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The Division of Labor by Sex in
Fishing Societies

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INTRODUCTION Many productive activities in addition to harvesting fish take place in fishing communities. The most obvious are those associated with fishing, such as fish processing, marketing, and distribution as well as vessel and gear manufacturing, sales and maintenance. In addition to these fishery-related activities, however, one frequently finds other productive endeavors such as manufacturing, horticulture, and animal husbandry. In many small-scale fishing communities of the developing world, these ancillary activities form essential parts of a productive system which sustains (sometimes marginally) the community in its physical, social, and economic environment. For this reason, fishery development programs should not be narrowly confined to fishery matters alone. They should also be concerned with the impacts proposed changes in a fishery can have on other elements in the total productive system. For example, if proposed changes in the fishery reduce time available for work in some other activity (e.g., agriculture), the output of that ancillary activity may be reduced. If the impacted activity is horticulture, it is important to determine potential effects of reduced output on community well-being (e.g., nutrition, income, etc.). These effects must then be balanced against projected gains in the fishery.

One important aspect of evaluating impacts of changes in systems of production is determining the social identity of those who carry out the

various activities (cf. Stevenson, et al 1982). Determining the groups of individuals who will be directly impacted by proposed changes as well as the range of productive activities they traditionally perform is an essential first step in project evaluation. Additionally, renewed interest in the role of women in development projects makes it important to assess their roles in the overall productive system if proposed changes will increase or somehow alter their present involvement in the small-scale fishery of developing countries.

Crosscultural analyses performed thus far have indicated that the sexual division of labor with respect to specific activities (e.g., processing of animal products, housebuilding, loom weaving, and some other tasks) changes dramatically with technological shifts from nomadic hunting or pastoralism to sedentary agriculture and/or animal husbandry, as well as in response to technological change, intensification of agriculture, and increased occupational specialization (Murdock and Provost 1973). The purpose of this paper is to describe the division of labor by sex in traditional fishing societies. The division of labor will be examined in non-fishing societies as well to determine if the degree of emphasis on fishing has any influence on the distribution of labor in other productive activities.

METHODS The methods used will be simple cross-cultural comparison (Pelto and Pelto 1978), cross-tabulating degree of emphasis on fishing with division of labor in other productive activities. Statistical analyses appropriate to cross-tabulation are employed where appropriate.

The sample of societies used in the analysis presented here is known as the Standard Cross Cultural Sample (Murdock and White 1969). As a first step in defining the sample, data on some 1250 societies were examined to identify those with the fullest ethnographic coverage. Those societies were then classified into groups of geographically contiguous societies which were culturally similar (Murdock 1967). The groups, not necessarily geographically adjacent to one another, were further classified into 200 "world sampling provinces" (Murdock 1968) on the basis of linguistic and cultural similarities indicative of historical connections. Murdock and White further refined these 200 world sampling provinces into 186 "distinctive world areas", and using criteria such as "superiority of ethnographic coverage" and "cultural distinctiveness" (1969:332), one society was drawn from each area. The geographical distribution of the societies in the sample can be found in Table 1.

Table 1. Distribution of Societies in the Standard Cross Cultural Sample.

Sub-Saharan Africa	28
Circum-Mediterranean	28
East Eurasia	34
Insular Pacific	31
North America	33
<u>South and Central America</u>	<u>32</u>

¹ Derived from Murdock & White (1969).

Degree of dependence on fishing for food was coded into five categories, ranging from none to providing more than one-half of the local food supply (see Table 2). The data was originally coded by

Murdock and Morrow (1970). Data concerning the division of labor by sex for 50 technological activities was coded into eight categories by Murdock and Provost (1973). The eight categories are presented in Table 3, and the fifty technological activities can be found in Table 4.

Table 2. Coding categories for degree of dependence on fishing.

1. None: No fishing for food practiced.
2. Minimal: Fishing contributes less than ten percent of the total food consumed.
3. Low: Fishing contributes more than 10 percent of the local food supply but less than one or more other subsistence techniques.
4. Moderate: Fishing contributes less than 50 percent of the local food supply but more than any other subsistence technique.
5. High: Fishing contributes more than 50 percent of the local food supply.

Derived from Murdock and Morrow (1970).

Table 3. Coding categories for division of labor by sex.

1. Activity absent in the society.
2. No relevant data available for the society.
3. Activity present in the society but sex participation not specified in the sources.
4. Activity performed exclusively by males at the pinpointed date (or at a somewhat earlier date in the case of activities which had recently lapsed in consequence of culture contact - a qualification likewise applying to the following categories).
5. Activity performed by both sexes but predominantly by males.
6. Activity performed by both sexes with approximately equal participation or with a roughly equivalent division of subtasks.

Table 3, continued

7. Activity performed by both sexes but predominantly by females.
8. Activity performed exclusively by females, male participation being negligible.

Derived from Murdock and Provost (1973).

ANALYSIS Division of labor by sex was crosstabulated with degree of dependence on fishing for each of the 50 technological activities listed in Table 4. This analysis resulted in a five by eight table containing forty cells for each of the activities -- a total of 2000 tabular entries. Although interesting in detail, the fifty crosstabulations present more information than is necessary for the purposes of this paper; hence, each crosstabulation was reduced to a set of indices. This index of sex allocation of labor is the same as the one used by Murdock and Provost (1973).

The total number of societies within the sample practicing a given technological activity with information concerning the division of labor by sex was determined; the percent of the total number of societies in each of the sexual division of labor categories was calculated by giving a weight of unity to the percentage of societies where the activity is performed by males only, a weight of 0.8 to societies where the activity is performed predominately by males, a weight of 0.5 where performed equally by both sexes, 0.2 where performed predominately by females, and zero where females exclusively perform the activity. These weighted percentages were summed resulting in the indices presented in Table 4. An index was calculated for each activity for the sets of societies falling within each coding category of degree of dependence on fishing.

Table 4. Index of sex allocation of 50 technological activities in societies classified according to emphasis on fishing.

ACTIVITY	Emphasis on Fishing					
	NONE	MIN.	LOW	MOD.	HIGH	MOD. & HIGH
Gather wild vegetables	16	22	29	16	16	16
Gather eggs, insects..	37	66	47	100*	28	39
Gather shellfish..	--	35	36	44	00	17
Collect wild honey	85	94	94	90*	--	--
Hunt birds	96	99	99	98	89	93
Fishing	67*	86	88	92	82	86
Trap/catch small land fauna	99	98	98	96	95	96
Hunt large land fauna	100	99	99	100	96	98
Hunt large aquatic fauna	100*	100	100	100	100	100
Clear land for agriculture	94	88	93	73*	100*	84
Soil preparation	88	69	72	73*	90*	80
Crop planting/transplanting	66	53	48	67*	80*	72
Crop tending	52	49	32	40*	80*	56
Harvesting crops	49	47	39	13*	80*	40
Care of small dom. animals	51	34	29	60*	63*	61
Tending large dom. animals	83	82	85	90*	--	--
Milking	50	37	56	--	--	--
Prepare vegetal foods	02	06	06	11	09	10
Butchering	95	94	90	93	83	88
Preserve meat/fish	50	36	37	20	15	16
Preparation of drinks	22	24	17	00*	50*	20
Dairy production (e.g., cheese)	27	00	20	--	--	--
Cooking	09	07	10	04	09	07
Mining/Quarrying	92	96	89	--	100*	--
Fuel gathering	28	30	24	14	28	23
Lumbering	99	99	99	100	100	100
Water fetching	12	09	05	00	19	13
Skin preparation (tanning, etc.)	60	69	51	30	12	20
Spinning (thread)	18	10	17	00*	25*	17
Loom weaving	49	36	24	00*	00*	00*
Smelting metal ores	100	100	100	--	--	--
Matmaking	19	58	28	33	13	21
Netmaking	100*	68	78	57	63	60
Basketmaking	41	57	40	12	00	06
Rope/cordage making	74	64	85	56	41	49
Leather products (nonclothing)	69	64	56	16	04	09
Clothing manufacture	31	23	26	10	04	07
Pottery making	09	25	16	50*	00*	30
Wood working	99	98	99	100	100	100
Bone working	98	91	97	92	94	93
Stoneworking	90	98	96	100*	95	96
Metalworking	100	99	100	100*	100*	100*
Manufacture musical instrum.	91	99	99	93*	92	92
Fire making	42	58	74	78	66	71

*Fewer than five societies in category.

Table 4, continued.

ACTIVITY	Emphasis on Fishing					
	NONE	MIN.	LOW	MOD.	HIGH	MOD. & HIGH
Laundering	13	11	21	00*	00	00
Bodily mutilation (tattoos..)	61	64	72	43*	26	31
Bonesetting/other surgery	96	92	94	80*	90*	87*
Burden carrying/portage	42	40	37	33	44	39
Boatbuilding	50*	96	98	98	96	96
Housebuilding	61	79	85	57	83	71

*Fewer than five societies in category.

The index was also calculated for societies collapsed into a combined moderate and high emphasis on fishing category.

The index used is a combined measure which indicates the degree of participation of males or females in performance of a specific activity within the set of societies for which it is calculated. The higher the index, the more predominantly male the activity; the lower the index, the more predominantly female. For example, gathering wild vegetables had an index of 16 for societies with a high emphasis on fishing. This indicates that it is, for the most part, a task performed predominantly or exclusively by females. In contrast, bird hunting has an index of 89 in societies with a high emphasis on fishing, indicating that it is a predominantly male activity.

First focusing only on societies with a moderate or high emphasis on fishing, the indices in Table 4 indicate a wide range of variability with respect to assignment of tasks to one sex or the other. As a means of making some generalizations about Table 4, activities with a sex allocation index of 33 or less will be considered predominantly female,

34 to 66 as mixed, and 67 or more as predominantly male activities.

Using these criteria, 19 of the activities in Table 4 can be classified as predominantly male in societies with a moderate or high emphasis on fishing, 7 as mixed, and 18 as predominantly female. Six of the activities are not classified due to the fact that the activity was absent in either one or both of the moderate and high categories. The activities arranged according to this classification system for moderate and high emphasis fishing societies can be found in Table 5.

Table 5. Technological activities classified according to index of sex allocation for societies with a moderate or high emphasis on fishing.

PREDOMINANTLY FEMALE ACTIVITIES

Gather wild vegetables
 Gather shellfish
 Prepare vegetal foods
 Preserve meat/fish
 Preparation of drinks
 Cooking
 Fuel gathering
 Water fetching
 Skin preparation
 Spinning
 Loom weaving
 Matmaking
 Basketmaking
 Making nonclothing leather products
 Clothing manufacture
 Pottery making
 Laundering
 Bodily mutilation

PREDOMINANTLY MALE ACTIVITIES

Fishing
 Trap/catch small land fauna
 Hunt large land fauna
 Hunt large aquatic fauna
 Hunt birds
 Clear land for agriculture
 Soil preparation
 Crop planting/transplanting
 Butchering
 Lumbering
 Woodworking
 Boneworking
 Stoneworking
 Metalworking
 Manufacture of musical instrum.
 Fire making
 Bonesetting/other surgery
 Boatbuilding
 Housebuilding

MIXED MALE AND FEMALE ACTIVITIES

Gather eggs, insects, and/or small
 land fauna
 Care of small domestic animals
 Burden carrying/porterage

Crop tending
 Crop harvesting
 Rope/cordage making

Applying the same criteria to Murdock and Provost's analysis (1973:207) we find that five activities classified as predominantly female in moderate or high emphasis fishing societies would be classified as mixed male and female activities for the total sample. The affected activities are: (1) Body mutilation; (2) Preparation of skins; (3) Manufacture of leather products; (4) Basketmaking; and (5) Matmaking. Crop planting, which is classified as predominantly male for moderate and high emphasis fishing societies, was classified as mixed for the total sample¹; and making of rope or cordage, a predominantly male activity for the total sample, is "mixed" in fishing societies.

An examination of Table 4 also indicates that there are seven activities where societies with a moderate or high emphasis on fishing manifest indices clearly distinct from societies with less an emphasis on fishing. These activities are: (1) preservation of meat and/or fish (e.g., drying, smoking); (2) preparation of skins (e.g., scraping, tanning); (3) basketmaking; (4) making of rope and/or cordage; (5) manufacture of leather products exclusive of clothing; (6) clothing manufacture, exclusive of footwear and headgear; and (7) bodily mutilation (e.g., tattooing, circumcision). For all seven of these activities, the activity is more predominantly female in societies with a moderate or high emphasis on fishing.

These seven activities were subjected to further analysis to determine if the observed differences are greater than what would have

¹Sample size was very small for fishing societies on this variable; hence, the observed shift may not be representative of the universe of fishing societies.

been expected on the basis of chance alone. Due to the relatively small number of societies in the sample with a moderate or high emphasis on fishing (only 23 in the two categories) and the distribution of missing data concerning the allocation of activities by sex, the data was dichotomized before further analyses. Societies with a moderate or high emphasis on fishing were placed in one category versus all others. With respect to allocation of activities by sex, societies with the activity absent or missing data were eliminated from the analysis, and those with predominantly or exclusively female performance of the activity were placed in one category versus all others. Chi squares were calculated for the seven activities (see Table 6).

Table 6. Relationship between emphasis on fishing and sex allocation of activities.

ACTIVITY	EMPHASIS ON FISHING	DIVISION OF LABOR		X ²	PROB.
		PREDOMINANTLY OR EXCLUSIVELY MALE OR EQUAL	PREDOMINANTLY OR EXCLUSIVELY FEMALE		
Preservation of meat or fish.	None				
	Minimal	20	30		
	Low				
	Moderate	3	13	2.411	>.05
	High				
Preparation of skins.	None				
	Minimal	39	24		
	Low			7.006	.008
	Moderate	4	12		
	High				
Basketmaking.	None				
	Minimal	59	53		
	Low				
	Moderate	1	16	12.992	.0003
	High				

Table 6, continued

Ropemaking.	None				
	Minimal	76	18		
	Low				
	Moderate	10	6	1.731*	>.05
Manufacture of leather products.	None				
	Minimal	37	21		
	Low				
	Moderate	1	13	14.522	.0001
Manufacture of clothing.	None				
	Minimal	29	71		
	Low				
	Moderate	2	18	3.140	>.05
Bodily mutilation.	None				
	Minimal	81	10		
	Low				
	Moderate	7	8	13.513*	.0002

*Yates corrected

The analysis in Table 6 indicates that four of the seven activities differ more than one would expect on the basis of chance alone ($p < .05$). All four of the activities (preparation of skins, basketmaking, manufacture of leather products, and bodily mutilation) are among those which shifted from "mixed" for the total sample to predominantly female in moderate or high emphasis fishing societies.

SUMMARY AND CONCLUSIONS The analysis of the division of labor by sex in fishing societies, overall, indicates a shift of activities into the predominantly female category. Five activities which are classified as mixed male and female activities for the sample as a whole are more likely to be performed predominantly or exclusively by females in societies with a moderate or high emphasis on fishing. All of these activities are those which can be performed near home and would not interfere with child-care responsibilities (Brown 1970; Murdock & Provost 1973); hence, could be easily assumed by females in societies where the males' fishing activities separate them physically from their home communities for longer periods of time than more sedentary subsistence activities such as farming. Although the physical distance of the separation may, in some cases, be the same for farmers and fishermen, the fisherman is frequently relatively more removed since he usually performs his activity on water. The shifted activities would be difficult, if not impossible, to perform while fishing from the relatively small vessels found in traditional fishing societies; thus, as the emphasis shifts more to fishing, more land-based activities have a tendency to be performed predominantly or exclusively by females. It is important to note, therefore, that development changes which impact activities of females in fishing communities will be more likely to have an effect on other activities than in non-fishing societies. Hence, although one rarely finds female fishermen, potential impacts on the role of women cannot be overlooked in fishery development programs.

References Cited

- Brown, Judith K.**
1970 A note on the division of labor by sex. *American Anthropologist* 72:1073-1078.
- Murdock, George P.**
1968 World sampling provinces. *Ethnology* 7:305-326.
1967 Ethnographic atlas: a summary. *Ethnology* 6:109-236.
- Murdock, George P. and D. O. Morrow**
1970 Subsistence economy and supportive practices: cross-cultural codes I. *Ethnology* 9:302-330.
- Murdock, George P. and Caterina Provost**
1973 Factors in the division of labor by sex: a cross-cultural analysis. *Ethnology* 12:203-225.
- Murdock, George P. and Douglas R. White**
1969 Standard cross-cultural sample. *Ethnology* 8:329-369.
- Pelto, Pertti J. and Gretel H. Pelto**
1978 *Anthropological Research*. London: Cambridge Univ. Press.
- Stevenson, David, R. B. Pollnac, and Philip Logan**
1982 *A Guide for the Small-Scale Fishery Administrator: Information from the Harvest Sector*. Kingston, R.I.: I.C.M.R.D.