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FACTORS AFFECTING RELOCATION IN RESPONSE  
TO RESERVOIR DEVELOPMENT

by

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and  
Richard L. Ludtke

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University of Kentucky Water Resources Institute  
Lexington, Kentucky

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1970

## ABSTRACT

The focus of this paper is on the question of how rural people anticipate forced moves as a result of flood control projects and how they change their life in accepting separation from familiar surroundings.

A model of forced migration is presented which sees the variables of socio-economic status, knowledge of reservoir projects, vested interests and the degree of identification with place of affected persons as producing differential apprehension over moving. Differential apprehension is then seen as producing different attitudes toward the project which will influence the type of migration plans.

To test this model of forced migration, data were obtained by means of personal interview with 261 adults located in two areas about to be flooded by multipurpose reservoirs. Goodman and Kruskal's gamma was used as the measure of association for the ordinal data.

Basic to the model were the two findings that (1) apprehension over moving relates inversely with people's willingness to separate themselves from their current friends and homes, and (2) that people with favorable attitudes toward flood control projects were less apprehensive over moving and as a consequence were more willing to engage in moves that require greater degrees of separation from their current friends and types of residences.

Other findings suggest that those persons whose vested interests would be enhanced by the reservoir project can be expected to engage in moves requiring the greatest amounts of social separation. Knowledge of the reservoir project and its purposes did little to meliorate people's attitudes toward the reservoir project or to facilitate ease of moving. A new variable "identification with place," developed for this study, was found to relate strongly with apprehension over moving.

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## FACTORS AFFECTING RELOCATION IN RESPONSE TO RESERVOIR DEVELOPMENT

### I. STUDY PREVIEW

Foremost among current demands of the urban community is the need for ample water supplies, abundant recreation facilities and adequate flood control reservoirs. The U. S. urban populations need for rural land is forcing the displacement of increasing numbers of persons each year. Whether the need be water projects, highways, or public recreation, each year many hundreds of persons must give up their homes. The focus of this paper is on the question of how rural people anticipate these forced moves and how they change their life in accepting separation from familiar surroundings.

#### Involuntary Migration and Stress

The unique aspect of this research study is that return migration is precluded. In other types of forced migration studies there exists at least some possibility of return. Expectations or hopes of return can serve tension management functions for forced migrants, but do not present an attitude alternate for Involuntary migrants as reported in this paper.

It is the dissociative nature of migration (i.e., separation from membership systems) that serves as a basic starting point for developing the present research design. Persons who experience migration are placed in different situational contexts and are faced with the task of establishing themselves in a new social

environment. Recent investigations consistently support the basic proposition that migration produces mental strains and associated psychoses. Malzberg and Lee (1956) found considerably higher frequencies of both functional and nonfunctional psychoses among migrants of all ages. In a more recent study Lee (1958) concluded, that migrants had higher rates of functional and nonfunctional psychoses than non-migrants even though age, sex, and race were controlled. A stronger generalization of the relationships between migration and mental illness was set forth by Abrahamson (1965), who found a relation between emotional disorder, general deteriorating health and migration. None of the research studies reviewed rejected the notion that migration was not a stress producing activity.

For many types of migration it is possible to conceive that moving is an adjustive process in itself. However, in the case of involuntary migration, one can scarcely suggest that the move is an effort to gain better adjustment. Weinberg (1964) places involuntary migration in perspective by indicating that it is more stress provoking than is voluntary migration and he generally acknowledges that a mental uprooting occurs even among many healthy voluntary migrants.

For purposes of this study stress produced as the result of anticipation of migration is the variable under examination. We assume that actual physical migration is not needed to produce stress. Much of stress producing adjustment will have taken place long before the physical move. Other variables included in this study are seen as increasing or attenuating this pre-migration stress.

### Apprehension Over Moving

The simple knowledge of an approaching move can be viewed as a crisis to the participants. Brown and Birley (1965) contend that being told of an impending change, such as a job transfer or forthcoming move, provides stress much in the same manner as the actual move. In effect the dissociative nature of migration is recognized in advance and produces a mental strain qualitatively parallel to that of the actual migration. Thus, the definition of the pre-migration situation can be expected to vary among migrants, as would their post migration adjustment.

### Responses to Reservoir Projects

Studies of attitudes toward watershed development, river basin development and highway construction projects, among affected persons has provided a list of variables that related to people's attitudes toward development projects (Table 1). Empirical results suggest that socio-economic status, vested interests, and knowledge of project would serve as explanatory variables in determining individual response to reservoir projects. People with more favorable attitudes toward the projects would be of high socio-economic standing, have vested interests served by the projects and would have more knowledge of the projects. These favorable attitudes would in turn serve to reduce the prospective migrants apprehension over moving and contribute to his willingness to accept separation. Conceptually all the factors in this investigation are included in the list shown in Table 1 with the exception of the variable identifications with place.

Table 1. Variables Related to Favorable Attitudes Toward Water Resource Development and Public Development Projects

Researcher(s)	Factor
<u>Dasgupta</u> *	(1) high organizational involvement (2) non-farm occupations (3) education (4) level of living (5) history of flood damage to property (6) knowledge of projects and purposes
<u>Wilkenson</u> **	(7) community socio-economic status
<u>Photiadis</u> ***	(8) tenure status of renter (9) age related negatively to favorable responses when the extremes were considered
	Support was evidenced for elements number 3 and 6 above.
<u>Kraenzel</u> ****	(10) perceptions of metropolitan dominance related negatively to favorable attitudes toward resource development
<u>Hallberg and Flinchbaugh</u> *****	(11) shortness of residence

- Source: \* Dasgupta, Satadal.  
1967 Attitudes of Local Residents Toward Watershed Development. State College, Mississippi State University: Social Science Research Center in Cooperation with Water Resource Research Institute, Preliminary Report 18.
- \*\* Wilkenson, Kenneth P.  
1966 Local Action and Acceptance of Watershed Development. State College: Mississippi State University Water Resources Research Institute.
- \*\*\* Photiadis, John D.  
1960 Attitudes Toward the Water Resources Development Program in Central South Dakota.

Continued

\*\*\*\* Kraenzel, Carl F.

1957 "The social consequences of river basin development,"  
Law and Contemporary Problems (22):221-236.

\*\*\*\*\* Hallberg, M. C. and B. L. Flinchbaugh.

1967 Analysis of Factors Associated With Property Holder's  
Decision in Eminent Domain Proceedings. Pennsylvania  
State University, Institute for Research on Land and  
Water Resources.

## Identification With Place--An Exploration\*

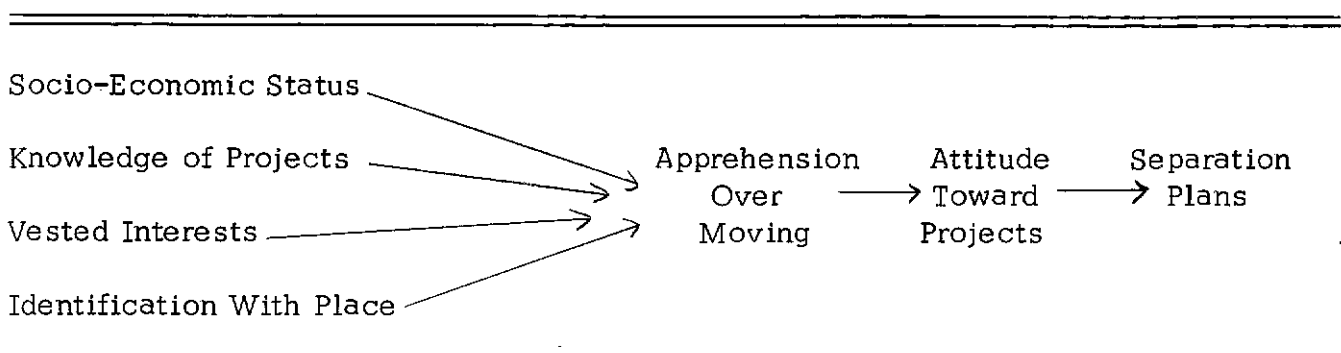
Identification with place is defined as an attachment to a particular home or geographical location. This concept is concerned with attachments to physical places such as the "old farmstead," or the "family place." Persons that have emotional attachment to a place, by definition would experience difficulty in moving. It is suggested that strong identification with place would produce apprehension of moving and have a differential affect on migration plans.

### II. METHODOLOGY

#### Model of Forced Migration

The model of forced migration utilized for test in this study is shown in Figure 1.

Figure 1. Model of Forced Migration Including Sequence of Casual Variables



The variables, socio-economic status, knowledge of reservoir projects, vested interests and the degree of identification with place of affected persons is

---

\* This variable was suggested informally by Daniel O. Price of The University of Texas at Austin. The treatment of the variable and its measurements are, however, the sole responsibility of the authors.

seen as producing differential apprehension over moving. Differential apprehension will produce different attitudes toward the project which will influence the type of migration plans.

To test this model of forced migration, data were obtained by means of personal interviews in 1969 about the migration plans and expectations of persons living in two areas to be flooded by multi-purpose reservoirs. One area was located in southeastern Ohio and the other in central Kentucky. The populations involved were predominantly rural and each location a small village will be flooded.

All adult members of each community were interviewed (total N = 261), with an adult being defined as those persons over eighteen years of age or living independent of parental support.

#### Apprehension

Apprehension of moving was measured with two Likert-type scales, one which measured apprehension of leaving the present community; the other measuring apprehension of new communities. The split-half reliability for these scales were .91 and .96 respectively using only items with t-scores significant at the .001 level. Each scale contained eight items (see Appendix).

#### Water Resource Development

Attitudes toward water resource development were measured with a ten item Likert-type scale (Appendix). The split-half coefficient of reliability for this scale was .98 using again only items that had t-scores significant at the .001 level.

### Socio-Economic Status

Sewell's (1943) socio-economic scale was utilized as a measure of social status. The application of this scale was justified by the character of the study populations. The study populations were in depressed areas and their material levels of living were comparable to Midwest farm populations of previous decades.

### Vested Interests

In measuring vested interests each respondent was provided a list of consequences which might affect him if the reservoir was built. After responding positively--negatively or not at all--each respondent was allowed to add to this list any personal benefits or detrimental effects of building the reservoir (Appendix). To develop an ordinal measure, the benefits were scored +1, the detrimental consequences were scored -1 and those not applicable were scored 0. The items were then summed to yield the net vested interest score of each respondent and a constant of 10 was added to eliminate negative numbers. Responses to a question on overall feeling of gain or loss correlated very highly (.90) with the measure of vested interest.

### Knowledge

Knowledge of the reservoir project was measured by a twelve item "test" based on the proceedings of the public hearings held at each site (Appendix). The Knowledge scores were accumulated as one would with an academic test, giving partial credit for partially correct answers. For example, if a person could name two out of three counties affected he would receive a score of two.



### Identification With Place

The measure "identification with place" was designed to determine the extent to which people maintain affective attachments to their places of residence. The scale developed was a Likert-type twelve items summated rating scale, using five response categories (Appendix). The coefficient of reliability was .99.

### Separation

The two measures used in this study of social separation are: (1) the presence or absence of expected contact with current neighbors after moving and (2) whether or not the respondents intended to move to communities of different population and cultural make-up. The latter measure was a judgment by the researcher as to whether or not current residence and the future residence (or expected residence) were the same.

### Analysis Design

Analysis in this study involves an application of Blalock's (1961) techniques for making causal inferences from non-experimental data. This technique provides a methodological fit with models that entail a sequential process such that a chain-like series of phenomena produce a given result.

Blalock (1961, p. 54) constructed his technique for causal inference on the basis of previous work in econometrics, using specifically a type of system referred to as a recursive system. Recursive systems are systems in which two way causation is ruled out, yielding a pattern without reciprocal causation or feedback. This is an acknowledged simplification necessary for analysis and no imputations are made that this is the definitive nature of social systems. There is no single dependent variable in a recursive system. The system involves an initial variable, labeled the exogenous

variable, caused by unknown factors outside the system. Using this exogenous variable as a starting point, the variables that follow sequentially may be dependent or independent. That is, they are caused by the preceding variables, making them dependent or causal (independent) for the variables that follow them. Only the concluding variable of the system is seen strictly in terms of being a dependent variable. For example, in the hypothetical four variable model ( $X_1 \text{ --- } X_2 \text{ --- } X_3 \text{ --- } X_4$ )  $X_1$  is exogenous, determined by unknown factors outside the system. Variables  $X_2$  and  $X_3$  may be considered independent or dependent and  $X_4$  considered strictly as a dependent variable. This is essentially the nature of the models used in this paper.

Therefore in the present paper, as specified in Figure 1, socio-economic status, knowledge of projects, vested interests, and identification with place are seen as  $X_1$  variables or variables determined by forces beyond the scope of this paper. Apprehension over moving and attitudes toward projects are seen as  $X_2$  and  $X_3$  variables (either dependent or independent) and separation plans are seen as dependent only.

### Statistics

Since the data in this study were of an ordinal nature, the Goodman and Kruskal's (1954) measure for ordinal association was used, gamma. Also, gamma as a proportional reduction of error statistics has the property of being analogous to the coefficient of determination ( $r^2$ ) and as such can be similarly interpreted.

The principle partialling technique used in this study was the net partial coefficient for gamma (Davis, 1967). This net partial coefficient allows one to assess the net effect of one or more control variables, thus providing an advantage over the more traditional subgroup analysis.

### III. RESULTS OF THE ANALYSIS

#### Apprehension Over Moving

Apprehension is the variable through which other variables in this paper produce their effects. Two measures of apprehension over moving were employed to tap conceptually different aspects of apprehension. These two dimensions were labeled apprehension of leaving and apprehension of new communities. However, they are not identical but overlapping measures. That is, persons who are apprehensive over leaving their present communities may also be apprehensive over new places of residence, but the two types of apprehension are distinct.

Separation was measured with two instruments designed to tap two different aspects of social separation. These measures were expected separation from present contacts and expected change in residence type (i.e., from farm to non-farm, small town to city, etc.). The two dimensions of separation do not statistically correlate to any appreciable degree ( $\gamma = .13$ ).

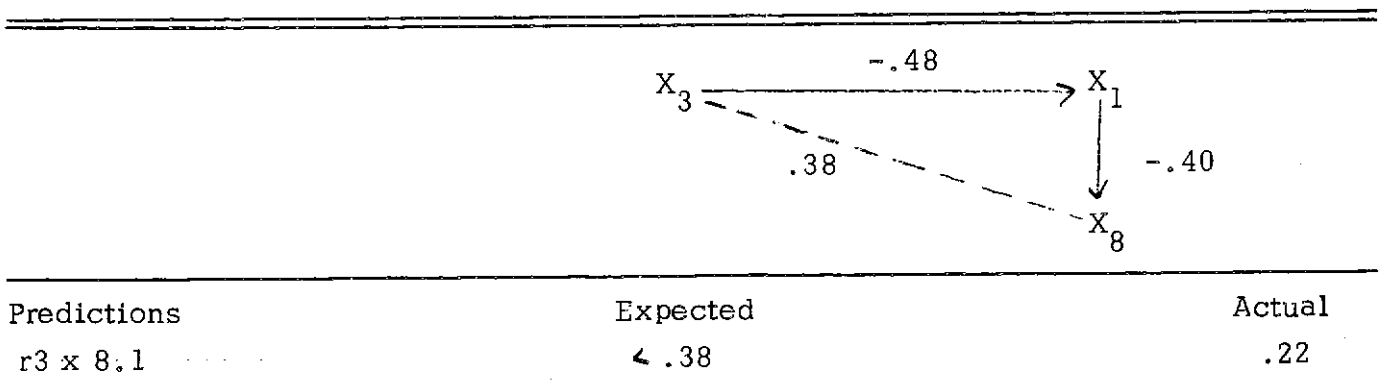
Both apprehension of leaving and apprehension of new communities were found associated with expected separation from present contacts yielding moderate gammas of  $-.40$  and  $-.42$  respectively. These results suggest the common sense conclusion that the more anxious people are by the thought of losing old friends, or facing new situations, the less likely they will want to move.



Attitudes Toward Projects

People's attitudes toward reservoir projects acts as a mediating variable through which the effects of the central variables in this study were predicted to operate. Based on the earlier presentation we suggest the relationship that the more favorable people's attitudes toward flood control projects which will force them to move, the less apprehensive they will be about moving and, as a consequence, will accept greater separation from their present community. Four tests of this hypothesis were made utilizing each of the two measures of apprehension and separation. Figure 2 shows the results involving people's apprehension of leaving their present communities and expected separation from current friends. These coefficients indicate moderate support for the relationship. Persons with favorable attitudes toward projects do experience less apprehension of leaving and consequently will likely accept greater separation from their present friends. Apprehension over leaving mediates the strength of positive attitudes toward the project as indicated by the results of the partialling shown in figure 2.

Figure 2. Attitudes Toward Reservoir Projects ( $X_3$ ), Apprehension of Leaving ( $X_1$ ) and Separation of Contact ( $X_8$ )\*

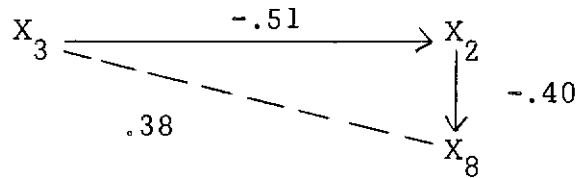


\* Unless indicated otherwise, solid lines indicate theoretically predicted relationships in all figures throughout the remainder of this paper.

The results using apprehension of new communities as a measure of people's apprehension over moving show moderate support for the relationship, with people's attitudes toward projects reducing their apprehension of new communities and increasing their willingness to accept greater separation from present contacts (Figure 3).

When studying people's expectations of change in type of residence, the tests using apprehension of leaving were excluded since it shows the same coefficient with attitudes toward projects as change in residence type. The result using apprehension of new communities is presented in figure 4. This coefficient shows moderate support for the hypothesis, indicating a path through which favorable attitudes toward the reservoir projects reduce apprehension of new communities and enhance people's willingness to change to a new type of residence.

Figure 3. Attitudes Toward Reservoir Projects ( $X_3$ ), Apprehension of New Communities ( $X_2$ ) and Separation of Contact ( $X_8$ )

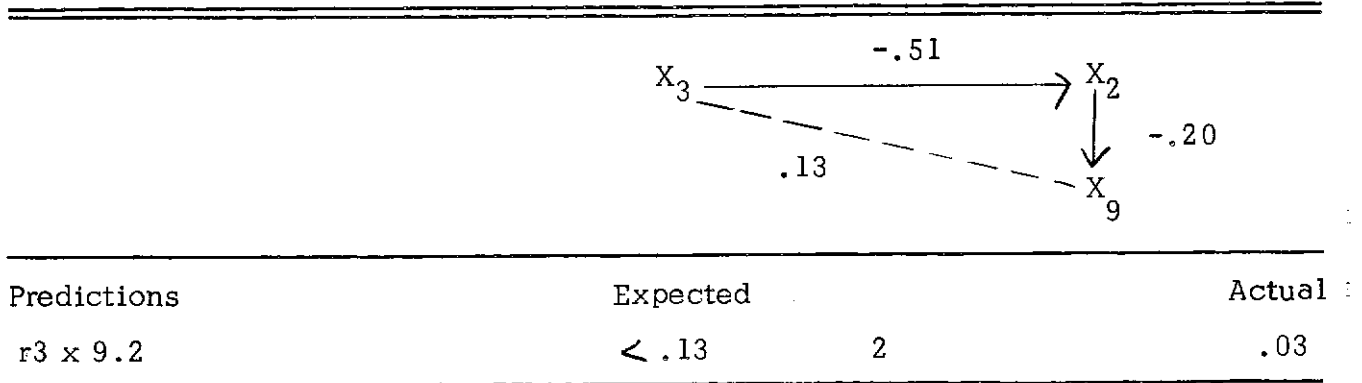


Predictions	Expected	Actual
$r_{3 \times 8.2}$	$< .38$	.24

The tests shown in figures 2, 3 and 4 generally provide empirical support for predicted relationship that favorable attitudes toward reservoir projects reduce levels of apprehension and increase individual willingness to engage in social separation. These preliminary research findings appear to suggest that the Corp of Engineers is correct in assuming that if favorable attitudes toward reservoirs can be established

in the population, there will be less resistance to moving.

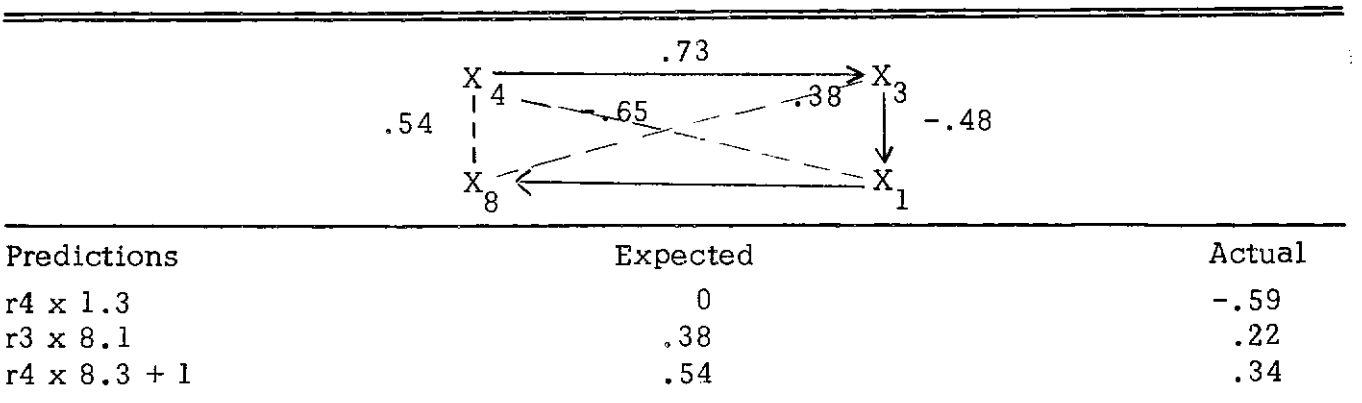
Figure 4. Attitudes Toward Reservoir Projects ( $X_3$ ), Apprehension of New Communities ( $X_2$ ) and Change in Residence Type ( $X_9$ )



### Vested Interests

Vested interests as conceived in the present study refer to those personal interests that may either be served or damaged by the construction of reservoirs. Based on extent research by other sociologists we suggest that the more people expect to have their interests served by the flood control project, the more favorable attitudes toward the project they will have and, as a consequence, the less apprehensive they will be over moving and will accept greater separation from their present community.

Figure 5. Vested Interests ( $X_4$ ), Attitudes Toward Projects ( $X_3$ ), Apprehension of Leaving ( $X_1$ ), and Separation of Contact ( $X_8$ )



The results of the statistical analysis shown in figure 5 generally supports the expected relationship that those persons expecting to benefit from reservoir projects have more favorable attitudes toward the project. These favorable attitudes in turn appear to reduce people's apprehension over leaving and consequently enable them to accept separation from their current friendships. These latter relationships are all moderate in strength. Examination of the predictions made for the partialling equations suggests that although a path exists conforming to the hypothesis, that the measures involved in this test do not completely explain the influence of vested interests. It also must be noted that vested interests retained an apparent direct relationship with apprehension of leaving when the effects of attitudes toward projects were partialled out. These data suggest that both direct and indirect contributions are made to people's apprehension of leaving by vested interests.

The coefficients presented in figure 7, when apprehension of new communities is substituted are apparently both direct and indirect. The revised model for these findings is identical to that presented in figure 6.

Figure 6. Reconstructed Alternative to the Model in Figure 5:  
Vested Interests ( $X_4$ ), Attitudes Toward Projects ( $X_3$ ),  
Apprehension of Leaving ( $X_1$ ) and  
Separation of Contact ( $X_9$ )

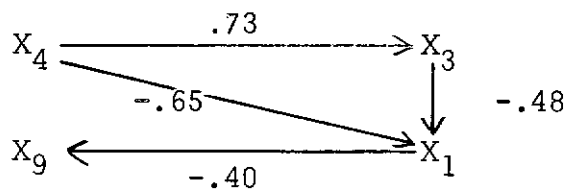
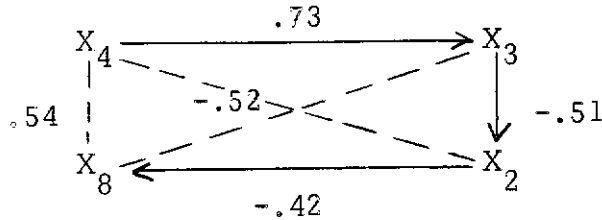




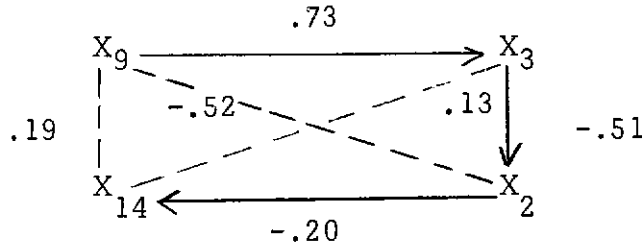
Figure 7. Vested Interests ( $X_4$ ), Attitudes Toward Projects ( $X_3$ ), Apprehension of New Communities ( $X_2$ ) and Separation of Contact ( $X_8$ )



Predictions	Expected	Actual
$r_{4 \times 2} = .3$	0	-.35
$r_{3 \times 8} = .2$	.38	.11
$r_{4 \times 8} = .3 + 2$	.54	.44

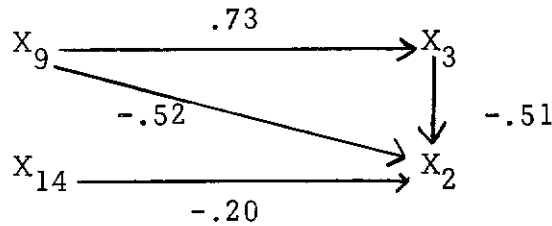
The introduction of people's anticipated changes in their type of residence presented in figure 8, continues to support the general hypothesized relationship that vested interests reduces apprehension over moving. The sequential pattern hypothesized is generally supported. Strong relations support the predictions that people expecting to have their interests served by the projects will have more favorable attitudes toward the projects and that those with favorable attitudes will experience less apprehension over moving. It should be noted that vested interests explains the level of apprehension only partially through its influence on attitudes. Part of this relationship appears to present a direct influence from vested interests to apprehension of new communities. The final segment of the path is supported by a slight relationship. A revised model for this test of the hypothesis using apprehension of new communities is presented in figure 9.

Figure 8. Vested Interests ( $X_9$ ), Attitudes Toward Projects ( $X_3$ ),  
Apprehension of New Communities ( $X_2$ ) and Change  
in Type of Residence ( $X_{14}$ )



Predictions	Expected	Actual
$r_{9 \times 2.3}$	0	-.35
$r_{3 \times 14.2}$	< .13	.03
$r_{9 \times 14.3 + 2}$	< .19	.09

Figure 9. Vested Interests ( $X_9$ ), Attitudes Toward Projects ( $X_3$ ),  
Apprehension of New Communities ( $X_2$ ) and Change  
in Type of Residence ( $X_{14}$ )



The findings with respect to the influence of vested interests are uniform. The hypothesized sequence that people who have their interests served by the project will have more favorable attitudes toward the project and consequently will have less apprehension over moving and will be more willing to accept separation from their friends and/or a new way of life is basically supported. The analysis also indicates that vested interest is directly related to attitudes toward reservoir projects. The

strength of the associations in the foregoing tests also indicate that vested interests is an important variable to consider when seeking to explain people's migration plans under such involuntary conditions.

#### Knowledge

Knowledge refers to the levels of information people have about reservoir construction and sale procedures used by the Corps of Engineers. The model designates knowledge as influencing separation through essentially the same variables as vested interests. Thus we suggest the relationship that the more knowledge people have about the flood control projects affecting them, the more favorable will be their attitudes toward the projects and, as a consequence, the less apprehensive they will be over moving and will accept more separation from their present community.

The effect of knowledge upon separation would appear negligible according to this analysis. The only relationship with knowledge was the slight relationship with change in type of residence. It would appear then, although previous research on watershed development has indicated a correlation between knowledge of the projects and attitudes toward the projects, that when persons are totally affected by being displaced, knowledge does not appear to be an important consideration. Information campaigns in other areas have indicated that information alone is not sufficient to produce changes in attitudes (Hyman and Sheatsley, 1947).

#### Socio-economic Status

Socio-economic status should relate indirectly to separation in the same manner predicted for vested interests and knowledge. We suggest that the higher people's socio-economic status, the more favorable will be their attitudes toward the projects

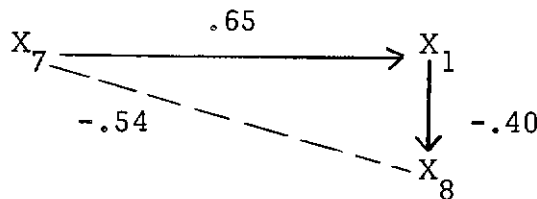
and, as a consequence, the less apprehensive they will be over moving and will accept greater separation from their present community.

Socio-economic status does not relate to attitudes towards projects with sufficient strength to be considered important ( $\gamma = .06$ ). In view of this lack of substantive support for the hypothesis, one must conclude that socio-economic status does not operate through attitudes toward reservoir projects to affect separation. Socio-economic status related only slightly to change in type of residence.

### Identification With Place

Identification with place is here defined as an affective attachment to home and region. This attachment was hypothesized as relating to separation and apprehension, with the effect on separation being through the intermediate variable apprehension. The basis for this hypothesis was conceptual, rather than supportive through previous research. We suggest that the more people identify with this present place of residence, the more apprehensive they will be over moving.

Figure 10. Identification With Place ( $X_7$ ), Apprehension of Leaving ( $X_1$ ) and Separation of Contact ( $X_8$ )



$$r_{7 \times 8.1} = -.41$$

When using the measures apprehension of leaving and expected separation from present contacts, the variable identification with place appears to be quite significant and highly supportive of the hypotheses (Figure 10). Identification with place relates strongly to apprehension of leaving and the predicted direction. That is, the more strongly people identify with their present places of residence the more apprehensive of leaving they will be.

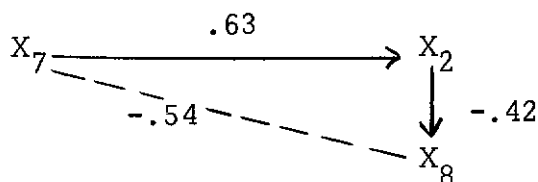
The presence of sequential pattern is supported by the net partial. The relationship between identification with place and separation of contact is reduced by partialling out apprehension of leaving. This reduction indicates the presence of an indirect relationship between identification with place and separation of contact, but also suggests that this path explains only a portion of the influence of identification with place. The remaining portion may be explained by other paths.

Utilizing the measure apprehension of new communities yields results that basically parallel the above findings. Both the zero-order coefficients and the net partial in figure 11 support the hypothesis that the more strongly people identify with their present places of residence the less likely they will be to leave their present friends and relatives.

When expected change in residence is used, the variable identification with place continues to yield strong coefficients. The nature of the relationships is almost the same as with expected separation from present contacts with one notable exception. Identification with place relates positively to apprehension of new communities and this apprehension relates negatively to expected change in residence type. Both of these statistical relations support the theoretical model presented in figure 1. Identification with place also relates to expected change in community type inversely

and this relationship does not reduce significantly when the effect of apprehension of new communities is partialled out. This indicates that identification with place contributes both directly and indirectly to expected change in type of residence. Figure 12 contains the model utilizing apprehension of new communities.

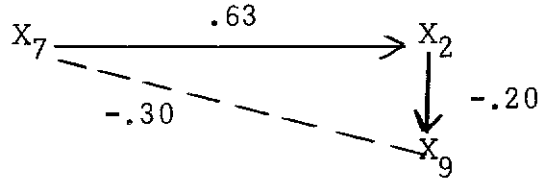
Figure 11. Identification With Place ( $X_7$ ), Apprehension of New Communities ( $X_2$ ) and Separation of Contact ( $X_8$ )



$$r_{7 \times 8.2} = -.44$$

Based on this analysis it is suggested that identification with place is an important variable to consider in the explanation of social migration. Persons who are strongly identified with the present homes and are required to move will attempt to retain both their present circle of associations and type of residence. This finding supports the inclusion of identification with place as a variable relevant to the explanation of forced migration. This variable might also be used in explaining people's reluctance to move under totally voluntary conditions.

Figure 12. Identification With Place ( $X_7$ ), Apprehension of New Communities ( $X_2$ ) and Expected Change in Residence Type ( $X_9$ )



$$r_{7 \times 9.2} = -.26$$

#### IV. CONTROLS FOR ALTERNATIVE VARIABLES

Controlling for additional variables not included in the model shown in figure 1 involves the continued application of the net partial coefficient for gamma (Davis, 1967, pp. 189-93). The relationships on which the controls were exercised were those between the exogenous variables (those independent of all the rest) and the intervening variables through which they operate. An initial examination of the zero-order coefficients was used to determine which controls were to be executed (Table 3).

##### Vested Interests

Vested interests were found to be one of the more important determinants of people's attitudes toward flood control projects and subsequently affected individual apprehension and willingness to accept social separation. A strong relationship was found between vested interests and attitudes toward projects ( $\gamma = .73$ ). This relationship was maintained under controls for age. When age was held constant, the resulting association was a gamma of .69 which did not differ significantly from the .73 found in the original test.

Table 3. Zero Order Coefficients for the Statistical Relationships  
Between Control Variables and the Study Variables

Study Variables	Control Variables					Proclivity for Change
	Leisure Orientation	Familism	Age	Sex	Group Move	
Vested Interests Served	.23	.07	-.49	.05	-.16	-.35
Identification With Place	-.13	.13	.24	-.14	.29	-.15
Socio-economic Status	.21	.01	.09	.08	-.26	.16
Attitudes Toward Projects	.03	.08	-.30	-.005	-.06	-.56
Apprehension of Leaving	-.08	.12	.23	-.05	.11	.17
Apprehension of New Communities	-.10	.02	.10	-.01	.17	.00
Separation of Contact	.20	-.18	-.24	.03	.65	.13
Change in Type of Residence	.09	-.02	-.01	-.03	-.01	.12



### Socio-economic Status

Age was controlled in the relationship between socio-economic status and apprehension of leaving which produced no significant change in the relationship (gamma = .18).

The relationship between socio-economic status and separation of contact (gamma = .22) was found to merit two controls. Age and the presence of plans for a group move were controlled sequentially, yielding gammas of .25 and .15, respectively. None of these are indicative of an appreciable change in the original relationship and permit to conclude that the original relationship continues to be valid. The contradictory effects of socio-economic status evident in the original tests appear, in view of these controls, to be the correct results.

### Knowledge

In testing the models, knowledge related inversely with change in type of residence (gamma = -.20). This was the only substantive finding with regard to the variable knowledge and controls. For age, sex and group move did not appear necessary based on the zero order relationships.

### Identification With Place

Identification with place provided strong relationships with both measures of apprehension. Using the measure apprehension of leaving, the original relationship (gamma = .65) was not affected by age. Controlling for age the resulting coefficient was gamma = .65.

The original relationship between identification with place and apprehension of new communities (gamma = .63) was not affected by controlling for the presence

of plans for a group move. The resulting coefficient of this control was  $\gamma = .60$ . No additional controls were suggested for this relationship.

The result of introducing test factors in the relationships between identification with place and the measures of apprehension was indicative of support for the original relationships. The effect of identification with place on apprehension does appear to be a direct causal effect.

## V. SUMMARY AND CONCLUSIONS

It was found that apprehension over moving relates inversely with people's willingness to separate themselves from their current friends and homes. This finding was basic to the model shown in figure 1 and supported the contention that migration (or the anticipation of migration) is likely to provoke stress. This stress can be managed in part by planning a move that will minimize change. In planning such a move, people are using migration as an adjustive process, not simply moving and thereupon beginning an adjustment process. Thus, under conditions of involuntary movement, people plan their moves and begin the adjustment process with the initial news that they must move.

A second basic consideration for the model was the prediction that people's attitudes toward the flood control project would influence their levels of apprehension and by so doing would influence their willingness to leave current membership systems. This prediction was supported by the analysis. People with more favorable attitudes toward the projects were less apprehensive over moving and as a consequence were more willing to engage in moves that require greater degrees of separation from their current friends and types of residence.

The constellation of variables theoretically expected to affect attitudes and segmentally affecting social migration yielded varying results. Vested interests proved to be an exceptionally powerful variable in support of the theory. Vested interests were found to relate to apprehension indirectly as the theory predicted, supporting the idea that those with interests enhanced by the reservoir project expect to engage in moves requiring the greatest amounts of social separation.

Knowledge had a negligible effect on people's attitudes toward the reservoir project and did not contribute to the explanation of social migration. Thus, under the involuntary conditions of a free compelled migration, knowledge of the project and its purposes does little to meliorate people's attitudes or to facilitate ease of moving. This finding is particularly significant in that much Corp of Engineers public relation policy is based on this supposition. However, there is some evidence to suggest that persons with strong pro or con feelings were being statistically cancelled.

The variable identification with place also provided strong support for the theoretical model. People do appear to identify with their homes with varying degrees of intensity. The responses to the scale items for "identification with place" were so varied that some respondents were moved to tears during the interview, while others broke out in laughter at the thought of being attached to their homes. The level of identification with place was found to relate consistently and strongly with apprehension and consequently produced indirect effects on social separation. Uniformly, the more intense the identification with place, the less inclined people were to move.

### Implications

The findings of this study include implications which could be taken into account by organizations required to move people for public projects.

Increased knowledge tends to reduce resistance has been the dictum accepted by most promoters of public projects. Once the public knows that a government agency is promoting the general good the resistance of the individuals affected is expected to crumble. Findings from the present study do not support this expectation. Rather knowledge has no effect on increasing willingness to move. Persons that are well informed about a project probably represent an equal division of pro and con opinions.

Rather than spending funds on large information programs the Corps of Engineers might develop vehicles for the orderly relocation of people. Much of the hostility presently directed to the Corp might be attenuated if new resettlement procedures were made available.

The importance of people's identifying with their residences is difficult to meliorate by direct means. There are, however, possibilities that merit exploration. Identification with place is not spontaneously created, but rather the product of a number of factors. In selecting areas for public projects, attention could be paid to correlates of identification with place. Two factors evidenced by this survey are age and previous mobility. By selecting those areas with the highest rates of mobility and the "youngest" age structures, one could expect to minimize the extent to which the populations would be strongly attached to the area. In minimizing the attachment adjustment problems would also be minimized.

In any large public works development certain persons will gain, i.e., the vested interests of some people will be served. The Corps of Engineers could develop procedures to insure that all lands and buildings were appraised fairly and that equal settlement was made. Too often, those persons who have knowledge of legal and demolition procedures are the ones who will have their vested interests best served.

## APPENDIX--SCALE ITEMS

The following scale items and methods of scoring were used in this study.

Apprehension of Leaving Present Community: The eight items used to measure this dimension scored on the basis of five responses--Certainly-Probably-Don't Know-Probably Not-Certainly Not--were (1) Just getting a chance in life will be a rewarding experience; (2) It is hard to leave all the businesses one has traded with for a long time; (3) A chance to leave rural life is pleasing; (4) It's hard to leave a place where you have spent most of your life; (5) Leaving a place where everyone knows all about you is a comfortable feeling; (6) All the ties one establishes makes it difficult to leave the area; (7) The help one can always get from his neighbors is bound to be hard to leave; and (8) The thought of losing contact with old friends is disturbing.

Apprehension of New Communities: The eight items used to measure this dimension scored on the basis of five responses--Certainly-Probably-Don't Know-Probably Not-Certainly Not--were (1) Starting a new life in a new community is really a pleasant feeling; (2) Living in a strange neighborhood is pretty nerve wracking; (3) One feels as though he is all alone when he's among strangers; (4) Making a whole new set of friends is going to be an enjoyable experience; (5) Having all new people around is quite enjoyable; (6) The way everyone looks you over in a new town gets pretty initiating; (7) Not knowing what to expect from the people who live here makes one a little nervous; and (8) It is easier to relax and be yourself when nobody knows who you are.

Attitudes Toward Water Resource Development (Reservoir Projects): The ten items utilized to measure this variable scored on the basis of the Likert five-item response were: (1) More dams are being built today than are necessary for flood control; (2) Money spent on building reservoirs exceeds the benefits that we get from them; (3) Local people should have more to say about flood control in their areas; (4) Reservoir construction often floods land that is worth more than the land it protects; (5) Reservoir construction nearly always improves the areas in which they are built; (6) Reservoirs should only be constructed where they won't take peoples homes or good farm land; (7) Flood control projects always help more people than they hurt; (8) Fish and wildlife development alone provide good reasons for reservoir construction; (9) Since floods only occur once in a while, it is foolish to give up good farm land for reservoir construction; and (10) Reservoir construction is a good investment for reducing flood losses in the long run.

Vested Interests: The following eight items were scored +1 (good) or -1 (bad) and not applicable items were scored as zero. Each respondent was allowed to add to the list and the resulting sum plus the constant 10 was the vested interest score. (1) The project will end periodic losses due to floods; (2) In general, how will selling your property affect you?; (3) Water recreation facilities will be available in the area; (4) Land not taken for the reservoir will probably become more valuable; (5) Churches are going to be removed when the reservoir is built; (6) Schools will be changed by the reservoir (i.e., redistricted, etc.); (7) Reservoirs may break up families such as contact with cousins, etc.; (8) Do you feel that at your age it is either good to move or difficult to move?

Knowledge of the Reservoir Project: The twelve item "test" included the following items: (1) Can you tell me where the proposed dam would be built?; (2) What counties have land that would be affected by the reservoir if it is built?; (3) Is the proposed dam supposed to be used as a source of generating electric power?; (4) Who will be building the dam, the federal government, the state or both together?; (5) How many acres of land approximately would be flooded for the reservoir? \_\_\_\_ acres; (6) Will people who own land that borders the reservoir be able to build private beaches and boat landing facilities?; (7) Do you know how much it will cost to build such a reservoir? \$ \_\_\_\_; (8) Will everybody have open access to the reservoir for watering livestock or will other arrangements have to be made?; (9) Who is responsible for the final decision as to whether or not to build these reservoirs?; (10) What will happen to the cemeteries that are located in places that will be flooded?; (11) Does the Army Corp of Engineers pay moving expenses for everyone affected?; and (12) What is done with the buildings purchased by the Corp of Engineers? For example, if a person could move two out of three counties affected he would receive a score of two.

Identification With Place: The twelve items utilized to measure this variable scored on the basis of the Likert five-item responses were: (1) Of all the places I have been, I like this area best; (2) I would just as soon see my children move away from this place; (3) People like me just belong in a place like this; (4) This area is in my blood, it is really a part of me; (5) I don't really feel any strong attachment to this place; (6) Whenever I die, I would like to be buried in this area; (7) I've seen a lot of places that I would really prefer to live rather than staying here; (8) There might be things I would like to have, but this place is mine and I love it; (9) I think that I could be at home in any number of places away from here; (10) I've seen other places but this is the only place I could ever call home; (11) I think that our home is as good as another, so it doesn't make any difference where I live; (12) The memories I have of this home are the best memories I have; and (13) I really feel that I'm a natural part of this place.

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