evident than in the experience of the commercial fisherman unsupported by an organization of his peers. At the mercy of the physical and the social environment, the lone fisherman is beset with uncertainties that exacerbate the difficulties of a difficult existence. The necessity of minimizing the uncertainties of his occupational life impel the fisherman to organize with his fellows, and one form of organization that has been tried by fishermen is the co-operative. It is this type of social structure which we examine in the present paper from the perspective of open system theory. Our empirical referent is a co-operative incorporated in 1947 by participants in a New England small-vessel fishery.

Three strategies of organizations in dealing with the uncertainties of the context in which they exist that are set forth by Thompson can be illuminated by the example of the fishermen's co-operative. Conversely, the elements of Thompson's theory facilitate the analysis of the organization we have studied. The organizational strategies in question may be termed 'buffering', 'levelling', and 'anticipation'.

Buffering

First, in order to minimize uncertainty, organizations 'seek to seal off core technologies from environmental influences' [2]. To the extent that the technology which is most centrally related to achieving the organization's principal goal is susceptible to direct influences from the social environment, the operation of that technology and the achievement of that goal will be subject to uncertainties beyond

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the control of the organization. Reduction of these external influences is therefore necessary. In Thompson's terms:

Under norms of rationality, organizations seek to buffer environmental influences by surrounding their technical cores with input and output components [3].

In simpler terms, this implies bringing certain activities into the organization so that they can be controlled rather than left to the vagaries of a (by definition) hostile environment.

Levelling

The limits of buffering as a means of reducing uncertainty are obvious. Unless one organization could absorb all others to constitute some sort of totalitarian monolith, other organizations will be 'out there' in the social environment that are not subject to inner control. That being the case, the activities of an organization will be subject to fluctuations caused by external factors. These fluctuations cause uncertainties that vex the organization in pursuit of its goal. Therefore, 'under norms of rationality, organizations seek to smooth out input and output transactions' [4]. In other words, efforts are directed toward levelling the curve of external variations affecting inputs needed by the organization as well as outputs supplied by the organization.

Anticipation

Just as absorption of the environment into the organization is limited, so is the capability of levelling or smoothing input and output variations. In order to avoid surprises, minimizing of uncertainty entails preparedness through development of predictive models and contingency planning.

Under norms of rationality, organizations seek to anticipate and adapt to environmental changes which cannot be buffered or levelled [5].

Thus, if environmental fluctuations follow predictable patterns, preparations can be made to meet them, which seems preferable to being taken by surprise. Other fluctuations which may not be patterned can nevertheless be anticipated, and preparations for these can be made through various insurance schemes.

The three strategies for reducing uncertainty outlined here have guided our inquiry into the fishermen's co-operative which is reported in this paper.

Fishing Co-operatives in the United States

There are about eighty co-operative associations in the commercial fisheries of the United States. Of these, the Point Judith Fishermen's Co-operative Association is one of the most successful. Fishermen are motivated to band together in such organizations by the payment of low prices by fish dealers, by high individual costs in getting fish to the market, by the inordinate expense of money and time in obtaining equipment on a retail, individual basis, and by an unsatisfactory supply of producer services beneficial to fishing.

By joining a co-operative and pooling their resources, members can obtain a combination of one or more of the following services:

1. Acquire their own trucks to carry their catch to markets or processing plants;
2. Obtain repair facilities and get their vessels and gear services as employer rather than as client;
3. Pool their catch and employ marketing specialists to sell more advantageously than they could do individually;
4. Purchase supplies and equipment on a wholesale basis;
5. Secure competent representation in dealing with banks and other financial institutions; e.g., assist members in obtaining loans;
6. Operate retail stores, freezing plants, and cold storage warehouses on behalf of the co-operating fishermen;
7. Provide dock facilities;
8. Operate processing plants (filleting rooms, etc.) and ice plants;
9. Provide business record services and market research inaccessible to the unaffiliated individual;
10. Facilitate contacts with state and federal agencies on behalf of members (e.g., legislative lobbying, contact with the National Marine Fisheries Service).

These services of fishing co-operatives are primarily ways for coming to grips with the social environment by means more advantageous than those available to unaffiliated fishermen. Fishery co-operatives in the United States have been classified by the Department of Commerce according to the functions they perform for their members. The distribution of functions among the eighty co-operatives is as follows [6]:

	<i>Number</i>	<i>Percentage</i>
Marketing and purchasing	27	33.75
Marketing exclusively	25	31.25
Collective bargaining exclusively	9	11.25
Purchasing exclusively	5	6.25
Marketing, purchasing, and collective bargaining	8	10.00
Other (docking facilities, marine insurance, production)	6	7.50
	<hr/> 80	<hr/> 100.00

The potential benefits of collective action, when such programmes are perceived and implemented, have been realized with varying degrees of success. Among all of the fishermen's co-operatives in the United States, the Point Judith (Rhode Island) Fishermen's Co-operative Association has been one of the most successful. It is this organization which we wish to use as a case study to illustrate and analyse the functioning of a co-operative within the framework of Thompson's open system theory.

The Point Judith Fishermen's Co-operative

The Point Judith Fishermen's Co-operative [7] is located in the port of Galilee, Rhode Island, and is named after a projection of land at the entrance of

Narragansett Bay. While the fishery at Point Judith dates from pre-colonial times when the Indians obtained sustenance from aquatic life, a pursuit in which they were succeeded by the European settlers and their descendants, this was a shore fishery with rowboats and a few sailboats. Hook-and-line, haul seine, and trap fishermen, working from shore with small boats, harvested fish and shellfish. For most of them it was not a full-time occupation but a sideline to augment farming and other shoreside work. During the period of 1892 to 1935, the United States Government and the state of Rhode Island constructed an artificial harbour west of Point Judith, one consequence of whose massive engineering works was the transformation of a shore fishery into a vessel fishery, with a complement of about seventy vessels in 1972.

During the period of construction, fish landings rose from 300 tons in 1895 to about 3000 tons in 1935. With the completion of pier construction in 1935, a full-fledged vessel fishery was made possible. Landings reached 17,000 tons in 1945, and the peak in quantity was achieved in 1957 with a landing of about 56,000 tons. Thereafter the catch declined, but income continued to rise because of increasing prices.

Until 1947 the primary producers in this fishery were unorganized and at the mercy of two fish dealers who bought the catch on the basis of collusive bids. Alternatives were to sell in more distant ports, a practice disadvantageous in several ways. Purchases of gear by the fishermen were individually transacted at retail prices, and this too put the Galilee fisherman at a disadvantage.

On 21 October, 1947, after many years of discussion, ninety-six fishermen incorporated under the United States Fishery Co-operative Marketing Act of 1934 and state laws pertaining to corporations. The organization was chartered at that point in time because naval or military service in World War II had brought many of the fishermen into contact with the outside world beyond the confines of small-town New England. This contact encouraged scepticism about traditional ways of doing things and sharpened a sense of relative deprivation among fishermen as they compared themselves with others. Thus, the emergence of this Fishermen's Co-operative can be seen as part of a world-wide tide of rising expectations and broader horizons that followed World War II.

Membership in the corporation is based on ownership of one or more shares of common stock, and each member has one vote regardless of the number of shares he owns. No distinction is made between captain and crew or vessel owner and non-owner. The object of the organization is to reap the benefit of collective action with respect to purchasing and selling. Operations began in April, 1948, and in the ensuing quarter century many benefits have accrued to the member-fishermen as a result of this step.

The members meet annually to elect officers, and the officers in turn hire a manager who is in charge of all shoreside facilities and activities. The manager is a knowledgeable business executive who furnishes the group with many skills beyond the reach of the fishermen, who spend most of their waking hours in the hunt for fish and the tending of equipment. The present incumbent jokingly described the fishermen-manager relationship:

Each fisherman is technically my boss. I wouldn't say they take advantage of this point, but at times my relationship with the fishermen is the same as a hydrant is to a dog [8].

The organization also hires two marketing agents who work with the catch of the forty to fifty vessels whose owners are in the association and, through telephone negotiations in a network of markets up and down the East Coast, obtain far better returns than was the case when individual fishermen were dependent on two local buyers.

The function of the marketing agents is reflected in the fact that one of the most important expenditures of the organization is its telephone bill. Dependence on local wholesalers was broken by communicating with the markets of the East Coast, making it possible to sell under the most advantageous conditions.

The co-operative is financed through an assessment based on the selling price of the fish. A stockroom is maintained with an inventory of equipment and supplies such as line, wire, boots, and gloves, as well as replacement parts for the vessels. This saves the members not only money but valuable time, particularly during the summer months when fishing activity reaches its peak. Fuel is also sold through the organization, and ice is manufactured in the co-operative's own ice plant. Thus, boats can be restocked at the same time that they are being unloaded. A welfare fund is maintained for members. In addition, the members receive health and accident insurance as well as vessel insurance through the organization.

Before the co-operative established unloading facilities, the fishermen had to discharge their catch at facilities belonging to a middleman who collected packing and transport charges that were deducted from the price paid by the New York market, as were brokers' commissions. All of these costs were deducted before the primary producers received any return for their labour and investment.

With the co-operative, there is no middleman for filleting, packing, and shipping, nor are the fishermen restricted to selling in one market. Moreover, facilities have been acquired for processing industrial fish to obtain fish oil and fish meal used in poultry feed and other industrial products.

In addition to the tangible benefits of the organization, there have also been social benefits that are no less real, though they are more difficult to measure. By selling advantageously in their home port, fishermen are able to spend more time at home, with the result that their family life is much improved. An improvement in status honour is reflected in the fact that before the rise of the co-operative, children were ashamed to admit that their father was a fisherman. Now it is a source of pride in the community where many fishermen have acquired a middle-class life style [9]. The annual fishermen's golf tournament may be symbolic of this status mobility under the aegis of the co-operative organization.

Reducing Uncertainty through Organization

The co-operative reduces the uncertainties impinging upon the core technology of the individual fishermen in various ways that come under the different headings elucidated in Thompson's theory. The buffering, levelling, and anticipation effects of various activities and functions of the organization provide the fishermen of Galilee with greater rationality in their efforts; that is, greater predictability of the connexion between means and ends than was the case prior to incorporation.

BUFFERING: Sealing off the fishing process from certain environmental influences entails the acquisition on the part of the organized fishermen of the means to produce certain services and obtain certain goods *within* the organization rather than getting them from the outside social environment. Whether the activity involved is ice-making or gathering of market information, it is clearly beneficial to the fishermen to have their own ice-making equipment and their own marketing specialists.

Organizations 'buffer environmental influences by surrounding their technical cores with input and output components' [3]. In this connexion, the co-operative operates a storeroom to furnish marine supplies which is open 24 hours a day and operates with a smaller mark-up than retail supply stores on the outside. Fuel and ice are supplied in the same manner. In 1962 the organization acquired a flake ice plant with a capacity of 30 tons of ice per day, and in 1964 a block ice plant was put into operation. The fishermen's collective ownership of these input components reduces costs and uncertainties of supply. Output components that serve to buffer the fishermen against uncertainty and to maximize their rewards include the marketing department, a filleting room, and a fish by-products plant.

At its inception the co-operative required its members to sell all of their fish through the organization except fish for their personal use and up to 100 lb. per day which could be sold to local merchants. After the first year, this marketing agreement was discontinued and the buffering effect has been maintained since that time because earnings and efficiency of time were higher on fish marketed through the organization.

From 1950 to 1966 the buffering also included ownership of trucks for hauling the fish to market. Investment in transportation equipment reached \$90,000 in 1963. It should be evident that organizational buffering entails costs, and these must invariably be weighed against the benefits that result. A 'debuffering' took place in 1966, when the organization discontinued its trucking activities. The alternative transport arrangement will be discussed below.

LEVELLING: Where input and output activities cannot be controlled by bringing them into the organization, rationality can be enhanced by procedures or activities that reduce fluctuations. For example, acquisition of cold storage capacity by the co-operative organization means that when the supply of fish is great and prices fall, some of the catch can be stored until the price rises again as a result of diminished supply.

Another levelling activity is carried on by the marketing agents of the co-operative. If the price drops in one market, they have the means for communicating with a large number of alternative markets, and they sell where the price is highest. Thus, the fluctuations in output activity are levelled to whatever extent is possible.

The organization in this study also used the mechanism of levelling when capital expenditures for 'buffering' fish transport became too great. Instead of increasing investment in trucks, the organization got out of the transport business and contracted with an outside trucking firm to carry the fish to market at a flat rate. This was done by entering into an agreement with a company that transported goods from the southern states to the north-east and had empty trucks returning

to the south. Instead of travelling empty, this firm agreed to transport fish from Galilee for a constant tariff regardless of weight. This obviously is advantageous because it makes an important output activity entirely predictable, and it makes a good catch even more profitable. It is also a good example of a situation in which the cost of levelling is much lower than the cost of buffering.

ANTICIPATION: The third organizational strategy for minimizing the uncertainties arising from environmental impact is by anticipation of, and preparation for, certain contingencies. Untoward circumstances that are unpredictable and cannot be buffered or levelled can be taken into account and their impact can be made less severe through various forms of group insurance. Compensation for individual risks is spread over the entire organization, and contingencies which cannot be avoided are anticipated as a means of increasing rationality. Just as persons convinced of their own immortality will not acquire life insurance, fishermen who think that their vessels are unsinkable and their bodies indestructible will not seek boat insurance and sick benefit insurance. The Point Judith Co-operative provides both types of insurance to its members as a means of anticipating misfortunes that occur all too often in this perilous industry.

For the individual members there is a welfare fund financed through an assessment of 1 per cent of gross stock. If a member is unable to fish, he receives \$49 per week, and if he is hospitalized, the payment is doubled while he is in the hospital. The maximum period of benefit is 52 weeks.

For the vessels the organization makes available a fleet insurance plan which anticipates the risk of shipwreck. To keep the premiums low the organization accepts vessels into the plan only if they pass stringent inspection procedures. This is another benefit of collective action, because group insurance for the fleet is less costly than individual policies obtained by an owner from a commercial insurer.

Conclusion: The Limits to Organizational Control

Our discussion of a fishermen's co-operative organization has focused on the benefits of collective action with respect to buffering, levelling, and anticipation of environmental impacts. At the empirical level the advantages that have accrued to the fishermen of Galilee through organizational rationality can be readily documented.

However, both economic cost and the countervailing power of competing organizations place limits on the effectiveness of the organizational strategies employed. For example, we have noted that the tonnage of fish landings at this port reached its peak before 1960 and that the continuing prosperity of this fishery is attributable to rising prices in the face of diminishing supply. If buffering were a panacea, the organization would be able to exclude the foreign fishing fleets with their exceedingly productive factory ships and auxiliary vessels from their traditional fishing grounds. The fight of American fishermen for the establishment of a 200-mile limit is a buffering strategy that is probably doomed to failure because of the power of the competing groups. At the level of cost we have already seen that ownership of land transport equipment proved to be too expensive so that the organization 'debuffered' and turned to other transport arrangements.

Levelling and anticipation are also patently limited strategies. Holding fish off the market to control price fluctuations is a limited strategy where the diet of the population is 'carnocentric' and where fishermen have no alternative sources of income. A welfare fund that sustained the average income of the working fisherman would entail prohibitive premiums and might encourage idling.

To organize means to become more powerful. The individual fisherman, prior to the formation of the co-operative organization, was virtually powerless, and this condition was reflected in his dependence on forces in the environment to meet his needs. By pooling their negligible individual powers, fishermen acquired the capacity to meet more of their needs within their own group. This created the possibility for the buffering, levelling, and anticipation strategies we have described in this paper.

The fishermen's co-operative is not an all-powerful leviathan but an aggregate with limited, though valuable, power. Since the power is limited, so is the control over the social environment. In the realm of social life, half a loaf is better than none, and the experience of the Point Judith Fishermen's Co-operative serves as one possible model upon which other fishermen may base their action.

Notes

- [1] THOMPSON, JAMES D. (1967), *Organizations in Action*, p. 13. New York: McGraw-Hill.
- [2] THOMPSON, p. 20 [1].
- [3] THOMPSON, p. 20 [1].
- [4] THOMPSON, p. 21 [1].
- [5] THOMPSON, p. 21 [1].
- [6] UNITED STATES DEPARTMENT OF COMMERCE (1971), *Fisheries of the United States*, p. 72. Washington: Government Printing Office.
- [7] The descriptive material dealing with the Point Judith Fishermen's Co-operative Association was derived from the following unpublished materials: DAVID RABOY, 'Fishing Co-operatives', unpublished manuscript for three radio broadcasts, 1969; interview with JACOB J. DYKSTRA, October, 1970; and LEONARD J. STASIUKIEWICZ, 'Report on the Point Judith Fishermen's Co-operative Association', New Bern, North Carolina, Sea Grant Conference, March, 1972.
- [8] STASIUKIEWICZ, p. 2 [7].
- [9] DYKSTRA [7].