A QUANTITATIVE STUDY OF CERTAIN ASPECTS OF THE MAN-LAND RELATIONSHIP IN MARSHALLESE ECONOMY AT ARNO ISLAND

by Leonaro Mason and Harry Uyehara

Quantitative data for the fiscal year 1949-50 were obtained* for atoll production of copra at Arno (by district and by season, sales value and weight, and distribution of money income) and for atoll importation of trade goods (by district and by season, sales value and, in the case of food supplies, specific itemization). Further quantitative studies had been intended, at Arno Island only, with special reference to individual and family participation in copra production, in preparation and consumption of food, in movement of persons within the atoll and between atolls, and in the distribution and use of other economic goods derived from the natural environment. Time, however, did not permit.

A feeling that generalizations about these activities, as based upon personal observation by the investigator or upon statements and estimates by Marshallese informants, were frequently too vague or unreliable, resulted from two conditions. The first was the great individual variation in work activity as noted in the few test studies on a quantitative basis that were attempted. The second was the unconcern on the part of the majority of Marshallese, in recalling past behavior, about the accuracy of numbers of hours expended, numbers of people involved, and amounts of work produced.

These are conditions, of course, which are not peculiar to the Marshallese situation. Other anthropologists working with other groups in the Pacific and in other parts of the world, have noted the same methodological difficulties among nonliterate peoples. Nonetheless, the value of quantitative data which can be obtained under controlled conditions with statistically reliable techniques is never doubted.

(in this case, Mr. Harry Uyehara)

It was proposed, therefore, that an anthropologist conduct an intensive quantitative study of certain aspects of the man-land relationship in Marshallese economies at Arno Island during the summer of 1951. This study was an extension of the 1950 field work referred to above, and utilized the materials already collected and analyzed. The results of the 1950 and 1951 field projects will eventually be integrated with other studies undertaken at Arno Atoll within the framework of the Coral Atoll Program for the better understanding of the Arnoese and their ecological relationship with other components of the total atoll environment.

In 1950 Arno Island, with a land area of 0.66 square miles or 422.4 acres, supported 201 persons who were combined in various numbers (ranging from 1 to 15, averaging 6) in 30 households. The island was divided into 63 land parcels, each averaging 6.72 acres and with boundaries from lagoon to ocean shores; only 30 of these parcels were actually occupied in 1950. The remaining 33 were either more or less abandoned although ownership and use rights were kept alive, or associated with parcels then occupied.

* by Mason in 1950.
In obtaining quantitative data for statistical treatment, 12 of the 30 households were selected by random sampling, thus 4 from each of three strata based upon size of household. After an inventory of economic resources available to each of these 12 households made by the anthropologist, with special attention to numbers and kinds of economic plants, animals, and fishing areas, building facilities and household goods, and personal effects, he checked each household daily during one month, and later for one week for a detailed quantitative report on a number of economic activities as listed below. A number of simple questionnaire forms were prepared in English and in Marshallese on which each household group recorded numbers, amounts, and times involved in production, distribution, and consumption of economic goods.*

The anthropologist lived at intervals of one to two weeks in several of these 12 households, reviewing daily the reports of the other 11, checking for accuracy wherever possible, filling in more complete information through interview with members of each household, and further instructing Marshallese assistants in a more reliable reporting of economic activities. The difficulty of employing questionnaires, among an essentially untutored people are realized, but it is believed that the carefully conceived forms were feasible in this case, since most Marshallese at Arno Island are literate in their own language, and many have become accustomed to reckoning in numbers and by weight through their transactions over half a century with foreign traders and tax collectors.

Within the three-month period, the anthropologist became acquainted with each household, providing thus a better basis for evaluation of the daily reports, and had adequate opportunity to take his own observations on economic activities of the people. The three summer months, roughly from mid-June to mid-September, coincide with the main breadfruit season, the most productive period of the year in terms of food. The results of the study have primary value for this season of the year; similar studies should be carried out at other seasons for a more complete understanding of the year-round relationship between Arnoese and their natural environment.

**Subjects for Quantitative Study**

The following subjects were basic in the daily reports from each of the households selected for this study. In general, the questions to be answered were:

- How much work is accomplished?
- Where is the work undertaken?
- How many persons are involved?
- Who are they? What is their social status?
- How much time is consumed in each activity?
- How much leisure time remains? How is it spent?

1. **Food collection and preparation:**

Kinds and amounts of food materials assembled (plant, animal, marine, store); time consumed in different stages of preparation; artifacts and accessories required; persons employed; location of activities.

* See sample cards attached (B and C, pp. 119 and 120)
2. Food distribution and consumption:

Food exchanges (raw, cooked, store); persons involved in exchanges; their relationships; quantities and kinds of food exchanged; occasions for exchange; quantities and variety of food consumed by individuals; number of meals, times, and composition of eating groups; visitors at mealtimes, their relationship with host; their treatment by host; foods consumed by visitors.

3. Copra production:

Number and size of nuts husked; weight of meat cut from nuts and dried; weight of copra sacked and stored; weight and value of copra sold to trader; location of each activity; time involved; persons employed; distribution of income from sale of copra.

4. Production of artifacts and handicraft:

Amounts and kinds of raw materials collected, prepared, and processed; types of articles produced; value of articles sold to trader; use of articles retained; ownership in relation to producer; location of each activity; persons employed; time involved.

5. Clothing production, laundry, and repair:

Items of clothing produced or bought; value and quantity of clothing; materials employed in laundry and repair; time involved in work; persons employed; location of each activity.

6. Construction and repair of housing and water transport:

Quantities of raw materials for use in construction of housing units or canoes and boats; processing of raw materials (time consumed, persons employed, location of activity); ownership and use of completed structures and craft.

7. Weather conditions and events competing with economic activities:

Frequency and duration of weather conditions impeding work progress; Sundays and holidays; festivals and visiting; recreation and other leisure-time activities; frequency of these, degree of disruption of work program, persons involved.

8. Movement of persons.

Travel from one land-holding to another; from Arno Island to other islands in the atoll; from Arno Island to other atolls; kinds of transport used; occasions for travel; length of journeys; duration of stay; persons involved.

9. Participation in money economy:

Receipts of money; source of income; distribution of income; purchases and other transactions requiring money; persons involved.
SAMPLE CARD B.
INVENTORY OF LANDHOLDING - Arno Project - 1951

Name________________________ Informant________________ Lot No.______
Iroij________________________ Iroij erik________________ Alab______
Ri jerbal______________________

Occupants______________________

Buildings_____________________

Sail canoes________ Paddle canoes________ Bicycles________

Other transport________________

Land acreage_________________

Pigs_________________ Chickens________ Ducks________ Others_____

Breadfruit________ Coconut________ Pandanus________ Banana____

Papaya________ Mangrove________ Others____________

Taro____________ Arrowroot________ Sweet potato________

Cisterns________ Wells________

Household effects______________

Money______________________
1. How much food was eaten here today?
   Morning:_________________________________________
   Noon:_________________________________________
   Evening:_______________________________________

2. How much of this food was prepared before today?________________________

3. How much food was prepared here today, but was not eaten today?__________

4. Who helped to make the food today?____________________________________

5. Where did the food come from that was eaten or prepared today?____________

6. Who ate the food here today?___________________________________________

7. How much food was sent to people elsewhere?_____________________________
   * * * * * * * * * * *

8. What work was done on houses or canoes today?___________________________

9. Who did the work?_________________________ When?_______________________

10. What materials were used?____________________________________________

11. Where did the materials come from?____________________________________
   * * * * * * * * * * *

12. How much money was earned by people here today?_______________________

13. How was the money earned?___________________________________________

14. Who worked for the money?_________________________ Who received the money?

15. How much money was spent here today?_____ To whom was the money paid?____

16. For what was the money spent?________________________________________
   Who spent it?________________________________________
   * * * * * * * * * * *

17. How many coconuts were collected today for husking?_______ Where?_______
   Who did the work?
18. How many coconuts were husked today? Who did the work?

19. How many coconuts were cut today? Who did the work?

20. How many bags of dried copra were sacked today? Who did the work?

21. How many bags of copra were sold today? To whom?

22. Who sold the copra? How much money was received? How was the money divided?

23. What new clothing do you have here today?

24. What clothing was washed here today?

25. What clothing was ironed here today?

26. What clothing was mended here today?

27. What handicraft was made here today?

28. Where did the materials come from?

29. Who did the work? Who owns the finished products now?

30. Where is the handicraft now?

31. How much water was used here today? For what purpose?
   Cistern:
   Well:
   Lagoon:

32. What work was stopped today because of bad weather, or for other reasons?

33. What other things did you do today besides work?

34. Whom did you visit today? Where? When?

35. Did anyone from here leave today for another place: house, island, or atoll?
   How did he travel? Where did he go?
   How long will he be gone? Where did he go?

36. Did anyone arrive today to stay here awhile?
   How did he travel? Where did he come from?
   When was he here the last time? Why did he come?