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**Future Orientation Among the Small-Scale Fishermen
of the Northwest Coast of Costa Rica**

by

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INTRODUCTION An important component to be considered in any situation of proposed techno-economic change is the temporal perspective of the population involved. It is clear that participation in change programs will be enhanced if the participants are oriented toward the future as opposed to the present or the past. This is true because most development schemes do not pay-off immediately -- there is usually a delay between the acquisition of new technology and increased income or production. This delay after investment of time, effort, and capital is often perceived as risky, and in situations where the outlook for the future is uncertain or negative, individuals are less likely to defer gratification (cf. Thompson 1975; Pollnac & Poggie 1978). Where the perceptions of the future are rather unfavorable, an orientation towards the present and/or the past develops, and change programs oriented toward the future are unlikely to succeed unless they include some means of influencing this temporal perspective.

The purpose of this paper is to examine the temporal perspective and future investment orientations of small scale fishermen on the Northwest coast of Costa Rica. A great deal of research has related investment orientations (or economic gratification orientations) to a host of variables such as age, modernization, socio-economic status, success, efficacy, optimism, income variability, and occupation.¹ Likewise, there are an increasing amount of studies which relate behavior to subjective evaluation of life sit-

uation and future expectations.² This paper will examine the interrelationships between these two variables and a range of sociocultural variables including age, years fishing experience, kin involvement in fishing, number of dependents, ownership of productive equipment, years formal education, income variability, father's occupation, and relative success at fishing.

SAMPLE A sample of 70 small-scale fishermen were interviewed at four locations on the northwest coast of Costa Rica between Playa del Coco and the Nicaraguan border. 39 were interviewed at Playa del Coco, a relatively popular resort area located in Bahia el Coco in the Gulf of Papagayo. Approximately 40 kilometers of black-top, all weather road links Playa del Coco with Liberia, the closest population center (population approximately 11,000), which is on the Interamerican Highway 216 kilometers from San Jose. 23 fishermen were interviewed at Cuajiniquil located on Bahia de Cuajiniquil approximately 50 air-kilometers northwest of Liberia. An all-weather road linking Cuajiniquil with the Interamerican Highway was undergoing construction at the time the research was conducted. Finally, 8 fishermen were interviewed at Jobo on the Gulf of Santa Elena and Puerto Soley in Bahia de Salinas approximately 5 kilometers from the Nicaraguan Border.

Most of the small-scale fishermen in the sample (77%) fish from open dugout vessels, approximately 18 to 24 feet long, powered by outboard motors. Others use vessels (primarily dugout but two large fiberglass vessels were in the sample) from 24 to 30 feet in length with inboard motors and cabins (launchas). Type of gear used was principally the gill net. Monofilament gill nets are the most frequently used type at Playa del Coco (used by 77% of the fishermen), while further north 94% of the fishermen interviewed use multifilament nets either alone or in combination with long or hand lines. Only

one fisherman interviewed at Cuajiniquil used a monofilament gill net. Finally, seven of the fishermen were divers (6 at Playa del Coco and one at Cuajiniquil) who captured various shell fish including the spiny lobster.

Overall, the fishermen at Playa del Coco have much more contact with modern Costa Rican society because of their relatively easy access to Liberia and the quantity of Costa Rican and other tourists who frequent the area. Manifestations of the impact of this contact among the small scale fish can be found in differences in level of technology (the high frequency of use of the relatively modern monofilament gill net at Playa del Coco) and levels of formal education (a mean of 6 years at Playa del Coco as opposed to 4 years among the fishermen further north). In the analysis section the sample of fishermen from north of Playa del Coco will be referred to as the "North Sample."

TESTS Self-evaluation of socio-economic position, perceived socio-economic progress, and perceptions of future position were determined with the use of the ladder of life test (Cantril 1963). The ladder of life test consisted of showing the respondent a ladder diagram with ten rungs. He was told that the top rung represented the best possible life, and the bottom the worst. He was then requested to tell where he felt he stood on the ladder at the present time (T_0), five years in the past ($T-5$) and five years in the future ($T+5$). The respondent was also requested to tell what he would do to arrive at the $T+5$ position.

Three items were used to determine future investment orientations (FIO). The first item involved the question concerning what the fisherman felt he must do to arrive at the state he projected for $T+5$. The responses to this item were content analysed, and those manifesting a plan to save or invest were

assigned a value of one and all others a value of zero. The other two items were derived from two questions: (1) If you were to receive 1500 colones as a gift or inheritance what would you do with it? and (2) If you were to receive 8500 colones as a gift or inheritance what would you do with it?³ Responses to these two questions were content analysed and classified as deferred if the response reflected an investment for future gain (e.g. purchase fishing equipment, put in a bank, etc.) or immediate if lacking an investment factor (e.g., buy clothing, alcohol, etc.). The immediate category was assigned a value of zero and the deferred a value of one. The values assigned to these three items were then summed, resulting in a scale which varied between zero and three, with zero indicating a lack of future investment orientation and three a maximum future investment orientation.

Independent variables such as age, years fishing experience, and education, were determined by responses to direct questions. Income variability was determined by subtracting the minimum monthly income from the maximum and dividing by the maximum. This results in an index which varies between zero and one, with one indicating maximum variability and zero no variability. Success rank was determined by requesting key informants (middlemen who had been buying fish from the fishermen for years) to rank each fisherman as being a very good, good, or average fisherman. These evaluations were assigned values of three, two, and one respectively.

ANALYSIS The distribution of responses to the questions concerning use of an unexpected inheritance or gift can be found in table 1. By far the largest percentage of responses to both the 8500 and 1500 colones questions make reference to investment in some sort of fishing equipment. Other studies (e.g., Pollnac 1977; Pollnac and Poggie 1978) have noted a similar tendency among small

Table 1. Percent Distribution of Responses to Questions Concerning Use of an Unexpected Inheritance or Gift.

<u>Categorized Response</u> ¹	<u>8500 Colones Question</u>	<u>1500 Colones Question</u>
Invest in fishing equipment	54	36
Purchase Boat	16	00
Purchase Boat with motor	09	00
Purchase motor	01	03
Purchase net	00	03
Repair equipment	00	01
Non-fishing investment (business, etc.)	03	06
Save (bank)	04	26
Non-investment response	13	24

¹ responses also include downpayment for item noted N=70

scale fishermen. Overall, only 13 percent of the fishermen provided non-investment oriented responses to the 8500 Colones question. This percentage increased to 24 percent with respect to the 1500 colones question reflecting the fact that the smaller amount is less likely to be perceived in terms of investment potential.

The distribution of responses to the self anchoring ladder scale can be found in Figure 1. As can be seen in Figure 1, the level of the modal response increases steadily from T-5 to T+5, indicating that the population is overall optimistic about the future. Further analysis of this scale will only involve a consideration of individual differences in position across time (e.g. T₀ - T-5).

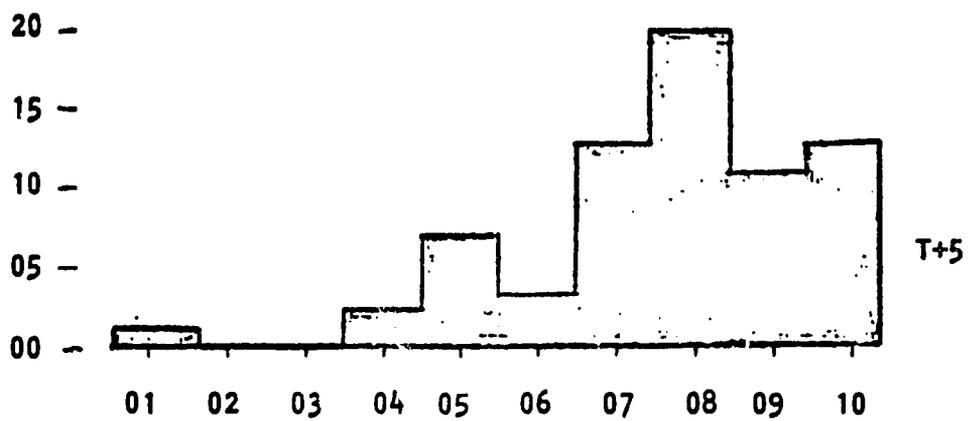
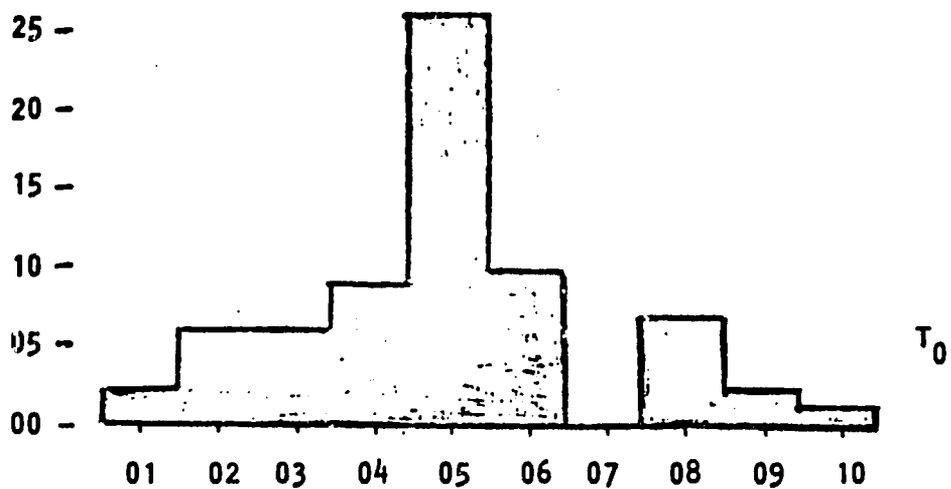


Figure 1. Distribution of Responses to Ladder of Life Test.

Fishermen's perceptions of factors influencing attainment of projected T+5 level emphasize work, saving, and possession of adequate equipment. The distribution of categorized responses can be found in Table 2. These responses manifest a marked similarity to the distribution of responses to an identical question posed to small-scale fishermen in the Gulf of Nicoya, Costa Rica (cf. Pollnac 1977).

Table 2. Distribution of Fishermen's Perceptions of Factors Influencing Goal Attainment.

<u>RESPONSE</u>	<u>PERCENT</u>
Work and save	37
Work hard	30
Have equipment	11
Save	10
Other (luck, find help, etc.)	09
Things getting worse	03

N = 70

The distribution of the independent and dependent variables used in further correlation analyses can be found in Table 3.

Table 3 indicates that Playa del Coco is significantly different from the North on several of the independent variables. The analysis indicates that there is less kin involvement in fishing and that fishermen have less fishing experience in the northern region. Fishermen in the North also manifest less years of formal education, probably as a result of their relative isolation. Finally, income variability is greater in the North.

Table 3. Distribution of Independent and Dependent Variables.

<u>VARIABLE</u>	<u>TOTAL SAMPLE</u>	<u>PLAYA DEL COCO</u>	<u>NORTH</u>	χ^2	<u>t-value</u>	<u>p</u>
Age (\bar{X})	28.1	27.6	28.7	----	-0.49	>.05
Years fishing (\bar{X})	9.3	11.9	6.0	----	2.97	<.01
Fishermen kin (\bar{X})	3.8	4.9	2.4	----	2.48	<.02
Own boat (%)	39	33	45	1.02	-----	>.05
Dependents (\bar{X})	4.3	3.7	5.1	----	-1.80	>.05
Years Education (\bar{X})	5.4	6.2	4.4	----	2.64	<.02
Farmer father (%)	49	41	58	2.01	----	>.05
Fisherman father (%)	20	28	10	3.71	----	<.10
Success rank (\bar{X})	2.0	1.9	2.1	----	-0.97	>.05
Income variability (\bar{X})	.83	.79	.87	----	-2.63	<.02
Income past month* (\bar{X})	21.6	18.6	25.3	----	-1.38	>.05
FIO (\bar{X})	2.10	2.02	2.19	----	-0.80	>.05
T ₀ - T-5 (\bar{X})	.50	.23	.84	----	-0.90	>.05
T+5 - T ₀ (\bar{X})	2.77	2.49	3.13	----	-1.19	>.05
T+5 - T-5 (\bar{X})	3.27	2.72	3.97	----	-1.69	>.05

N = 70

*100's of Colones

Zero order correlations between the independent and dependent variables for the total sample and the two subsamples can be found in Tables 4 through 6.

Tables 4 through 6 indicate that the independent variables are related to Future Investment Orientation (FIO) only in the North Sample, and that only one variable, number of kin fishing, is significantly related to this variable. Perceived changes in socio-economic position and perceptions of future position are significantly related to several of the independent variables

Table 4. Zero-order Correlations Between Independent and Dependent Variables for the Total Sample.

<u>INDEPENDENT VARIABLES</u>	<u>FIO</u>	<u>T₀ - T-5</u>	<u>T+5 - T₀</u>	<u>T+5 - T-5</u>
Age	.01	.06	.09	.12
Years Fishing Experience	.14	-.09	.01	-.08
Number of Family Fishing	.00	.05	.05	.08
Boat Ownership	.15	.09	.11	.17
Number of Dependents	.08	.07	.24*	.24*
Years Formal Education	.04	-.14	.00	-.12
Farmer Father	.09	.17	-.10	.08
Fisherman Father	.03	-.05	.22	.11
Success rank	-.07	.28*	-.11	.17
income Variability	.09	.12	.11	.19
Last Month Fishing Income	---	.24*	.04	.24*

N = 70

*p < .05

Table 5. Zero-order Correlations Between Independent and Dependent Variables for Playa del Coco.

<u>INDEPENDENT VARIABLES</u>	<u>FIO</u>	<u>T₀ - T-5</u>	<u>T+5 - T₀</u>	<u>T+5 - T-5</u>
Age	.05	-.06	.13	.05
Years Fishing Experience	.18	-.07	.08	.00
Number of Family Fishing	-.12	.09	.08	.16
Boat Ownership	.05	.02	.12	.12
Number of Dependents	.08	-.04	.36*	.27
Years Formal Education	.08	.25	-.14	.12
Farmer Father	.17	.01	-.19	-.16
Fisherman Father	-.02	-.08	.34*	.21
Success Rank	-.03	.18	-.18	.02
Income Variability	.22	.09	.11	.18
Last month Fishing Income	----	.12	.03	.14

N = 39

*p < .05

Table 6. Zero-order Correlations Between Independent and Dependent Variables for North.

<u>INDEPENDENT VARIABLES</u>	<u>FIO</u>	<u>T₀ - T-5</u>	<u>T+5 - T₀</u>	<u>T+5 - T-5</u>
Age	-.07	.22	.01	.20
Years Fishing Experience	.23	-.05	.03	-.02
Number of Family Fishing	.41*	.11	.17	.20
Boat Ownership	.24	.14	.07	.16
Number of Dependents	.03	.14	.01	.13
Years Formal Education	.08	-.42*	.26	-.21
Farmer Father	-.04	.31	-.04	.25
Fisherman Father	.17	.05	.13	.13
Success Rank	-.15	.38*	-.06	.30
Income Variability	-.13	.10	.03	.11
Last Month Fishing Income	_____	.29	.00	.26

N = 31

*p < .05

in all samples. In the Total Sample, both T+5 - T₀ and T+5 - T-5 are positively correlated with number of dependents, and income from fishing during the past month is positively related to T₀ - T-5 and T+5 - T-5. Both fisherman father and number of dependents are positively related to T+5 - T₀ in Playa del Coco. Finally, in the North Sample, success rank is positively and years of formal education negatively related to perceived progress (T₀ - T-5).

As a next step in the analysis, a step-wise multiple regression of the independent variables on the dependent was applied in cases where Tables 4 through 6 indicated that the dependent variables had at least one statistically significant correlation with an independent variable. In this procedure, the independent variable which accounts for the most variance in the dependent variable is entered first. The next variable entered is the one that manifests the largest partial correlation with previously entered variables controlled. This procedure is continued until all variables are entered or until some pre-

viously set criterion is reached. Here the criteria was set at an F-Ratio of at least 2.0 for the variable to be entered. The results of these analyses can be found in Tables 7 through 9.

Table 7. Stepwise Multiple Regression of Independent Variables on Dependent Variables for the Total Sample.

<u>DEPENDENT VARIABLE</u>	<u>VARIABLE ENTERED</u>	<u>PARTIAL TO ENTER</u>	<u>R</u>	<u>F RATIO TO ENTER</u>
T ₀ - T-5	Success Rank	----	.28 ^a	5.64
" "	Last Month Fishing Income	.20	.34 ^a	2.72
T+5 - T ₀	Number of Dependents	----	.24 ^a	4.16
" "	Fisherman Father	.22	.32 ^a	3.38
T+5 - T-5*	Last Month Fishing Income	----	.24 ^a	4.26

N = 70 *No variable to enter had an F Ratio greater than 2.0

a = p < .05

Table 8. Stepwise Multiple Regression of Independent Variables on Dependent Variables for Playa del Coco.

<u>DEPENDENT VARIABLE</u>	<u>VARIABLE ENTERED</u>	<u>PARTIAL TO ENTER</u>	<u>R</u>	<u>F RATIO TO ENTER</u>
T+5 - T ₀	Number of Dependents	----	.36 ^a	5.50
" "	Fisherman Father	.27	.44 ^a	2.75

N = 39 a = p < .05

The analysis presented in Tables 7 through 9 indicate that for the total sample the independent variables account for only a small proportion of the variance in the socio-economic progress variables. In Playa del Coco, two

Table 9. Stepwise Multiple Regression of Independent Variables on Dependent Variables for North.

<u>DEPENDENT VARIABLE</u>	<u>VARIABLE ENTERED</u>	<u>PARTIAL TO ENTER</u>	<u>R</u>	<u>F RATIO TO ENTER</u>
T ₀ - T-5	Years Formal Education	----	.42 ^a	6.12
" "	Success Rank	.44	.58 ^b	6.79
" "	Fisherman Father	.42	.67 ^b	5.86
" "	Boat Ownership	.40	.74 ^b	4.88
F10	Number of Kin Fishing	----	.41 ^a	5.91
" "	Boat Ownership	.30	.49 ^a	2.71
" "	Years Fishing Experience	.30	.56 ^a	2.75
" "	Success Rank	-.32	.62 ^b	3.02
" "	T+5 - T-5	.29	.66 ^b	2.23

N = 31 a = p < .05 b = p < .01

of the independent variables account for 19 percent of the variance in perceived progress from T₀ to T+5 -- almost twice the amount of variance that was accounted for in the same dependent variable for the total sample. The strongest relationships are found in the North Sample. There, four variables account for 55 percent of the variance in perceived progress from T-5 to T₀, and five independent variables account for 44 percent of the variance in F10. The two subsamples are apparently quite different in terms of the correlates of the dependent variables.

DISCUSSION AND CONCLUSIONS Overall, we have seen that the small-scale fishermen are positively oriented toward the future and manifest a relatively high

degree of future investment orientation. An examination of the socio-cultural correlates of these variables resulted in some relatively interesting findings. Turning first to perceived socio-economic progress over the past 5 years ($T_0 - T-5$), the analysis indicates that for the Total Sample, success rank and income from fishing during the past month are the strongest predictors of this variable. Success rank is also an important predictor of perceived progress in the North Sample. The explanation of this finding is quite clear. Those who have higher incomes and are relatively successful as fishermen are probably more likely to state that their condition has improved over the past five years. In the North Sample, it was found that in addition to success rank, years formal education, fisherman father, and boat ownership contribute to the perception of progress. Boat ownership is important to the positive self perception of a fisherman which probably contributes to his perception of progress over the past five years. Further, those with fisherman fathers are probably more aware of how extremely isolated the northwestern sector was in the recent past with respect to transporting fresh fish products. Today, however, construction of the all weather road to Cuajiniquil provides the fishermen with better access to markets and thus enhances their view of progress over the past five years. The strong negative correlation between years of formal education and perception of progress is probably the result of disillusionment -- a young man living in an area where the education level is relatively low who obtains an education higher than many others and finds that he still must fish for a living would probably feel rather negative about his present position. This does not occur in Playa del Coco because the fishermen there have more contact with modern Costa Rican society and have a more realistic perception of the levels of education necessary for alternative occupations.

In both the Total Sample and Playa del Coco number of dependents and fisherman father are relatively strong predictors of projected socio-economic progress ($T+5 - T_0$). Several alternative explanations can be suggested to explain the positive relationship between number of dependents and $T+5 - T_0$. First, one could argue that the more optimistic one is concerning the future, the more likely one would be to acquire more dependents. Concerns about their future maintenance or place in the world would be minimized. Second, it can be suggested that number of dependents increases future security, assuming that those who depend on you today will contribute to your welfare in the future. Thus, number of dependents can be either the cause or result of optimistic perceptions of the future. In reality, there is probably reciprocal interaction between the two variables.

The other correlate of $T+5 - T_0$, having a father who was also a fisherman, can probably be explained by the fact that fishing has improved greatly (in terms of access to the market) in the northern Pacific coast of Costa Rica in the recent past, and these changes result in those with a history of involvement in fishing becoming even more optimistic concerning the near future.

Finally, turning to Future Investment Orientations (FIO), the only statistically significant correlations with this variable were found in the North Sample. The only independent variable manifesting a significant zero-order correlation with FIO is number of kin fishing. This relationship can probably be explained by the fact that individuals with more family fishing are probably better adapted to the occupation through the socialization process of growing up in a fishing family context. If, as has been suggested elsewhere (Poggie 1978; Pollnac and Poggie 1978), a deferred orienta-

tion is an adaptive characteristic among fishermen, then those more thoroughly adapted through familial involvement would be expected to manifest a greater degree of FIO. This explanation, however, contradicts earlier findings which show a relatively strong negative correlation between fisherman father and gratification orientations (cf. Pollnac and Poggie 1978). This contradictory explanation, however, is in keeping with the inconsistent nature of relationships between gratification orientations and other variables reported in the literature and argues strongly for further research to delineate the situational constraints which affect these relationships (cf. Pollnac and Poggie 1978).

Boat ownership, as one of the predictors of FIO, can be explained by the fact that one must have a deferred orientation to obtain a boat and to keep it running. The boat owner must have a future orientation to take the time to perform the preventative maintenance which, after all, only reduces the chance of a need for major repairs in the future. He also needs a future orientation to put money aside for the periodic repairs which require parts if he wants the least amount of interruption in his future production. The restriction of this correlation to the North Sample can probably be explained by the fact that a lower percentage of fishermen in the north have fathers who were fishermen; thus, there was less of a chance for equipment to be inherited and more of a need for an initially deferred orientation to obtain the equipment (cf. Pollnac and Poggie 1978).

Years fishing experience, as a predictor of FIO, makes sense in light of the adaptive hypothesis cited above. If a future orientation is an adaptive characteristic for fishermen, the longer one fishes, the more they would be expected to manifest a FIO. The negative partial correlation between success rank and FIO is the opposite of what would be expected on the basis of Poggie's

(1978) findings that a deferred orientation is positively related to success as a fisherman. In this case it could be suggested that those who are already successful do not need to defer since they have already achieved their major goals. It must be noted, however, that although the multiple correlation coefficient is statistically significant, the negative partial correlation between success rank and FIO, with previously entered variables controlled, is not statistically significant at the .05 level.

In sum, the findings presented here indicate, once again, the existence of a relatively strong situational component influencing differential patterning of determinants of future investment orientations. The importance of situational constraints with respect to the determinants of gratification orientations have been emphasized in several studies (Pollnac and Poggie 1978; Thompson 1975; Robbins and Thompson 1974). The results presented here indicate that we cannot assume that individuals from one area or occupational subculture will respond to increased wealth in the same manner as those from other regions or occupational subcultures. If development funds are invested in a region with the goal of sustained development through reinvestment of reasonable amounts of profit, then the situational determinants of future investment orientations are of utmost significance. Part of the development scheme should be involved with creating an environment which would facilitate optimistic perceptions of the future and, hence, a climate favorable to investment.

FOOTNOTES

1. This literature will not be reviewed here. Readers are referred to Pollnac & Poggie 1978; Poggie 1978; Pollnac 1977; and Thompson 1975 for reviews of the gratification orientation literature and empirical applications.

2. Several recent studies include references to this literature (cf. Robbins, Pollnac, & Robbins 1978; Robbins, Robbins, & Pollnac 1977).
3. One U.S. Dollar was worth approximately 8.5 Colones when the research was conducted.

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