THE STUDY OF
TECHNOLOGICAL CHANGE IN UNDERDEVELOPED AREAS

Practicum Session VIII

Report of Team III

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Methods of Social Research
May 25, 1958

The Present State of Theory and Research

Team V admirably synthesized the elements and contributions of the first series of research efforts. Teams I and II set out to answer the question of team V: "When technological change occurs, how and in what circumstances does it occur?" The research designs of the latter two teams were structured to study a single variable in relation to each of the underdeveloped areas.

We propose to follow the lead of teams I and II by tracing the satisfaction of a particular need (increased food production in this case) in six different areas. The choice of food production is based on the simple fact that the literature is rich in case studies of agricultural improvement, a problem common to all underdeveloped areas.

Point of Departure

Our point of departure is "How do we analyze the objective need with reference to (1) the technical, (2) the social, (3) the personal and (4) the cultural aspects of the society under study?" This question is answered within the framework of our paradigm. The paradigm is designed to throw into relief certain basic questions that confront the student of technological change against the background of the total cultural ethos, and emphasize the interrelation of variables. It is a grave error to lose sight of the whole when emphasizing one of the parts, or to consider a culture as a static relationship rather than the dynamic and living situation where real men and women grapple with the problems of human life.

The Technical System

In the technical system we want to know what will be replaced, what modifications in tools and techniques will take place and what new demands will result from the introduction of improved methods of food production.

The Social and Personal

The social viewpoint considers first of all the abandonment or change in occupations and who will be affected. The division of labor is also considered. The formal and informal organizations that are likely to be affected are discussed. Questions are then asked concerning the new forms of cooperation with the resulting benefits and the new forms of conflict with the resulting suffering. The role of the leaders, both individual and group, as to their understanding of the change in investigated. Finally, the question is asked as to whom are the participants and non-participants?

The Cultural

The cultural analysis deals with the customs affected and their reinforcement or their becoming the center of a conflict. Since there will be present some type of innovator; the attitude of the society towards this innovator as a person and towards his ethnic group is considered. A question on the recent history of the relationship between the introducing group and the people, and also the point of history with regards to any similar recent introductions completes the study of this society.

Thus one variable is traced down through a society. This same variable is traced through other societies and the similarities or dissimilarities are compared. This fulfills the objectives of the longitudinal and cross-sectional studies as proposed by the previous team. After these societies have been studied as they face the introduction of improved methods of food production, we may come upon some significant generalizations that stand as the first link in a chain of research leading to a body of general knowledge on the introduction of technological change.

RESEARCH DESIGN
in the
STUDY OF TECHNOLOGICAL CHANGE IN UNDERDEVELOPED AREAS

FACTOR ANALYSIS

TECHNICAL

INNOVATION

Tools and Techniques

new replaced old

modified

CULTURAL

INNOVATION

History

introducing group & people — Relations w — similar introductions

innovator, as a person — Attitude — innovator's ethnic group

Effect on Customs

reinforced

- food habits
- interpersonal relationships
- marriage customs

conflict

- ceremonies, festivals
- religious belief
- major values

SOCIAL & PERSONAL

INNOVATION

Effects on

formal — Organization — informal

Leaders

groups — individuals

New Forms

Cooperation — Conflict

economic

benefits — prestige — threats

other

old — men

modified — Occupation — Division of labor

new — women

Participation

planning — implementing

Specific Studies Cited

We have studied the introduction of innovation in food production in relation to the questions outlined in the paradigm. The following have been studied in detail, and the revelance of our general conclusions, as derived from these cases, will be spelled out by the individual speakers.

British Borneo, Human Relations Area Files , New Haven,1956, pp. 171-187.

Burma, from Margaret Mead (ed.) Cultural Patterns and Technical Change, UNESCO, New York, 1955, pp. 23-56.

Iran, Human Relations Area Files, New Haven, 1957, pp. 176-202.

Navaho Indians of New Mexico, by Tom Sasaki and John Adair, in Human Problems in Technological Change, Russel Sage Foundation, 1952, pp. 97-113.

Papago Indian Reservations in Arizona, by Henry F. Dobyns in Human Problems,pp. 209-224.

Spanish American Farmers in New Mexico, by Anacleto Apodaca in Human Problems,pp. 35-40.

Conclusions:

Resistance to technological change is a symptom of a lack or an error in the idea, the innovator, or the approach. Once it is realized that resistance is not a constant factor, we may, through the study of cases in which resistance appears, discover and evolve causal factors of success and failure.

People resist changes which seem to them to be threats to the basic securities of their daily lives; they resist changes they do not understand; they resist changes which are forced upon them.

Specific Generalizations of Factors Encountered in All Cultures Studied:

1. Lack of communication between the innovator and those to whom the innovation is being brought. There are several possiblities here, all stemming from the "cultural bias" of an individual or group. Even within a culture, it is difficult for a literate, trained person to communicate with those of an illiterate, untrained group.

2. Distribution of the land, and traditional relationship of men to the land in the culture is an important point.

3. The question of forced change is also important. People may feel that this change is being imposed on them, while the innovator and/or innovating group consider they are proffering an opportunity for betterment.

4. The change must be integrated with the existing patterns, so that the new has its roots in the old way.

5. There is distrust of new methods because of poorly managed programs of change in the past. Thus, it is necessary to consider the historical aspect of each situation.