DEVELOPMENT AND USE OF CONCEPTUAL SCHEMAS FOR REDUCTION AND ANALYSIS OF QUALITATIVE DATA ON FAMILY VALUES: ADVANCES IN THE USE OF THE MICROCOMPUTER

By

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ABSTRACT

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The purpose of this study was to develop and use conceptual schemas for reduction and analysis of qualitative data on family values using the microcomputer.

The conceptual framework for the study was the human ecological framework. The assumption was made that the expression of family values and the family must be examined in their wholeness of interaction and interrelatedness. Values were considered in relation to American social values identified by Williams.

Three families were interviewed during their first month of residency on small farms. Recorded interviews were transcribed onto diskettes, using a microcomputer. An a priori coding schema for data analysis was developed based on the work of Williams. A second coding schema was based on the natural language used by the participants.

Using the microcomputer, interviews were searched for family values, indicated by the presence of value terms that were identified in the coding schemas. A unique set of value indicators was identified for each family through microcomputer sorting and hand analysis techniques.

The microcomputer applications developed for this project were effective in allowing the researcher to perform multiple manipulations

and analyses of data, using two different coding schemas. Slices of data were examined on different levels of abstraction, and comparisons made of them.

Throughout the identification and analysis processes, interpretation of procedures, data, and findings were required. Human thinking and decision making were necessary to interpret the theoretical and a priori coding schemas and to create a system by which they could be entered into the microcomputer.

The microcomputer could then be used to perform the repetitive sorting and identification processes for which it was designed. The results of the microcomputer processes required human interpretation and analysis before the next step could be designed with which the researcher could be assisted by the use of the microcomputer.

The processes of data analysis in this study utilized a grounded method of theory development. As analyses proceeded, they were grounded in the data contained in the interviews. New theoretical concepts were developed, based on the outcomes of the data. The concepts were then compared with reliable and established values theory. Based on this comparison, changes were made in the new concepts.

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CHAPTER I

INTRODUCTION

Background and Problem Statement

The family setting provides a wealth of information regarding the values, goals, and decisions made by family members in the processes of family functioning. What families do can be extracted from the family setting through the use of fixed responses to questionnaire items and then transformed into numeric form that is suitable for sophisticated data analysis. High speed computers and complex statistical programs enable researchers quickly and efficiently to analyze data in numerous ways.

Why families make decisions and act in the ways that they do may be extracted from family settings through the use of open ended responses, interviews, and observations. Open ended responses provide for more richness of detail than do fixed responses. The data collection methods for producing non-numeric information require time for developing rapport, observation, and recording (Sproull, and Sproull, 1982). They produce extensive amounts of data, which in the past, have been resistant to numeric coding and analyses.

Most of the non-numeric data have been managed and analyzed by hand, requiring large amounts of time. They are subject to human

error, and it is difficult to update and change the data sets (Sproull, and Sproull, 1982). Storage of qualitative or non-numeric data can be problematic with note books, file cards, audio cassettes, field notes, and photographic records all requiring management and handling. Tedious and labor intensive methodology make multiple analyses of the same data fatiguing and unfeasible to perform.

Computer technology is available to assist researchers in the process of machine analysis of non-numeric data. Little use of this technology has been made because applications of its uses have not been fully developed.

Purpose

The purpose of this project was two-fold. One purpose was to develop and compare conceptual schemas for the reduction of qualitative data to be used with the microcomputer. Another purpose was to use the schemas developed above to begin to understand the values of three farm families. Analyses concentrated on identifying values and patterns of values expressed by family members. Each of the families was interviewed during its first month of residency on a small farm in a midwestern state.

This study is a part of a project (MAES Project 3261) which seeks to develop a comprehensive picture of the processes families go through while changing to a life style that includes farming. The overall goal of the ongoing research is to describe and understand relationships among technical, economic, and human factors in production and management on small scale farms.

Research Objectives

The major objectives of this study were to use the microcomputer to develop and compare conceptual schemas for reduction of in-depth qualitative data about family values held by selected families, and to determine relative gains derived from using the conceptual schemas developed in the study. The methodology that was developed utilized available technology and commercial software for microcomputers that were readily accessible to researchers.

In order to accomplish these research objectives, the following specific research questions were proposed:

1. What is the relative gain by using an a priori theoretical conceptual schema to analyze qualitative data as compared with a conceptual schema developed from and grounded in family responses?

2. What specific steps are required to utilize the microcomputer and available software for analyzing non-numeric data?

3. What values are identified in the statements made by family members?

4. What identified values are held in common between families? In what identified values do families differ?

5. What identified values are held in common among adult family members? In what identified values do adult family members differ?

Conceptual Framework

The human ecological conceptual framework in conjunction with a values schema was used to guide this study. Human ecological systems models are based on ecology, which is the study of the interrelations of organisms and their environment. Flannery (1972) claims that all

populations exchange matter, energy, and information. In an ecosystem approach to the study of the family, everything which transmits information is within the province of ecology.

The ecological approach assumes that the phenomena and family will be examined in their wholeness of interaction and interdependence (Andrews, Bubolz, and Paolucci, 1980). Emphasis is given to the biological and physical components of the organism and its environment as well as to the social and psychological dimensions of the family and its members.

The ecosystem has three central organizing concepts: environed unit, environment, and the interactions and transactions between them (Bubolz, Eicher, and Sontag, 1979; Andrews, et al., 1980). Individual family members or the family unit have been conceptualized as the human environed unit and the focus of study (Bubolz, et al., 1979). The environment includes the natural, human constructed, and human behavioral components. The natural environment is comprised of physical, biological, and space-time components (Bubolz, et al., 1979). The human constructed environment has been altered or constructed by humans. It includes physical and social constructions such as laws, rules, practices, roads, and pollution. The human behavioral environment is the environment for human beings and includes their biophysical, psychological, and social behaviors. In this environment, human beings can comprise environments for other humans.

When any part of an ecosystem influences or acts on any other part and is influenced or acted on in return, interaction has occurred (Bubolz, et al., 1979). Interaction takes place within the environed unit, among the environments, and between the components of the ecosystem. It is this interaction that makes the system dynamic. It is assumed that a change in one component of the ecosystem will affect the system as a whole and each of the system's subparts (Bubolz and Whiren, 1984). This creates the need for adaptation and change within the system.

An a priori values coding schema was based on the work of Williams (1965). His work was selected because it has been widely used, has a scientific foundation, is grounded in theory, and has been extensively tested.

In an effort to describe the major patterns of values in American society, Williams (1965) identified fourteen theoretical values that are held by many American people. Williams clearly states that these values are not exclusive to nor peculiar to the United States, and they are not shared by all Americans.

Social norms, according to Williams are the rules for the game of life. The rules are useless unless they guide people in reaching goals that are valid and valuable for human beings. Human beings accept as valuable or right some of the goals and standards of conduct that are held by parents, peers, or others with whom they identify.

Williams posited that institutions, beliefs, and values cannot be taken for granted. As society changes, beliefs and values are

strained and challenged. When basic transformations of humans and society occur, vital choices of values must be made.

Williams describes values as having four qualities: 1. have a conceptual quality with abstractions drawn from the individual's immediate experiences, 2. represent actual or potential emotional mobilization and are affectively charged, 3. are the criteria by which goals are chosen, not concrete goals of action, 4. are important, not trivial.

Values are considered as part of a continuum by Williams with moral values residing at one pole, and technical efficiency at the other pole. Moral values are expressed as true matters of conscience in which individuals feel high levels of guilt or shame, and groups censure individuals for not adhering to the value. As values evoke less guilt or shame when not adhered to, they can be expressed as aesthetic standards, norms of expediency, or technical efficiency.

Values do not just happen, but emerge in the experience of people. Williams claims that values are arranged into hierarchies that are defined by choices individuals make.

Williams states that values may be observed and measured according to individuals' directions of interest. By determining what people pay attention to, one may gain a sense of what they value. Another way of identifying values is to listen to what people say. He cautions that explicit statements of values can not always be relied upon or considered valid. Values may not be explicitly stated, but may be inferred from verbal materials.

Implicit premises for determining values need to be considered in concert with explicit statements. What is not said may reveal as much information and insight into values held by individuals as what is said. Williams considers beliefs to be "a conviction that something is real" (1965:406). Values, on the other hand, are "standards of preference."

In view of what has been said so far, Williams operationalizes the concept of value as "overt choice or preference, attention or emphasis, statement or assertion, implicit premise" or "as a referent of social sanctions" (1965: 408). He considers evidences of values as pointers that indicate what the value holder means. All indicators are not equal in usefulness for every purpose, but when used in combination, they gain reliability if they are mutually consistent.

Williams ordered dominant and subordinate value systems according to four criteria: 1. The extensiveness of the value, indicated by the proportion of the population that manifest the value, 2. The duration of the value, indicated by its importance over a period of time, 3. The intensity of the value, manifested by the effort, choices, verbal affirmation and reaction to threats against the value, 4. The prestige of the value carriers symbolized by the persons, objects, or organizations identified with the value.

The range of interests, beliefs, and values is so great that single values cannot be identified to characterize the American population. Instead, American value-systems are described by Williams. He defined a system as a "determinate arrangement of parts or entities" (1965:413). He considered the relationships as more than

a chance ordering of parts, and implied that values are arranged in a pattern, interdependent, and subject to reciprocal or mutual variation.

Williams was concerned with the distinctive elements of the value-systems he identified, not with the universal features shared by the human species. His concern was with the form and content of the value-systems as they related to the American culture.

The American value-systems identified by Williams include achievement and success, activity and work, moral and ethical, helping and giving, efficiency and practicality, progress and up to date, prosperity and ease, equality and fairness, freedom and independence, external conformity and agreement, science and research, nationalism and patriotism, democracy and sharing, and individuality and personality. He stressed that these value-systems do not work as single or separate units, but, instead, are continually shifting and forming new configurations.

In summary, Williams has identified fourteen values and value-systems that are interrelated, and function in the behavior of individuals and in actual social structures. There are, in addition to the fourteen identified values, more general dimensions or orientations that must be identified through inference. These dimensions are difficult to identify and document.

Both William's descriptions of value-systems and the ecosystem approach to the study of the family embrace the concept that values and behaviors are interdependent and subject to reciprocal or mutual variation. This study identified the relatiohships between expressed

values held by three families within their ecosystem and shows in what ways values and behavior are interdependent and subject to variation.

Definition of Terms

Computer Methodology and Data Management

For the purposes of this study, the following definitions related to computer methodology and data management were used:

Methodology Conceptually, methodology refers to the processes, techniques, procedures, or rules used by scientists. In this study, methodology consists of the procedures required to use available technology and software to analyze qualitative data that are collected in the process of studying the family farm ecosystem.

Technology For the purposes of this research, technology refers to the scientific and technical knowledge related to the functions and operations of microcomputers.

Hardware Conceptually, hardware refers to the microcomputer and ancillary machinery necessary to carry out the purposes of this study. Hardware used in the study consisted of an IBM-PC computer with dual disk drive and 256K RAM and a monochrome monitor, an Apple IIe computer with dual disk drive and 128K RAM and a monochrome monitor, and a C. Itoh dot matrix printer.

Software Software is defined as the program or programs required to operate the computer hardware. Software, for the purposes of this study, is in the form of floppy diskettes on which the programs and data are recorded.

Commercial Software Commercial software refers to software that has been professionally developed and is available for purchase by consumers through retail or wholesale outlets. Commercial software is often licensed or copyrighted. Software selected for this project consisted of the Star Series programs by MicroPro (1983). Specific programs used include WordStar, SpelStar, StarIndex, and MailMerge.

Qualitative Data Conceptually, qualitative data refers to information gained from subjects' interpretations and open ended responses to research inquiries. It is resistant to quantitative or numeric recording, coding, or analysis. In this study, qualitative data refers to prose transcriptions of interviews with three farm families conducted in October 1983 and September 1984.

Non-numeric Data Non-numeric data are information items that are recorded in textual format rather than numeric format. For the purposes of this study non-numeric data will be used synonomously with qualitative data.

Quantitative Data Quantitative data are derived from structured research methodology in which responses are recorded or transformed into numbers for reporting. The numeric codes are then analyzed using statistical methodology.

Numeric Data Numeric data are information items that are recorded in digit format rather than textual format. For the purposes of this study, numeric data will be used synonomously with quantitative data.

Ecological Perspective

For the purposes of this study, the following definitions related to the ecological perspective for study of the family were used.

Field Settings Conceptually, field settings refer to the participants' natural settings in which observations and other data collection procedures are conducted. For this study field settings consisted of the families' farmsites.

Patterns of Behavior Conceptually, patterns of behavior refer to repeated acts performed by actors in specific situations or related to particular areas of concern. Patterns of behavior in this study refer to statements or actions taken by participants that are related to their values.

Family Farm Ecosystem Conceptually, the family farm ecosystem is a specific application of an ecological systems framework for study of the family. The farm families comprise the research units which were analyzed to determine the processes they go through in adapting to changes in living environments and resources. The interrelationships between the components of the family farm ecosystem were considered. (See Appendix A).

Farm Family Conceptually, the farm family is a family unit residing on a small scale farm site (5-40 acres) and earning part or all of their income from the farming enterprise. The family unit controls the management and production systems on the farm. The labor

force for the farming enterprise is primarily or solely provided by the family unit, including parents and children.

Value Concepts

In the process of data analysis, some of the following definitions were expanded to more closely relate to the concepts expressed by the families. The expansions are high lighted with bold print within the definitions.

Values Conceptually, values are what one believes is right, good, or best. They are characterized by what one holds dear, prizes, cherishes, and feels a commitment toward. For the purposes of this study, values will be what the family members believe is right, good, or best for them and their family members in relation to their family, farm, or small business enterprises.

Value systems or value patterns Conceptually, value systems or value patterns consist of a specific arrangement of interests, beliefs, and values which are interdependent and subject to reciprocal or mutual variation. For this study value systems and value patterns were used interchangeably. They referred to patterns of values expressed by family members during in-depth interviews.

Achievement Achievement consists of expressions of personal excellence indicated through accomplishment of stated goals. The goals may be related to personal aims, farm, home, or business enterprises.

Success Conceptually, success refers to technical effectiveness

in the accomplishment of goals. Success is recognized through actual or perceived rewards given for achievement.

Activity Activity is defined as a process that involves mental or physical functioning required to reach an implicit or explicit goal. For this study, activities relate to values or value-systems held by family members.

Work. Work is defined as physical or mental exertion for the purpose of accomplishing stated or unstated tasks. Work, for this project refers to both paid and unpaid purposeful activity that is not classified as leisure.

Moral Moral refers to right or wrong, good or bad, ethical or unethical. Family members define moral issues based on their specific sets of values.

Ethical Ethical is defined as being in accord with approved standards of behavior. It is concerned with issues of right and wrong and is consistent with socially or professionally accepted codes. Families express this concept through statements indicating right or wrong behavior.

Helping Helping is concerned with giving aid, comfort, kindliness and generosity. Verbal and physical expressions of concern and assistance to other people, animals, and organizations illustrate the presence of this value.

Giving Giving is the act of providing or supplying another person

with ideas, goods, experiences, or services without expectation of anything in return. Giving is indicated by the donation of time, ideas, goods, or services to another person, family, or organization.

Efficiency Efficiency is a standard against which activity is judged. It incorporates the concepts of standardization, streamlined, practicality and getting things done. Efficiency is identified through planning and activities designed to provide the most effective means for a given end. Efficiency requires long range discipline.

Practicality Practicality refers to short-range adjustment to immediate situations. This is demonstrated by the farm families in their ability to solve immediate problems as they arise.

Progress Progress refers to looking forward, rather than back. It involves acceptance of changes and the belief that the direction of change is good. Families express progress as a value through planning new enterprises and through stating their accomplishments of past goals.

Up to Date Up to date is defined as containing the latest facts or being abreast of the times. Family members apply this concept to their lives by researching and trying new ideas and techniques in their farm, home, and business enterprises.

Prosperity Prosperity is defined as being successful or a state of growth and well being. Prosperity may be identified by family members through language that signifies material comfort and mental and emotional well-being.

Ease Ease refers to the state of being comfortable, freedom from care or worry, freedom from labor, inconvenience, burden, or constraint. It is expressed by families through statements of well-being and relief from constraints.

Equality Equality means sameness in quantity, quality, or status. Equality may be perceived as equality of opportunity rather than equality of goods or services. Equality is exhibited in the way individuals relate to others in interpersonal activities.

Fairness Fairness is the state of being fair, which is exemplified through reasonableness and fair or impartial treatment.

Freedom Freedom is the enabling of individuals to make the choices they wish to make with minimum coercion and minimal infringement of the spontaneous actions of others. Families express freedom when making decisions that are free from coercion or "influence" by other people.

Independence Independence is the state of being self-governed or autonomous. For this study families demonstrate independence through making their own decisions and taking action based on their sets of values.

Conformity Conformity refers to uniformity in behavior for the purpose of gaining approval. Families exemplify conformity through adherence to accepted cultural and societal patterns.

Agreement Agreement is the act of coming to a mutual arrangement,

oneness of opinion or purpose, or being in accord with others. Families are in agreement when they consent to reciprocal promises or demonstrate oneness of opinion with others.

Science Science is a method of approaching problems that is characterized by a set of procedures for interpreting experience. Families practice science by seeking information procedures and skills and then applying them to solve their problems.

Research Research refers to studious inquiry, examination, and experimentation. Its purpose is to discover new facts in order to apply them to problems at hand. Families demonstrate research activity by seeking information about and applying it to their farm, family,and business activities.

Nationalism Nationalism is defined as total and unquestioning allegiance to national symbols and slogans.

Patriotism Patriotism refers to loyalty to national institutions and symbols because they represent values that are the objects of allegiance.

Democracy Democracy a state of society which is characterized by freedom of expression, respect for dignity and worth of human individuals and encouragement for them to freely develop to their fullest capacity. Families symbolize democracy through tolerance and understanding of other people as they pursue their own goals.

Sharing Sharing means to have, use, engage or experience

something in common with others. For this study, families illustrate sharing by working together among and between each family in order to solve problems, accomplish farming or other tasks, and lending or borrowing equipment, machinery, and other goods between them. Socializing. learning, and being or the desire to be together illustrate sharing.

Individuality Individuals are defined as human beings who have unique, intrinsic value. Part of the socialization process is to teach children to become individuals. Family members express individuality by acting on their own values.

Personality Personality is the property of being a person, specifically an individual person. Thus, personality refers to a unique individual person who has intrinsic value.

Value Flag For the purposes of this study, value flags refer to words found in the interviews which denote the presence of values or values indicators in the natural language used by families.

Constraints and Limitations

In a study of this type, constraints and limitations can be expected to affect the research plan and outcomes. The data used for this study have been collected from only three families. This research is exploratory in nature and will not be used to generalize to other populations. It may be used, however, to generate research questions and hypotheses to be tested in future research efforts.

Voluminous amounts of data have been collected. The scope of this study requires that only one area of interest be selected for analysis. A thorough analysis of the data is not the intent of this study. It is to show patterns and relationships of value patterns to each other.

CHAPTER II

REVIEW OF LITERATURE

Review of Literature Related to Computer Methodology in Research

The Need for Information Processing

In recent years, much attention has been placed on the generation of information and the role of computers in processing it. At one time information was difficult to transmit and was possessed by few individuals (Taub, 1984). Today information has become accessible to all. Taub (1984) views information as a commodity which can be bought and sold and is different from other commodities in that it remains in the possession of the seller, who can rework it and sell it again.

Information may be acquired for other than financial or economic reasons (Taub, 1984). It is stimulating and may spur intellectual goals. Taub refers to information as fuel for the brain which can provide power to individuals. He stresses that information must be pertinent and accurate to be useful to individuals.

Cianni-Surridge (1983) studied the area of technology and work. She indicated that the network by which information travels is creating a change in the concept of work and human interaction. The impact of the microcomputer on the work we perform, interactions with

people, access to information,and our lifestyle is likely to be enormous.

One of the greatest challenges, according to Cianni-Surridge (1983) is dealing with tremendous amounts of information in manageable ways. Toffler (1970) indicates that overwhelming amounts of information create the concept of over-choice. Without being able to channel the information constructively, individuals will feel overwhelmed and unable to make reasoned choices.

Naisbitt (1984) also cautioned that the level of information that we have is impossible to handle by present means. He claimed that the job of professional people is to create, process, and distribute new information. He stated that unorganized and uncontrolled information becomes an enemy to the information worker, rather than a resource that can be called upon.

Information technology is required to bring order out of the chaos of too much information (Naisbitt, 1984). The emphasis of the information society then changes from supply to selection. If users can find what they need from the information supply, they will use it to advance knowledge in their field of endeavor.

Initial Attempts to Manage and Analyze Behavioral Records

Several studies have dealt with methods for analyzing non-numeric data (Sproull, and Sproull, 1982; LaRossa, and Wolf, 1984). Others have attempted to develop methods of quantifying qualitative data as a means to connect it into manageable forms for analysis (Walters, Pittman, and Norrell, 1984; Klein, 1984; Wilcox, and Edmondson,

1984; Schumm, Barnes, Bollman, Jurich, and Milliken, 1984).

Olson (1976) defined data analysis as the reshaping of available data. It involves assessment of linguistic symbols in order to sort and manipulate them into ones that suit the present purposes. Content analysis, according to Olson, allows access to past events that might otherwise be unavailable. Content analysis involves the development of a coding schema to sort the data into categories that best fit the current purposes and also maintain the integrity of the data. He cautions against the development of artificial patterns in sorting data and against differential applications of the coding schema.

Olson (1976) indicated three levels or systems of content analysis. The folk system refers to the latent structure of meaning among the participants. The analytic system is one step beyond the folk system. This represents the researcher's schema for interpreting the world and may incorporate the conceptualizations of insiders. Olson's third level is the theoretical network which links increasingly generalized concepts. It is used to relate concepts to one another as well as anticipating and predicting events not yet explored. Finally, connectors are used to link the objects to the common meaning term.

Significant for this study, Sproull and Sproull (1982) argue that non-numeric data in the form of behavioral records can be managed and analyzed by computer, using general purpose editors and analysis programs. They state that behavioral records have two features that should be preserved; they are text based and they are semi-structured.

To accomplish their goals, Sproull and Sproull (1982) developed a method in which they allowed for the preservation and management of verbal material. Their method involves embedding codes within their field notes, and then utilizing the computer to copy and count the occurrences of the coded behaviors. Every item, such as each speaker's remarks, each answer to a question, or each minute of activity is entered separately into the computer.

Caron (1984) saw the use of personal computers as essential in helping participants to identify processes over time. An important aspect of this, in his view, was to provide flexibility that would allow human memories to correct and modify each other. To accomplish this he is involved in an effort to develop computer methodology which will allow participants to record their responses over time on the computer. The computer will then be used to generate automatically an appropriate analysis of the events.

Practical applications of data collection and analysis techniques are evident in the literature of anthropology. Werner (1984) took his computer into the field to collect ethnographic data in order to develop a Navajo Ethno-Medical Encyclopedia. He used a software program, Keyword in Context (KWIC) to identify the key word, and to list it in its context with the ten words preceding it and the ten words following it. Werner then wrote programs to assess the distribution and frequencies of all of the words.

Werner (1984) and R. Bolton with C. Bolton (1984), in separate projects, developed computer methods for indexing words and records collected in field settings. Werner developed an index of the computer diskettes on which his data were recorded. Thus, he could readily locate the appropriate diskette on which specific information was stored. Bolton and Bolton (1984) created an index for the pages in their field notes from a two year study of a native village in Peru. The index reduced the time required to leaf through 10,000 pages of typewritten notes. Another type of index was developed by R. Bolton (1984) when he created a concordance from the index. A concordance is a listing of topics in their original stated context. One part of the concordance, related to native folk songs, indicates the item, its identification number, the title of the folk song in which it appears, and the line containing the specific word. The concordance is more detailed and provides more information than an index.

Analysis of qualitative data involves a process of concept formation, coding by categories, analysis, reformation of concepts, coding, and so on (Podolefsky, 1984). A system of coding, named computer assisted topical sorting (CATS) was developed by Podolefsky. Every paragraph is coded as it is entered into the computer. It can then be sorted according to any one of the codes.

Agar (1983) combined the use of a purchased word processing package with an interactive coding program that he wrote to analyze three interviews. The interviews were first transcribed into the computer using the word processing package. They were then coded, line by

line, Finally, they were sorted according to the utterances of authority figures by name, role, or indirect inference, and printed for analysis.

Artificial intelligence is a new discipline in which a theoretical framework for the concept of intelligence is being developed (Waltz, 1982). The computer is considered a laboratory in which to develop ways of thinking about thinking. Practitioners in this discipline suggest that complex programs which can alter their own actions may be good models of human learning.

Concepts from artificial intelligence may be used in the analysis of qualitative data. One of the themes in artificial intelligence has been to determine how to explore a range of possible actions in the pursuit of specific goals (Waltz, 1982). A process called a search tree consists of a model in which the top of the tree represents the current situation. The branches represent possible actions, and the tips of the branches represent possible outcomes. One or more of the outcomes may correspond to the specific goal.

Minsky (1982) developed an alternative to the search tree that he calls a frame. In the frame, much more information is entered into the computer than is needed. Definitions of which details are optional, and which are not, are developed. Data which meet all of the required details, and some or all of the optional details, express the concept or behavior in question.

Development of Integrated Information Processing Software

Software developers are working on data integrated packages that will enable users to manage and analyze different types of data on the computer. Data integration can be implemented over a range of levels (A+ Magazine, 1983). The lowest level of data integration is file compatability, in which one data file which has been written with one program can be accessed and read by a different program. The next level of integration requires that each program must be able to understand the output of the other program, e.g., the word processing file must know what fields to read from a data base file, or the graphics package must be able to sort the titles and formulas from the values to be plotted from a spread sheet program.

The third level of an integrated software system must provide for data transparency (A+ Magazine, 1983). Data transparency is the ability of any task in the software package to use and translate data generated through any other task in the package without specific instructions from the user.

The final level of data integration is a common data base for the integrated package. With a common data system, updates may be made from any program in the system (A+ Magazine). At this level, changes may be entered in the data base one time, and the software will update all of the programs contained on the disk. Changes do not have to be entered separately into each program contained in the package.

There is little agreement about how much and what types of integration tasks and procedures are needed (A+ Magazine, 1983). Some software companies are now producing packages that provide significant

levels of integration, i.e. PFS series from Software Publishing Corporation, VisiSeries from Visicorp, and Star Series from MicroPro. Separate software packages are available for each of the applications that are included in the integrated packages.

Ecological Perspective for Study of the Family

Several papers have dealt with the application of an ecological systems framework for study of the family (Hook, and Paolucci, 1970; Bubolz, Eicher, and Sontag, 1979; Andrews, Bubolz, and Paolucci, 1980; Bubolz, and Whiren, 1984; Flannery, 1972). The authors generally agree that ecological systems models are based on ecology, which is the study of the interrelations of organisms and their environment. Flannery (1972) claims that all populations exchange matter, energy, and information. In an ecosystem approach to the study of the family, everything which transmits information is within the province of ecology.

Debate has continued to occur as to the relative validity of observations of human behavior obtained in artificial settings versus natural settings. Gibbs (1979) expressed concern about human behavior research conducted in laboratory settings. Within the laboratory setting, the pursuit of objective purity often leads to the loss of the meaning-conferring contributions of the person. It results in separating the experimental stimulus from the subject's ordinary experience. He questioned the worth of research methods that produce findings that cannot be generalized into ordinary human reality. Ecologically oriented inquiry, on the other hand, may lack the rigor

of empirical methodology. What is needed, according to Gibbs is a "genuine cross-fertilization between these two poles of inquiry" (1979:28). He sees the key feature of ecological inquiry as the cross-fertilization of deductive rigor with inductive relevance.

A number of scientists utilizing an ecological approach to the study of the family have emphasized the interrelatedness of the biological and physical dimensions of the family and its environments with the psychosocial and cultural characteristics and interactions of the family (Hook and Paolucci, 1970: Bubolz, et al., 1979; and Andrews, et al., 1979). Critical to this approach is the interaction, or reciprocal influence, among a system's components (Bubolz, et al., 1979). The ecological approach assumes that the phenomena and family will be examined in their wholeness of interaction and interdependence (Andrews, et al., 1980). Emphasis is given to the biological and physical components of the organism and its environment as well as to the social and psychological dimensions of the family and its members.

Family Farm Ecosystem

As a part of a project (MAES project 3261), researchers have applied the ecological approach to the study of the family farm ecosystem (Bubolz, Sontag, and Ledwith, 1985). The model they have developed designates the farm family as the research unit and includes as part of the family its structure, values, and goals, human resources, management, and other processes (Appendix A). The near environment for the family includes their clothing, shelter, furnishings, farm-site, and equipment. The family and their farm ecosystem reside within and interact with broader community systems

such as education, neighborhood, and market.

An overall goal of the research is to describe and understand the interrelationships of the various components of the family farm ecosystem in farm and household production and in meeting farm and family goals. The farm family receives inputs and combines them with its own resources. They then input their resources into production, management, and community systems. In turn, the family system produces outputs, such as farm products, goods, services, and income earned. Outcomes and outputs may be input back into the system to help the system remain dynamic and productive.

Values and The Family

Values are learned beliefs that are expressed through what one believes is right, good, or best, and through what one feels a commitment toward (Melson, 1980). Rokeach (1973) believes that values manifest themselves in two distinguishable modes: 1. Talk or thought 2. Overt action. He claims that individuals must act in both ways for a belief to be a value.

Rokeach compared attitudes and values (1968). He indicated that attitudes are an organization of beliefs that are focussed on a specific object or situation and that predispose responses in some preferential manner. The beliefs assert that certain things about a particular object or situation are true or false, and other things about it are desireable or undesireable. Values, he contrasts, have to do with modes of conduct and end states of existence. Thus, for Rokeach, a value is something that must be believed and acted upon.

In a 1959 study of housing and personal values, Beyer defined values by the ways in which they differ from preferences and attitudes (1959). He indicated that preferences are based on individuals' experiences, while attitudes refer to what is desired. Values, on the other hand, are what is desireable and tend to endure. Values are the criteria upon which goals are chosen and the implications which the goals have in the situation. Values are standards that imply "ought" and "should" concepts.

Paolucci, Hall, and Axinn (1977) classified values by sorting them into three basic types: personal, moral, and social values. Personal values are expressed through self-discipline, punctuality, achievement, decisiveness, and goal orientation. Moral values are expressed through good and right behavior and include beliefs in concepts such as honesty, dependability, tolerance, and integrity. Social values are expressed in relationships to others and include characteristics such as support, cooperation, recognition, justice, and a sense of interdependence.

Kluckhohn defined values to include a conception of the desireable which influences the selection of action (1952). Bubolz simplified his definition to include an idea of what is right, or good or best, and which influences what we do (1979).

In an earlier publication, Jacobson (now Bubolz) defined values as "what is right, desireable, and proper" (1966). She continued that values are a part of the culture of people, of their way of life. Values are concerned with all of life and represent the things we hold dear, prize, and cherish.

Williams (1965) noted that value refers to aspects of situations, events, or objects that are vested with a preferential interest as being good, bad, or desireable. He continued that values concern the goals of action and, as such, are components in the selection of adequate means.

Lazlo (1973) viewed values as neither purely subjective nor purely objective. They express interactive states of adaptation by the individual to the biological and sociolcultural environment. Lazlo's approach to values is through systems theory. He sees values as goal-directing factors that are instrumental to a human's adaptation to the environment. Changes in an individual's values impact on the states of larger social systems.

Hogan (1978) discussed values and the family ecosystem. She stated that family members do not have a single set of values, but have a network of common values. She indicated that the stability of a family rests, in part, on a consensus of values. Hogan (1978) equated the realization of values to a continuous supply of resources. She further linked the realization of values to decision-making behavior. From an ecological perspective, all parts of the family system were linked together and a change in one component results in a change in every other component.

Valuing as a process was described by Paolucci, Hall, and Axinn (1977). It is learned from the natural, socioeconomic, and physiological environments and the values learned in the process affect the environment. Paolucci et al. differed from Rokeach in saying that values, rather than attitudes, are what we believe and

they are transformed into what might be. They agreed with Kluckhohn and Bubolz in seeing that values are concepts of the desireable. Paolucci, et al. saw values as the criteria used to make decisions regarding the allocation of limited resources, particularly energy.

Raths, Harmin, and Simon developed a process for clarifying values (1966). Values are identified when values indicators, such as goals, purposes, aspirations, attitudes, interests, feelings, beliefs, convictions, activities, worries, problems, or obstacles meet the requirements of seven criteria. These criteria include choosing freely, from alternatives, after considering consequences of the alternatives; prizing, which is expressed through cherishing and affirming; and acting on choices with repetition. If it does not meet all of the criteria, the concept is considered a values indicator, not a value. Values may be developed from values indicators.

All of the authors agreed that values are in a constant process of change and development. Out of the valuing process comes the goal setting process. Melson (1980) related the valuing process and the ranking or setting priorities of values to reaching desired goals.

While there is no consensus on a specific definition for values, the works of researchers revealed areas of agreement. Some of these concepts defined values as what is desireable (Beyer, 1959; Rokeach, 1968; Kluckhohn, 1952; Bubolz, 1979; Paolucci, et al.,1977), chosen from alternatives (Bubolz, 1979; Raths et al, 1966), influence action (Rokeach, 1968; Kluckhohn, 1952; Raths, et al.,1966) and are prized and cherished (Bubolz, 1979; Raths, et al.,1966).

Rescher (1969) saw values as indispensible for motivating goal

oriented behavior in a social setting. The ability to evaluate and make value judgments is the individual's ability to select from a multiplicity of possibilities those interests, ends, and ideas which give a meaning and a pattern to life (McKee, 1955).

Malone and Malone (1958) identified values and goals as guideposts for life. They believed that values tell what is worthwhile about families. Goals are things individuals set out to accomplish. Strongly held goals are associated with firmly held values.

Little work has been done to study values in rural living. Anderson (1947) developed a rural living opinion scale which identified ten phases of rural living. These described the rural environment as a place:

1. For healthful living
2. For doing enjoyable work through farming
3. For obtaining the necessary education for life
4. For earning a satisfactory living through farming
5. For enjoying wholesome recreation and leisure
6. For having aesthetically pleasing experiences
7. For carrying on a sociable life as a community member
8. For obtaining the necessary facilities for a good level of living
9. For developing wholesome family life
10. For the proper rearing of children.

Assessment of Literature

In summary, researchers and authors writing about information processing agree that the major problem facing individuals today results from the existence of too much information. The crucial need is to develop methods of processing information that will make it available to people who desire or need it. Some initial research has been done on computer assisted analysis of non-numeric data. Systems

of data analysis were developed that were specific to the requirements of the study being undertaken, or to the available computer hardware and software. Notably absent from their combined work was a single method or pattern of methods for using computers to assist in analysis of non-numeric data. Some of the methods used were constrained by the computer systems which were available to the researchers. At least one of these was based on a computer language that is currently obsolete and not readily available to other researchers.

The computer industry is beginning to address the need for integration of software. Packages with various levels of integration capacities are available for computer users. What remains to be done is the development of methodology for using integrated packages in various ways to assist researchers in the processes of data reduction and analysis. An additional need is to develop methods for analyzing data from disparate sources.

From an ecological perspective, researchers are studying the interrelationships between the components of the family ecosystem. Insufficient attention has been given to the interrelationships between the ecosystem components and family values and goals as they affect the total family system.

Methodology for handling, managing, reducing, analyzing and disseminating data is required to produce a complete description of the family farm ecosystem. From a description, researchers will be able to gain an understanding of the interrelationships of the components of the ecosystem. The end result should be an integrated whole in which the data are analyzed and presented in a variety of forms.

Values are an integral part of family decision-making processes, and influence the families' selection of goals and alternative means for reaching them. Values are complex, change over time in families, and serve as modifiers in the family-environment transaction. Value orientations predispose family members to select information which fits their set of values. As values change over time in family and individual circumstances, different information will be sought and may be reflected in family decisions.

Goals are things people want to accomplish or achieve, and are based on values. Goals require the resources of time, human and matter energy, money, and personal commitment to accomplish. They are related to the means used to attain them. Goals change over time. The process used to develop goals includes thinking about values, clarifying values, setting goals, and acting on values. Each family must choose its own way to reach its goals, based on its values.

Through the choices individuals constantly make and the way of life they build, they express those things that are of the most value to them. There is no area of life where values are not operative. Wherever human beings are involved, choices are being made and values expressed.

CHAPTER III

METHODOLOGY

This chapter delineates the methods that were developed and used for each part of the research process for this study. It answers the second research question: what specific steps are required to utilize the microcomputer and available software for analyzing non-numeric data?

The chapter contains sections on research design, research sample, data collection, data reduction and management, maintenance of diskettes, identifying values indicators, development of coding schemas, identification of values and value patterns, and comparisons of values and value patterns. This chapter differs from other methodology chapters in that it includes descriptions of the methodology developed and used for the research process and also for the reduction and analysis of the data.

Research Design

A comprehensive interdisciplinary program of research on small scale farming is underway at a major university. Three families are in residence on small farms, and are putting into practice a variety of farm enterprises, small industries, marketing of home produced goods, and strategies for conservation of energy and other resources. Each family has agreed to participate in the project for a period of three years.

This study is a part of a project (MAES project 3261) which seeks to develop a comprehensive picture of the processes families go through while changing to a life style that includes farming. The overall goal of the ongoing research is to describe and understand relationships among technical, economic, and human factors in production and management on small scale farms.

The major objectives for this study were to use the microcomputer to develop and compare conceptual schemas for reduction and analysis of in-depth qualitative data about family values held by the three farm families, and to determine relative gains derived from using the conceptual schemas developed in this study. It is exploratory in nature as it is an attempt to develop an initial understanding of a new application of computer technology as it relates to theory development in the identification of values that are contained in transcribed interviews.

Participants

The population for this study consisted of three families living on farmsites in a midwestern state. Each of the families was selected for participation in the project through a process that involved writing a formal application which stated in detail their goals, plans, and budgets for operating their respective farms.

A purposeful sampling method was employed to generate applicants for the research project. Announcements were carried by local and regional news media, Cooperative Extension Newsletters, and numerous organizations whose purposes were related to the project. Inquiries were received from 210 individuals. Each was sent application

materials and instructions for application procedures. Twenty seven proposals were received.

Seven interviews were conducted by research and extension representatives of the university research team to select the families for the project. Three families were selected on the basis of their written and stated goals, plans, and budgets for operating their respective farms, their willingness to participate in research activities, and their eagerness to work as a family.

The first family consists of a married couple in their early twenties. At the time of the initial interview, their two children were three years and eighteen months of age. The married couple were participants in the research project, the children were not. The male had recently completed his Bachelor of Science degree in agricultural engineering at a major university. The female had had her education interrupted to bear and care for the children, but continued to progress towards a Bachelor of Arts degree in psychology on a part time basis. Neither had previously held full time, permanent employment. The first family moved to the farm in September, 1983, from university housing.

The second family is comprised of a married couple. The male was in his mid-thirties, and had worked for several years as a counselor in a half-way house for delinquent teenage boys. Over the years, the female had held several full and part-time jobs which included working as a waitress, working in a bank, and working as a short order cook. In addition, she is a licensed masseuse, and had established a small private massage practice. She used her sewing skills to provide dressmaking and alteration services as a second home based business.

She also volunteered in youth club activities. The male holds a Bachelor of Science degree in recreation. The female holds a Bachelor of Science degree in animal science. Prior to moving to the farm in August, 1984, this couple owned their own home, situated on two-and-one-half acres of land on which they grew alfalfa, fruit, and vegetables.

The third family is composed of a married couple in their late twenties, and their two children, aged one and two years. His university work was in institutional foods, and he has worked as a professional bakery chef for several years. The female received a a Bachelor of Science degree in horticulture. She has not previously used her academic preparation on a full time basis in favor of devoting time and energy to their children. Prior to moving to the farm in August, 1984, this family resided in a small basement apartment in an urban area.

Data Collection

The collection of data on each of the families' interactions with various parts of the family farm ecosystem encompasses a variety of research methods ranging from structured questionnaire items and structured interviews to non-structured discussions and observations of family members' behaviors. The family farm ecosystem model (Appendix A) served as a basis for data collection. A methodological model of the family farm ecosystem is contained in Appendix B.

Although many types of data were gathered, only the initial interview completed within one month of farmsite residence was selected for analysis for this study. In-depth interviews were conducted by the two principal investigators and this researcher, who

served as a graduate assistant on the project. Each family was in its first month of residency on the farm. The interviews were semi-structured in nature, and the questions are included in Appendix C . After the interview was completed with the first family, the questions were evaluated and altered before being asked of the second and third families (See Appendix D). The questions were used as a foundation, or starting point, in discussions with the families. No attempts were made to direct or control family members' responses to the interview questions.

The interview for the first family was conducted in October, 1983, within one month after they moved to the farm. During their first year of residency, the research team conducted eight interviews with the family, participated with them in problem solving activities, and kept in close contact with them. This researcher had additional responsibilities with the family, which included scheduling contacts and visits with them from all university researchers, observing them for twenty hours, and teaching them how to use the computer.

The second and third families moved to their farms in August, 1984. Interviews with them were held in September, 1984, within one month after they moved to their farms. Involvement and interaction with the second and third families was not as intense as with the first family because problems had been solved and procedures established during the first year of the project.

Each interview lasted approximately two-and-one-half hours. They were documented with audio tape recordings and hand written field notes. The audio tapes have been transcribed on an IBM-PC microcomputer, stored on floppy microcomputer diskettes, and form the

basis for this study. Transcription of the audio tape recordings required approximately five hours for each hour of recorded interview.

Data Reduction and Management

Prior to data reduction processes, data must be formatted in a manner that is compatible with the microcomputer system on which it will be analyzed. The initial audio tape transcriptions were done on an IBM-PC microcomputer, using the WordStar (MicroPro, 1983) word processing program. Data reduction, management, and analysis for this project were done using an Apple IIe microcomputer system.

The StarSeries (MicroPro, 1983) of microcomputer software was selected for use with this project because it is powerful, it is capable of numerous applications, its parts can be integrated with each other, and it is available for a variety of microcomputers, including both IBM-PC and Apple IIe. For this project, word processing, searching, spelling, merging, and indexing programs from the StarSeries were selected for the purposes of transcribing interviews from audio tapes, identifying values expressed in the interviews, constructing indexes for each interview, writing papers, checking spelling, and merging different parts of the data into desired singular documents.

Two methods of transferring the transcribed interviews from the IBM-PC microcomputer to the Apple IIe microcomputer were used. The first method necessitated placing the IBM-PC and Apple IIe microcomputers next to each other. The actual transfer process involved working with two sets of diskettes, programming commands into both computers, and labeling and sorting the diskettes after the programs had been copied. This was a time consuming process which

took approximately eight hours to transfer eight hours of transcribed interviews. An additional four hours were required to learn the programs and to get them to function effectively.

The second method for transferring the data from the IBM-PC to the Apple IIe microcomputer was accomplished through the use of an IBM portable microcomputer that was equipped with a Quad Link board. A Quad Link board is a piece of hardware that is placed inside an IBM or compatible microcomputer. When used with the correct software and commands entered by the microcomputer user, data stored in an MS/DOS format can be converted to a CP/M format at the same time diskettes that will run on Apple IIe microcomputers can be created. The Quad Link board and accompanying software can also be used to convert data that is stored on Apple diskettes to IBM diskettes.

The Quad Link board and software were not available when the initial conversion of data to Apple IIe diskettes was completed. It was used for only one question which was missing from the initial transfer process, and required only five minutes to complete the transfer.

Maintenance of Diskettes

Computer diskettes may be damaged by a variety of things including heat, liquids, food, dust, lint, bending, or touching. For safety and protection of data, diskettes were backed-up during each step of the research process. This involved copying each diskette before the transfer process began and copying the new diskettes before data reduction and analysis began. The two sets of diskettes were stored separately to protect against accident to both sets at one time. As work progressed, data diskettes and back-up diskettes were alternated

so that, in the case of a damaged diskette, the amount of work lost would be no more than one work session.

Numerous diskettes were required for this project. The WordStar programs that were used generated as many as three new files each time they were run. If files were long, the researcher ran the risk of being unable to store the analyzed data on the diskette. To protect against loss of data, each interview was divided and stored with three questions per diskette. Twenty two diskettes were required to hold the three interviews analyzed for this project.

Identifying Value Indicators

The search function of the WordStar word processing program was used to locate the value indicators that were contained in each interview. Several searches of each interview were conducted on different theoretical levels. As value indicators were located, they were marked with a dot command. A dot command is an instruction that tells the microcomputer to perform a desired function. It is characterized by a dot (.) preceding the command. The dot command is visible on the screen, but is not printed on the hard copy of the document. Numerous dot commands can be inserted into the document to instruct the microcomputer to perform a unique task at a specific location. Each dot command indicated the theoretical level of the value indicator.

The dot commands were inserted within the interview and were later used to create an index of value indicators for each interview. The index listed the value indicators for each level in a different format. Figure 1 is an example of an index of one of the interviews.

A
Achievement
   success, 18
Active, 14
Activity
   work, 4, 10, 19
   working, 19, 20
   works, 15, 20

C
Conformity
   agree, 20
   agreeable, 20

G
      Goal, 12, 18, 19, 20
      Goals, 14, 15, 17, 18
      Good, 4, 19, 20

H
Help, 16, 19,
Helped, 3
Helping
   give, 3, 18
Helps, 11
      Hope, 13, 15, 16, 17, 19, 20
      Hopefully, 15

I
      Idea, 3, 14
      Ideal, 11
      Idealistic, 18
      Ideas, 12, 14
      Important, 15, 17, 18, 19, 20
Individual
   person, 18

L
      Like, 12, 15, 18, 19, 20
      Love, 10, 19
      Lovely, 20

Theoretical Value

Level 1

Level 2

Value Flags

Figure 1. Sample index created by using StarIndex to locate value terms that were sorted on three levels. (Edited for clarity of presentation)

It has been retyped for purposes of presentation. An unedited version is in Appendix E. The index made it possible to locate each level of value indicators on a printed copy of the interview.

Definition of Terms Used in Identifying Values

Three interviews were analyzed in depth for this project. During the analysis process, some terms were used repeatedly, and precise meanings were developed to define the terms. The following terms were defined for this study.

Values Conceptually, values are what one believes is right, good, or best. They are characterized by what one holds dear, prizes, cherishes, and feels a commitment toward. For the purposes of this study, values were what the family members believed was right, good, or best for them and their family members in relation to their family, farm, or small business enterprises.

Theoretical values Theoretical values refer to the values identified as American values by Williams. These comprised the theoretical foundation for all areas of value analysis for this project.

Value flag Value flags were words used to indicate that statements about values were being made, or were about to be made. Value flags were words used in every day language.

Value indicator Value indicator refers to words or phrases contained in each interview that alerted the researcher to the possibility of the presence of a value. Value indicators include theoretical values as well as value flags.

Value topic Value topics refer to the themes of statements contained in the interviews. They are identified through the use of theoretical values, value flags, or value indicators. Natural language statements surrounding the value indicators were examined and the value topics determined from the participants' statements.

Value categories Value categories refer to groupings of value topics for the purpose of identifying values on a more global level than can be done with value topics. Seven value categories were used for this study.

Value systems or value patterns Conceptually, value systems consist of a specific arrangement of interests, beliefs, and values which are interdependent and subject to reciprocal or mutual variation. For this study, value systems and value patterns were used interchangeably. They referred to patterns of values expressed by family members during in-depth interviews.

Development of Coding Schemas

An a priori coding schema was developed based on work by Williams (1965) in which he identified major values that can be identified in American society. Fourteen value-systems that Williams found provided theoretical terms which could be used to search the interviews at level one. A list of these words is included in Figure 2. Conceptual and operational definitions of these terms developed for use in this project are presented in Chapter 1.

A subset of the original fourteen words was developed for the level two search (Figure 2). These value indicators were also on a

American Social Values

	Level 1	Level 2
1.	Achievement	Success
2.	Activity	Work
3.	Moral	Ethical
4.	Helping	Giving
5.	Efficiency	Practicality
6.	Progress	Up to Date
7.	Prosperity	Ease
8.	Equality	Fairness
9.	Freedom	Independence
10.	Conformity	Agreement
11.	Science	Research
12.	Nationalism	Patriotism
13.	Democracy	Sharing
14.	Individuality	Personality

Figure 2. Theoretical values coding schema based on work by Williams (1965).

theoretical level. They were contained in William's definitions and descriptions of his original categories. An index was created to locate the uses of value indicators in each interview.

Following the level one and level two searches, the interviews and indexes were printed on hard copy. The MailMerge program was used to chain the interview questions together so they could be printed as a single document. This was necessary to provide a historical record of the coding, reduction, and analyses processes. Using the indexes, level one value indicators were identified on the hard copy by high lighting with yellow ink. Level two value indicators were identified and high lighted with green ink.

The initial level one and level two searches were conducted using the exact words indicated by Williams, and included in Figure 2. Few uses of the level one and level two value indicators were identified through the initial searches. The searches were then repeated using the root words included in the value indicators and, at the same time, programming the microcomputer to locate uses of the root words with different prefixes and suffixes. Some additional value indicators were identified. These were transferred to the hard copy in the same manner as those identified in the original search.

The level one and two searches identified some value indicators, however, they were used more often by the researchers than the family members. Words that could be used as a transition between the theoretical values levels and the language used by the families were needed. Flag words (See Figure 3) were used to identify values in common language, and were then used as a basis for the level three search to code the interviews in the same categories that were

Value Flags

1. Value
2. Important
3. Like
4. Want
5. Right
6. Wrong
7. Love
8. Good
9. Bad
10. Cherish
11. Prize
12. Hope
13. Wish
14. Goal
15. Promise
16. Commitment
17. Choose
18. Choice
19. Needs
20. Ideal
21. Idea
22. Plan

Figure 3. Value flags based on value definition and common usage.

specified by Williams. These words did not define values themselves, but indicated that statements about values were being made or about to be made. Flag words were identified in the definition of values in this paper and were the foundation for analysis of the values expressed by the families in their natural language.

Searching by flag words identified numerous uses of these terms in the interviews. Value flags were marked on the hard copy using a pink high lighter. Careful reading of the interviews revealed that many of the value flags were used in a non-value context, and did not indicate the presence of values, e.g., "we feel like we've got to make use of all that land."

Diskettes were copied and searched for value flags. As the value flags were identified, those that did not indicate values were decoded i.e., eliminated from the coding process. At the same time, value indicators used by the researchers on each of the levels were decoded. This produced interviews that were coded for value indicators for the respondents only. A new index was created for each interview.

Clean copies of the interviews were printed. Using the indexes, levels one, and two, and value flags, the value indicators were high lighted in yellow, green, and pink inks. The incidences of value indicators were greatly diminished from those present in the first copies of the interviews.

The three levels of coding schemas developed for this project correspond to Olson's (1976) three levels of content analysis. The a priori coding schema based on William's work corresponds to the theoretical level presented by Olson. The analytic system that Olson uses corresponds to the value flags used in this study. Finally,

Olson's folk system corresponds to the lay or natural language terms identified from the family interviews.

Identification of Values

A grounded approach, in which data were searched and lay or natural terms identified, was used to note values and value patterns among family members and between the families. Each interview was read and the value expressions stated by the family members were outlined in pencil. The value flags, high lighted in pink, were used to locate the values expressed by family members.

A series of sorting and analysis processes were required to interpret the identified values and to establish value patterns among and between families. Sorting and interpretation were considered in relation to William's (1965) theoretical value patterns in American society.

One sorting process consisted of locating the value flags and classifying values associated with the value flags. This was accomplished by charting the value flags, determining the value topic(s), and identifying the theoretical values associated with the value flags (Figure 4). As noted earlier, values were outlined in pencil, and value flags were high lighted in pink. The value topic was determined by reading the family member's value statement, and noting the theme of the statement (Figure 5). The theoretical values were identified by reading the conceptual and operational definitions of William's terms presented in this paper, and matching them to the content of the value statement.

To determine reliability of the coding process, several identified values were read by two other researchers. One of the researchers was

Identification and Classification of Values

#	PAGE	VALUE FLAG	VALUE TOPIC	THEORETICAL VALUE
1	1	Idea	Employment	Helping Prosperity Work
2	2	Want	Project	Efficiency Ease
3	2	Like Idea	Animals	Efficiency
4	3	Like	Project	Efficiency
5	4	Planning	Farm Enterprise	Efficiency
6	4-5	Important	Family Life	Giving Helping Sharing
7	6	Want	Children	Sharing Individuality
8	7	Good	Family Life	Sharing Practicality Efficiency
9	7	Love Good	Parenting	Sharing Helping Giving
10	8	Bad Wish Wants	Animals	Sharing Individuality

Figure 4. Example of identification and classification of values from values flags in one interview.

R Home based business is another that you talked a little about previously. Do you also have a medium range and long term goal.

M Yes, I would say that is a medium range because I want to look into whether we can do it here in the house.

F We are pretty sure that we can. That is why its kind of a hard goal to figure right now.

M Its pretty safe to say that regulations are such that we have to have a separate kitchen, it has to be separate set up in order to do it for a livelihood, or anything like that, so I've had this idea, it doesn't look like its going to pan out but the have another building over there that is completely separate from their dwelling, and has a kitchen set up and she was talking about tearing it down and I don't know if that is going to happen or not, but that would be a perfect set up, having that over there and was talking about having a day care center in that house, too, so those two would go together really well.

* She's not now.

M Oh, she's not now? Oh.

R Can you see your involvement in this?

F You know, its funny, I do, I would love to do it but because of the way that we don't cook well together, I don't know! (Laughter)

R That is my husband and me, our kitchen is like yours! I'm very happy just to empty the dishwasher - I'm very pleased with that.

VALUE FLAG:

Idea

VALUE TOPIC:

Small Business

THEORETICAL VALUE:

Efficiency (Level 1)

R = Researcher
M = Male Participant
F = Female Participant

Figure 5. Value statement with value flags underlined.

familiar with the project and had participated in the interviews. The other researcher was not familiar with the research project and had not participated in it. They agreed with this researcher on the analysis of the values. The researcher also checked for reliability by recoding randomly selected portions of each interview after time had elapsed. Agreement with the original coding was found. The conceptual definitions reported in Chapter 1 were the basis for all coding decisions.

A grid for each interview, with the theoretical values on the X axis, and the value flags on the Y axis, was constructed (See Figure 6). The purpose of this grid was to determine which theoretical values were identified through the use of value flags. The indication of a theoretical value was coded once, regardless of the level of terminology used. For example, a statement was coded either as achievement or success depending on its associated definition.

A rank order of theoretical values represented in each interview could then be established by theoretical Levels 1 and 2. The theoretical rank ordering of value indicators was then separated into Levels 1 and 2, with the combined frequencies for each pair of value indicators as the basis for the rank order received by each. This is discussed in the results chapter. Tables of frequencies are included in Appendix F.

This process was repeated for the purpose of determining value topics that were identified by using value flags. (See Figure 7). The value topics were placed on the X axis, and the value flags on the Y axis. The occurrences identified in the interviews were then charted. Value topics were subsequently rank ordered. Tables of frequencies

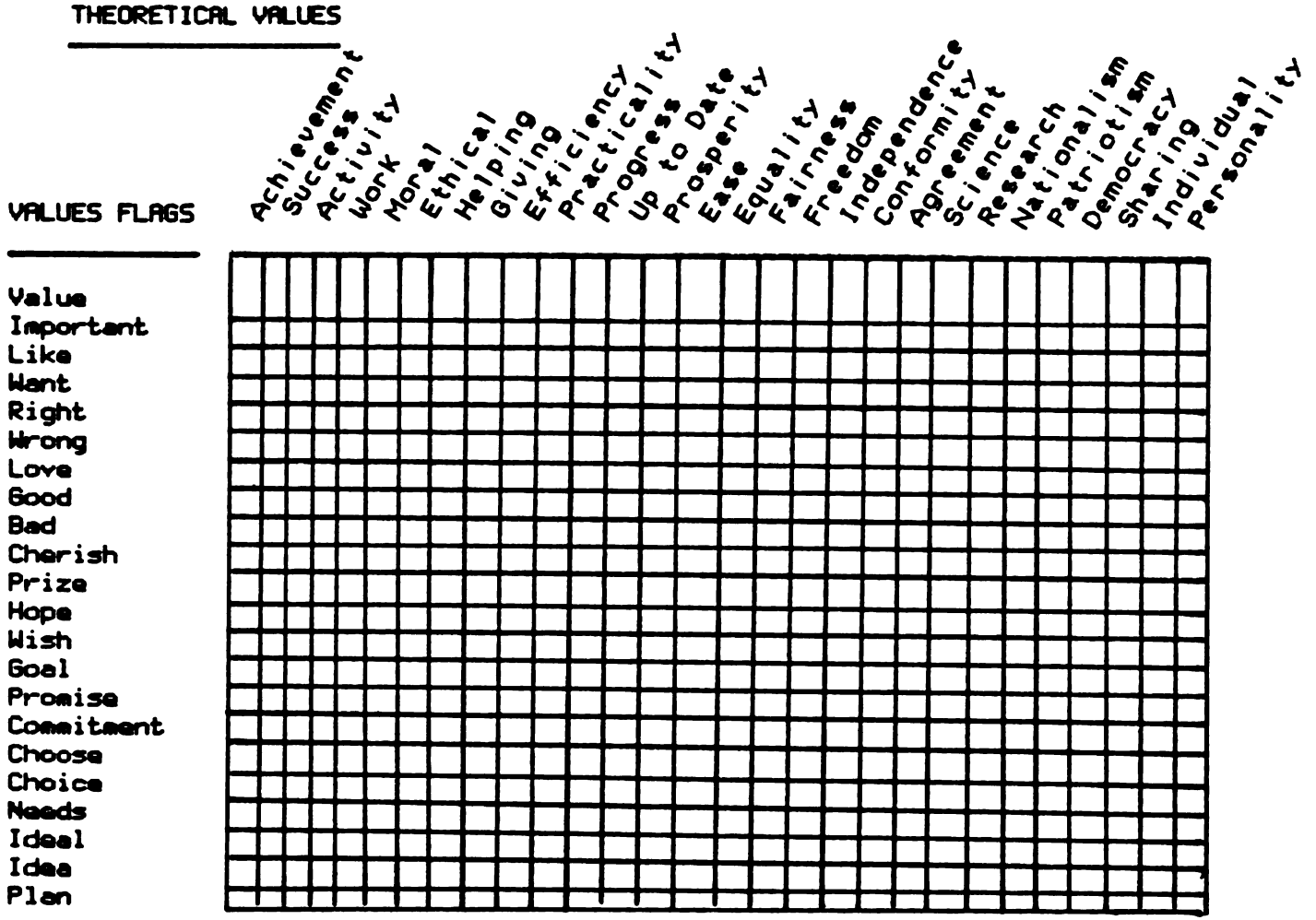


Figure 6. Grid for identification of theoretical values by using value flags.

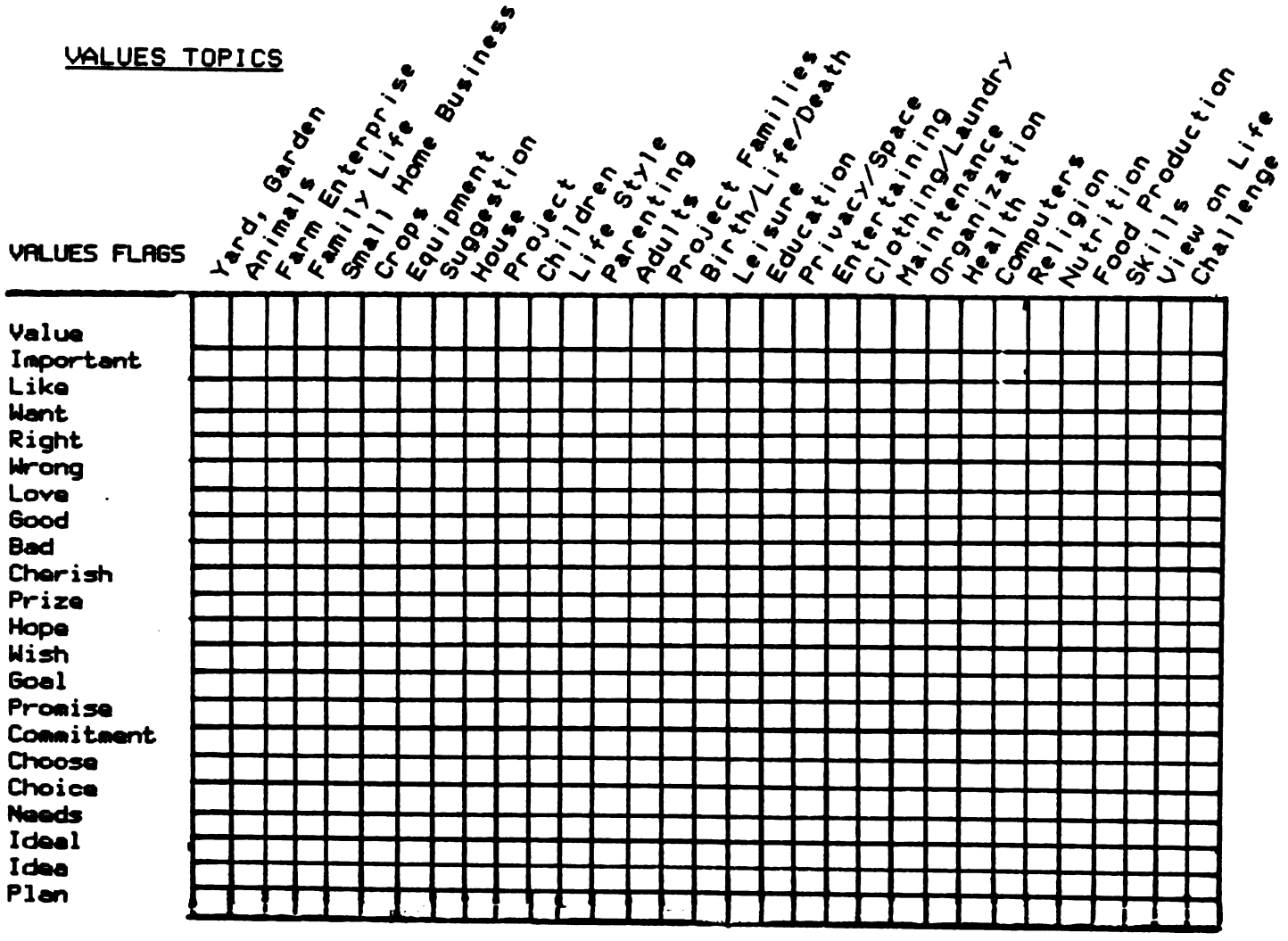


Figure 7. Grid for identifying value topics by using value flags.

are included in Appendix G.

The rank orders of value topics were used to develop value categories for each family. As a result of this process, commonalities began to emerge, and were then applied to the ecosystem theory. Seven categories of values were established, based on the Family Farm Ecosystem model. These categories included family and individuals, life style, business, farming, environment, community interaction, and other (Figure 8).

Patterns of values held by family members were identified by isolating the natural language value statements made by them. These statements were classified by the seven value categories. Value topics within each category were identified separately. (See Figure 8) Relationships between value patterns and theoretical values were determined by charting the value categories, value flags, and theoretical values.

Comparisons of Values and Value Patterns

The research objectives for this study required the comparisons of identified values and value patterns for agreement and differences among and between families. To accomplish these objectives, concrete or specific expressions in every day life, which were identified by using value flags, were coded according to which family member expressed them. Similarities and differences were noted.

Theoretical values represented in each category were indicated. The results of this process yielded a description of each value category classified by concrete or specific expressions in every day life, who expressed them, and by theoretical values represented.

Value Categories and Value Topics

FAMILY AND INDIVIDUALS

- Family Life
- Children
- Birth/Life/Death
- Parenting
- Adults
- Pets

BUSINESS

- Home Business
- Computers

ENVIRONMENT

- Clothing/Laundry
- Privacy/Space
- Yard/Garden
- House
- Energy

OTHER

- Research Project
- Project Families
- Resources/Skills
- Employment
- Organization

LIFE STYLE

- Nutrition
- View on Life
- Leisure
- Entertaining
- Health
- Friends
- Quality of Life

FARMING

- Animals
- Crops
- Farm Enterprise
- Equipment
- Food Production
- Maintenance
- Skills
- Fencing

COMMUNITY INTERACTION

- Education
- Religion
- Community

Figure 8. Value categories and value topics identified from value flags.

These descriptions formed the basis of comparisons among and between families.

Comparisons of theoretical values were based on frequency of incidence of values reported by families. Similarities and differences in the expression of values and in levels of values in relation to family composition were made from concrete expressions of value topics. To make valid comparisons among and between families, the identified theoretical values were used.

Summary of Procedures Used to Identify Values

Interviews were initially searched for theoretical values based on Williams' American Social Values (1965). This process revealed the need for words to identify the values in the participants' natural language. These words were called value flags, and they indicated that a value was being expressed, or was about to be expressed in natural language. Value indicators were read in context within the interview and the value topic identified. Value topics were then grouped into value categories which correspond with the components of the family farm ecosystem. The final step was to identify the theoretical values contained within the value categories, and specifically expressed in value topics through value indicators which were identified by natural language value flags. Figure 9 illustrates this process.

IDENTIFICATION OF THEORETICAL VALUES

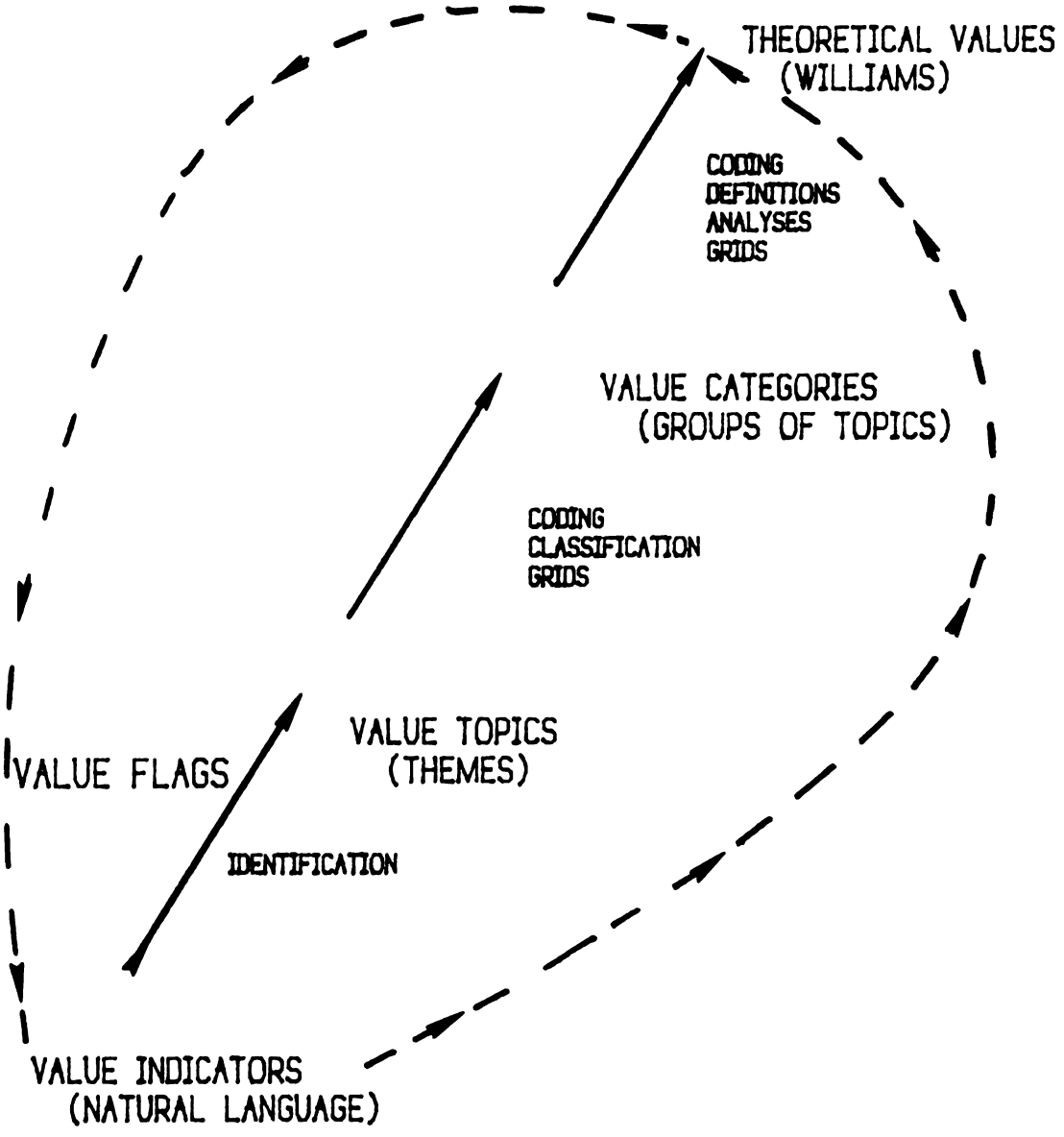


FIGURE 9. PROCEDURES USED TO IDENTIFY VALUES

CHAPTER IV

RESULTS FROM COMPUTER APPLICATIONS

Identifying Value Indicators

The use of the microcomputer to search data diskettes containing interviews from three families residing on small farms was effective. The WordStar search program (1983) allowed the researcher to mark each term that was considered a value indicator as it appeared on the screen.

Markings were made on four different levels, which were useful on subsequent searches and in analysis of the data. As searches were made, the interviews were marked and coded for the purposes of creating an index and a table of contents.

Indexes were created after each search of the interviews was completed. The indexes served several purposes in the identification and analysis of the value indicators. They were used to identify the value indicators on the hard copy of the interview. Because each entry was marked using a specific code, it was possible to identify the different levels of the entry on the hard copy. This served as a foundation for data analysis. The indexes also provided a visual display of the location and numbers of value indicators contained in each interview.

The speed with which searches were conducted and indexes created made it possible for the researcher to run multiple passes through the data for different research purposes. Searching and coding the data for constructing indexes served to fracture the data into component parts which were analyzed separately before they were put back together in ways that provided new insights into values held by the three farm families participating in this study.

Development of Coding Schemas

The initial identification of theoretical value indicators, based on the precise terms included in Levels 1 and 2 (See Figure 2), produced few instances of their use by family members. Researchers used the theoretical terms more frequently than did the participants in the study.

An expanded search of the interviews was conducted. The theoretical value indicators in Levels 1 and 2 were used as root words. The microcomputer was programmed to look for all instances in which the root words were included. This process retained the original theoretical level of analysis and provided a broader research base from which to work. It resulted in additional identification of value indicators, with notable increased usage of theoretical terms by researchers, but few additional uses by family members.

The initial interviews conducted were on the topic of values, goals, and decisions made by farm family members. The a priori coding schema for analyzing the qualitative data did not identify sufficient instances of value indicators in the data for analysis of the data

set. Initial reading and interpretation of the interviews proved them to be value laden. The problem was determined to reside in the level of abstraction of the Levels 1 and 2 terms. The language differed from common usage.

For the purpose of bridging the gap between theoretical language and the language used by family members, a list of value flags was developed (Figure 3). These were words that were used to identify the presence of values in every day language. The development and use of this operational level for searching the data identified numerous instances of value indicators.

The initial search for value indicators using value flags produced encouraging results. The process was repeated using the value flags as root words, as had been done with the Levels 1 and 2 analyses. Greatly increased instances of these words were noticed. For example, words such as helping were identified in a small number of cases. When the root word of help was used to search the data, additional instances which included the words help and helped were identified.

The use of value flags proved to be a positive step towards the identification of family values. In their initial form, they were not parallel to the theoretical values found by Williams and produced little insight into understanding the values held by the families in a systematic or organized manner. By using William's definitions and descriptions of American values as a base, the value flags were categorized into units that were parallel to Levels 1 and 2.

The categorization of value flags into a format that was compatible with Williams' provided the necessary bridge between values

expressed on a theoretical level and those expressed on a natural language level. In the search process, some value flags revealed no value indicators in the data. The value flags not mentioned in the three interviews included cherish, prize, promise, and commitment. The use of value flags produced some additional problems in the analysis of the data. In the English language, words are used in a variety of ways. The word like, for example, has very different meanings when it is used in the following sentences: "It looks like it will rain." "I would like to go back to school." The first is a statement of projection. The second is statement which is a value indicator.

The data were examined to separate the non-value statements from the value indicators that were identified. New copies of the diskettes were made for the purpose of retaining the initial identification of value indicators on three levels. Non-value statements and value indicators expressed by researchers were decoded from the interviews on the new diskettes. Fresh copies of the interviews were printed, and the revised sets of value indicators were high lighted on them. The incidences of value indicators were greatly diminished as a result of this process.

The steps utilized to identify value indicators and to clean extraneous or irrelevant notations from the data provided careful and systematic examinations of the data. Each examination of data was used as a foundation for the succeeding data analysis procedures. These steps served a valuable function by allowing the researcher to become immersed in the data without the fear of losing important

pieces of information as a result of oversight or fatigue. Sorting data based on differing theoretical levels provided means of layering data to allow analysis of each layer separately. As the layers were rejoined, new comprehension of the overall picture was possible as a result of the in-depth view of each layer of data. The use of the microcomputer enhanced the process and allowed the researcher to pay attention to emerging theoretical or procedural developments, free from the necessity of keeping myriad mechanical and operational procedures on a conscious level of awareness.

The process of methodology development for this project was long and involved many separate and interrelated steps. Figure 10 indicates the procedures required for using the microcomputer to aid in the management of qualitative data.

Each of the procedures used in the analysis of qualitative data required time to accomplish. The fitting together of many parts was necessary for the analysis process to be accomplished. Sequential steps were based on previous procedures, and were not accomplished in isolation.

Time was required to learn five microcomputer programs, problem solving, searching, indexing, and printing using the microcomputer (Table 1). Data collection, theory development or identification and analysis and interpretation of data and dissemination of findings all require large commitments of time.

Qualitative Data Analysis Procedures

1. Data collection - Interviews
2. Interview transcriptions
3. Transfer of data from IBM-PC to Apple IIe format
4. Diskette management
5. Development of Coding Schemas
6. Search data diskettes for value indicators
7. Create Index
8. Identify value indicators on hard copy
9. Expanded search of diskettes for value indicators
10. Sorting and analyses processes
11. Comparisons of values and value patterns
12. Repeat the procedures for different layers of data

Figure 10. Procedures used in analysis of qualitative data.

Table 1. Time spent developing computer applications and related activities in qualitative data analysis.

COMPUTER ACTIVITY	TIME (In hours)
Program learning	
WorsStar	8.00
MailMerge	2.00
Search	.75
SpelStar	.30
Sideways	1.00
Total	12.05
Data Transfer	
IBM-PC to Apple IIe	13.00
Total	13.00
Problem Solving (Debugging)	
Problem #1	25.00
Problem #2	.25
Problem #3	3.00
Problem #4	.25
Problem #5	8.00
Total	36.50
Searching	
Level 1 and Level 2 (3 interviews)	30.00
Expanded Levels 1 and 2	10.25
Values Flags	9.00
Expanded Values Flags	3.00
Clean Data	6.50
Total	58.75
Indexing	
Iitial Searches	1.50
Expanded Searches	1.50
Cleaned Data	1.50
Total	4.50
Printing	
Interviews	8.00
Total	8.00

Table 1 (cont'd.)

HAND ACTIVITY	TIME (In hours)
Identify Values on Hard Copy	
Levels 1 and 2	6.50
Expanded Levels 1 and 2	3.75
Values Flags	5.00
Expanded Values Flags	9.25
Figures of Speech	3.75
Total	28.25
Developing Levels of Comparison	
Theoretical Levels	9.75
Using V?lues Flags	25.50
Concrete Expressions	11.00
Alike and Different	8.50
Total	54.75
Data Collection and Preparation	
Travel Time	7.50
Interviews	7.50
Interview Transcription	39.00

CHAPTER V

RESULTS AND FINDINGS FROM VALUES IDENTIFICATION AND ANALYSIS

Identification of Values

Each step in the sorting and analysis process was essential for providing information that was required in the succeeding process. The grids (Figure 6) that were designed for the purpose of identifying theoretical values contained in the interviews produced evidence of agreement and lack of evidence of agreement among family members. No attempt was made to differentiate among family members at this level.[1]

The theoretical values were ranked in order of the frequency of incidences identified in each of the interviews. It should be noted that the interviews were of differing lengths. Although frequency of mention of a particular value might reflect its centrality or importance to a person, frequency of use of value terminology cannot be equated necessarily with either the importance or the intensity in which values are held. Tables 2, 3, and 4 illustrate the theoretical values in order of frequency for each family. Because the interviews were of varying lengths

[1] The reader is referred to definitions of terms pp.49-52.

Table 2. Theoretical values listed in order of frequency indicated by first family (two children)

LEVEL 1	FREQUENCY OF EXPRESSION	LEVEL 2	FREQUENCY OF EXPRESSION	TOTAL
Efficiency	50	Practicality	7	57 (22)
Activity	31	Work	16	47 (18)
Individuality	26	Personality	9	35 (13)
Helping	4	Giving	22	26 (10)
Progress	14	Up to Date	5	19 (7)
Achievement	7	Success	9	16 (6)
Moral	10	Ethical	4	14 (5)
Democracy	2	Sharing	12	14 (5)
Science	4	Research	8	12 (5)
Prosperity	5	Ease	5	10 (4)
Freedom	0	Independence	7	7 (3)
Conformity	1	Agreement	3	4 (2)
Equality	2	Fairness	0	2 (1)
Nationalism	0	Patriotism	0	0 (0)

( ) Frequencies in terms of per cent of total values expressed.

Table 3. Theoretical values listed in order of frequency indicated by second family (no children(

LEVEL 1	FREQUENCY OF EXPRESSION	LEVEL 2	FREQUENCY OF EXPRESSION	TOTAL
Efficiency	23	Practicality	11	34 (25)
Activity	6	Work	14	20 (15)
Prosperity	12	Ease	8	20 (15)
Achievement	8	Success	5	13 (10)
Science	6	Research	7	13 (10)
Democracy	0	Sharing	13	13 (10)
Progress	3	Up to Date	4	7 (5)
Helping	2	Giving	3	5 (4)
Moral	2	Ethical	2	4 (3)
Conformity	0	Agreement	4	4 (3)
Individuality	1	Personality	0	1 (1)
Equality	0	Fairness	0	0 (0)
Freedom	0	Independence	0	0 (0)
Nationalism	0	Patriotism	0	0 (0)

( ) Frequencies in terms of per cent of total values expressed.

Table 4. Theoretical values listed in order of frequency indicated by third family (two children)

LEVEL 1	FREQUENCY OF EXPRESSION	LEVEL 2	FREQUENCY OF EXPRESSION	TOTAL
Efficiency	31	Practicality	13	44 (26)
Helping	13	Giving	7	20 (12)
Democracy	0	Sharing	20	20 (12)
Activity	11	Work	8	19 (11)
Science	8	Research	10	18 (10)
Moral	6	Ethical	4	10 (6)
Prosperity	5	Ease	5	10 (6)
Individuality	7	Personality	2	9 (5)
Conformity	3	Agreement	5	8 5)
Freedom	0	Independence	6	6 (4)
Achievement	3	Success	2	5 (3)
Equality	1	Fairness	1	2 (1)
Progress	0	Up to Date	1	1 (1)
Nationalism	0	Patriotism	0	0 (0)

( ) Frequencies in terms of per cents of total values expressed.

of time for each family, the raw frequencies of expression of particular values cannot be equated. Therefore, for each family the raw frequencies of expression for each value were converted to percent of total values expressed. A table based on frequencies in terms of percentages was developed (Table 5).

Efficiency and practicality were the value indicators most often identified by all three of the families. The only other value indicators in which all of the families were in agreement were nationalism and patriotism, which were not mentioned by any of the family members.

Comparisons of Theoretical Values Between Families

All of the families indicated efficiency and practicality, and activity and work frequently enough to put these values, when combined, in the top third of theoretical values that were mentioned throughout the interviews. The values of activity and work were expressed more frequently by two of the families. The values of equality and fairness, conformity and agreement, freedom and independence, and nationalism and patriotism were the least frequently mentioned theoretical values. No other agreement was found between the three families in the frequency of their expressions of theoretical values.

Two of the families included pre-school children. The third family does not have children. The two families in which children were present indicated theoretical values more often that represented concepts of human development and family cohesiveness than did the family without children. Examples of indicators of human development

Table 5. Frequencies of Williams' theoretical values in terms of per cents for three farm families.

LEVELS 1 AND 2	FAMILY 1 %	FAMILY 2 %	FAMILY 3 %
1. Achievement/ Success	6	10	3
2. Activity/Work	18	15	11
3. Moral/Ethical	5	3	6
4. Helping/Giving	10	4	12
5. Efficiency/ Practicality	22	25	26
6. Progress Up to Date	7	5	1
7. Prosperity/Ease	4	15	6
8. Equality/ Fairness	1	0	1
9. Freedom/ Independence	3	0	3
10. Conformity/ Agreement	2	3	5
11. Science/Research	5	10	10
12. Nationalism/ Patriotism	0	0	0
13. Democracy/Sharing	5	10	10
14. Individuality/ Personality	13	1	5

and family cohesiveness were expressed by theoretical values such as helping and giving, individuality and personality, and democracy and sharing. Families with children more often expressed the values of moral and ethical, helping and giving, and individuality and personality than did the family without children.

The family without children more frequently indicated theoretical values that signified accomplishment of goals. These were expressed by theoretical values such as prosperity and ease, and achievement and success.

Education is included in the theoretical values of science and research. Both adult members of the first family expressed a desire to pursue formal education for the purpose of acquiring degrees. All adult members of the second and third families mentioned that they were satisfied with their formal education, and had no desire to return to school. However, the second and third families indicated values of science and research more often than did the first family (5%, 10%, 10% respectively).

Examination of the frequency with which families expressed Level 1 value indicators in comparison with Level 2 value indicators yields interesting results. All three families expressed the Level 1 value indicator of efficiency more often than Level 2 practicality, and Level 1 individuality more often than Level 2 personality. In the cases of science and research, and democracy and sharing, the three families in this study indicated Level 2 research more often than Level 1 science, and Level 2 sharing more often than Level 1 democracy.

Comparisons of Value Topics Between Families

Value topics were identified by using value flags. Frequencies were charted and rank orders of value topics were developed for each family. These are presented in Tables 6, 7, and 8.

If one looks at the topics that were ranked 1 and 2 for all three families, and compares them on percentage of frequencies, the following results can be discerned. (See Tables 6, 7, and 8). For Family 1, family life, animals, and small home business accounted for 26% of all occurrences of value topics. For Family 2, farm enterprise, resources/skills, health, and food/nutrition accounted for 42% of the value topics expressed. For Family 3, life style, farm enterprise, and the research project accounted for 33% of the value topics indicated.

Families differed on the value topics and the order of frequency of the value topic mentioned. Each set of value topics represented a unique picture of the individual family. Frequencies of value topics in terms of percentages and maximum differences in percentage points for the three families are shown in Table 9.

Examination of Table 9 reveals differences between families in the frequency of value topics mentioned in the interviews. If one looks at the differences in percentage points across the three families for each value, with the exception of life style, none of the value topics differed in per cent of frequency mentioned by more than 10 percentage points. In Family 3, life style was mentioned in 17% of the value topics referenced during the interview. This is in contrast to 3% in Family 1, and not being mentioned at all in Family 2.

Table 6. Rank order of value topics of first family (two children).

RANK ORDER	VALUE TOPIC	FREQUENCY	PER CENT OF FREQUENCIES
1	Family Life	14	10
2	Animals	11	8
	Small Home Business	11	8
3	Clothing/Laundry	10	7
4	Organization	8	6
5	Crops	7	5
	Children	7	5
	Birth/Life/Death	7	5
	Skills	7	5
6	Farm Enterprise	6	4
	Education	6	4
	Parenting	5	4
7	Privacy/Space	4	3
	Nutrition	4	3
8	Life Style	3	2
	Adults	3	2
9	Yard/Garden	2	1
	House	2	1
	Computers	2	1
	Religion	2	1
	Food Production	2	1
	View of Life	2	1
	Equipment	2	1
10	Research Project	1	0.5
	Project Families	1	0.5
	Leisure	1	0.5
	Entertaining	1	0.5
	Health	1	0.5
	Challenge	1	0.5
	Preventative Maintenance	1	0.5

Table 7. Rank order of value topics of second family (no children).

RANK ORDER	VALUE TOPIC	FREQUENCY	PER CENT OF FREQUENCIES
1	Farm Enterprise	8	11
	Resources/Skills	8	11
2	Health	7	10
	Food/Nutrition	7	10
3	Research Project	6	9
4	Space	5	7
5	Yard/Garden	4	6
	Religion	4	6
6	Education	3	4
	Crops	3	4
7	Animals	2	3
	Small Home Business	2	3
	Friends	2	3
8	Farming/Fencing	1	1
	Leisure	1	1
	Community	1	1
	Quality of Life	1	1
	Family Life	1	1
	Farm Equipment	1	1
	Energy	1	1
	Clothing	1	1
	Pets	1	1

Table 8. Rank order of value topics of third family (two children).

RANK ORDER	VALUE TOPIC	FREQUENCY	PER CENT OF FREQUENCIES
1	Life Style	15	17
2	Farm Enterprise	7	8
	Project	7	8
3	House	5	6
	Parenting	5	6
	Education	5	6
	Nutrition	5	6
4	Family Life	4	5
	Equipment	4	5
5	Adults	3	3
	Health	3	3
	Computers	3	3
	Religion	3	3
	Skills	3	3
6	Animals	2	2
	Children	2	2
	Community	2	2
	Organization	2	2
7	Small Home Business	1	1
	Crops	1	1
	Leisure	1	1
	Clothing	1	1
	View on Life	1	1
	Employment	1	1
	Friends	1	1
	Project Families	1	1

Table 9. Frequencies of value topics in terms of per cents for three farm families.

VALUE TOPIC	FAMILY 1 %	FAMILY 2 %	FAMILY 3 %	DIFFERENCE*
Life Style	3	0	17	17
Health	0.5	10	3	9.5
Family Life	10	1	5	9
Research Project	0.5	9	8	8.5
Skills	5	11	3	8
Nutrition	3	10	6	7
Farm Enterprise	4	11	8	7
Home Business	8	3	1	7
Privacy/Space	3	7	0	7
Animals (farm)	8	3	2	6
Clothing/Laundry	7	1	1	6
Yard/Garden	1	6	0	6
House	1	0	6	6
Organization	6	0	2	6
Birth/Life/Death	5	0	0	5
Religion	1	6	3	5
Crops	5	4	1	4
Equipment	2	1	5	4
Children	5	n/a	2	3
Friends	0	3	1	3
Computers	1	0	3	3
Adults	2	0	3	3
Parenting	4	n/a	6	2
Food Production	2	0	0	2
Education	4	4	6	2
Community	0	1	2	2
Pets	0	1	0	1
Quality of Life	0	1	0	1
Fencing	0	1	0	1
Energy	0	1	0	1
Employment	0	0	1	1
Project Families	0.5	0	1	1
View on Life	1	0	1	1
Leisure	0.5	1	1	0.5
Entertaining	0.5	0	0	0.5
Maintenance	0.5	0	0	0.5

* Maximum differences in percentage points between families

Health was mentioned in 10% of the value topics referenced by Family 2. Family 3 mentioned it 3% of the time, while Family 1 mentioned it in less than 1% of the value occurrences. Family life is identified in 10% of the instances for Family 1, 5% for Family 3, but only 1% for Family 2, for a difference of nine percentage points. The second and third families mentioned the research project 9% and 8% respectively. This is in contrast with the first family who mentioned it less than 1% of the time. Skills were referenced in 11% of the occurrences by Family 2, followed by 5% by Family 1, and 3% by Family 3. The rest of the value topics differ by 7 percentage points or less.

Some of the concrete expressions of values that were identified from the family interviews included expressions that were not a close fit with Williams' theoretical value systems. Theoretical value indicators which represented the areas of aesthetics, human relationships, and human continuity or rootedness are missing from William's American value systems. For this study, therefore, the concrete expressions of these values had to be coded according to the less abstract value topics to which the stated value was attached. For example, all three of the families made statements that related to their living conditions within their homes. Family 1 expressed a desire to make their home cozy, Family 2 wanted to get their home in liveable condition, while the third family was eager to arrange their house so they could relax and have conversations with each other and their guests.

Value flags used by the Family 1 included, want and good; Family 2 used planned, and Family 3 used idea, like, love, and want. Value topics were space/shelter, space, and house, for the three families respectively. All are classified in the environment category. They would all have been classified as aesthetics if that were included as a theoretical value in Williams' schema.

In the absence of a theoretical value of aesthetics, the first family's statement expressed theoretical values of prosperity, efficiency, progress, and practicality. Family 2 expressed theoretical values of practicality and work, while the third family's statement referred to the theoretical values of science and research. These classifications were based on value indicators expressed by family members in concrete terms, then coded by this researcher into value topics and value categories.

Williams' categories of nationalism and patriotism were not referenced in any of the interviews. Other theoretical values such as democracy, equality, and fairness, were referenced only one or two times, indicating that at least part of the value coding schema based on Williams' work was not expressed by the three research families in these interview data. This does not mean that they do not hold these values but that the interview did not elicit their expression.

Identified Value Patterns Across Families

Analyses of identified theoretical values, value topics, and value flags using the data from all three families were done for the purpose of determining whether any patterns existed between them. For example,

were any particular value flags associated with one theoretical value more frequently than with another? This process resulted in a chart which consists of value categories, a list of flag words used to call up value indicators, and the theoretical values that they represent. This chart is included in Figure 11.

Examination of the chart in Figure 11 reveals that efficiency and practicality, prosperity and ease, helping and giving, and activity and work appeared in all of the value categories. Science and research appeared in all but one value category. They did not emerge in the family and individual category.

Some patterns emerged in relation to value categories. The theoretical values of individuality and personality were confined to the categories of family and individual, and community interaction. This analysis must be considered exploratory, but it does indicate at least in this study of three families that some values are general enough that they appear to occur in almost all areas of life. Others appear only in more limited contexts.

Comparisons of Value Indicators and Value Patterns Among Family Members

In this study, agreement in expression means that family members expressed the same value, or one family member expressed the value and the other supported it. Agreement not expressed during these interviews may not mean that there was disagreement among family members on values. Individual and family patterns of communication must be considered. In some families, one person speaks for the other, or for the family. The interview process or the presence of

VALUE CATEGORIES	VALUE FLAGS	THEORETICAL VALUES Level 1	Level 2
Family and Individual			
Family Life	Important		Success
Children	Like	Activity	
Birth/Life/Death	Want	Moral	
Parenting	Love	Helping	Giving
Adults	Good	Efficiency	Practicality
Pets	Bad	Progress	
	Hope	Prosperity	
	Plan	Independence	
			Fairness
		Conformity	Agreement
			Sharing
		Individuality	Personality
Life Style			
Nutrition	Value	Achievement	Success
View on life	Important	Activity	Work
Leisure	Like	Moral	Ethical
Entertaining	Want	Helping	Giving
Health	Right	Efficiency	Practicality
Friends	Wrong	Prosperity	Ease
Quality of life	Love		Independence
	Good	Conformity	Agreement
	Bad	Science	Research
	Goals		Sharing
	Need		
	Idea		
	Ideal		
Farming			
Animals	Value	Achievement	Success
Crops	Important	Activity	Work
Farm Enterprise	Like	Moral	Ethical
Equipment	Want	Helping	Giving
Food Production	Hope	Efficiency	Practicality
Maintenance	Goal	Progress	Up to Date
Skills	Choose	Prosperity	Ease
Fencing	Need		Independence
	Ideal	Conformity	Agreement
	Idea	Science	Research
	Plan		Sharing

Figure 11. Value flags and theoretical values by value categories.

Figure 11 (cont'd.)

VALUE CATEGORIES	VALUE FLAGS	THEORETICAL VALUES Level 1	Level 2
Business			
Home Business	Like	Activity	Work
Computers	Want	Helping	
	Love	Efficiency	Practicality
	Good	Progress	
	Goal	Prosperity	
	Need	Science	Research
	Idea		
Environment			
Clothing/laundry	Values	Activity	Work
Privacy/space	Important		Giving
Yard/garden	Like	Efficiency	Practicality
House	Want	Prosperity	Ease
Energy	Good	Science	Research
	Goal	Democracy	
	Need		
	Idea		
	Plan		
Community Interaction			
Education	Important	Achievement	
Religion	Want	Activity	
Community	Like	Moral	Ethical
	Love	Helping	Giving
	Goal	Efficiency	
	Choose		Up to Date
	Needs	Prosperity	Ease
	Idea		Independence
	Plan	Science	Research
			Sharing
		Individuality	
Other			
	Important	Achievement	Success
Project	Like	Activity	Work
Project Families	Want	Helping	Giving
Resources/skills	Love	Efficiency	Practicality
Employment	Good	Progress	Up to Date
Organization	Hope	Prosperity	Ease
	Goal	Equality	
	Need	Conformity	Agreement
	Ideal	Science	Research
	Idea		Sharing
	Plan		

another family member may be intimidating for some individuals, who may not feel confident enough to publicly disagree with their spouse. In other families all of the family members speak for themselves. Expressions of agreement and difference may be both accepted and expected of family members. Thus, in the interview process, agreement and difference between family members on their stated values may be expressions of family communication.

Similarities and differences among family members were compared through analyzing specific, natural language statements of values identified in the interviews. The results of these analyses indicated that family members in Family 1 expressed agreement on major values contained in six of the seven categories of value topics. In families 2 and 3 less consistency of agreement occurred, they agreed on about half of the topics, and did not show evidence of agreement on the others. Specific comparisons for each family are included in Figures 12, 13, and 14.

Comparisons between families based on their concrete expressions of values showed some agreement between families in all seven categories (Figure 15). Time with children, inclusion of children in activities with parents, and time with extended families characterized agreement on values expressed in concrete terms by the first and third families in relation to the family and individuals value category. It was only in the category of family and individuals that Families 1 and 3 expressed values that were not shared by Family 2. This is likely due to the fact that Families 1 and 3 have children, while Family 2 does not.

Category		
FAMILY AND INDIVIDUALS		
Agreement Expressed		
		Fiber producing animals as a part of family life
		Entertaining
		Time with children
		Children involved with animals
		Children work with parents
		Time away from children
		Independence for children
		Children need to learn about birth/life/death from experiences with animals
Agreement Not Expressed		
	M	Importance of extended family
		Not critical about self as a parent
		Wants children raised in the same way he was
		Likes things of a technical nature
	F	Likes to be challenged on the job
LIFE STYLE		
Agreement Expressed		
		Organize and plan life
		Meal planning
		Easy going view on life
		Desire to entertain
		Importance of a regular health maintenance program
Agreement Not Expressed		
	F	Need to set schedule for self
		Baking, canning, home food preparation
		Planning winter vacation

M = Male
F = Female

Figure 12. Expression of agreement among family members on value indicators. First family, two children.

Figure 12 (cont'd).

Category

FARMING

Agreement Expressed

Animals to provide fiber
Bring in new ideas, new animals
Cut down on equipment needs for crops
Do as much as possible during the project
Develop maintenance and repair skills
Stay in good physical shape to run the farm

Agreement Not Expressed

M Provide good research data
Practice preventative maintenance

F Develop business and computer skills related to the farm

BUSINESS

Agreement Expressed

Marketing research

Agreement Not Expressed

F Focus talents and energies into one area
Develop computer skills

ENVIRONMENT

Agreement Expressed

Proper care and treatment for clothing
Efficient system for laundry
Everyone needs privacy
Independence for children in house and on farm
Picking garden spots
Make house "cozy"
Want shutters for house
Picket fence for yard

Figure 12 (cont'd.)

Category

Agreement Not Expressed

F Handmade clothing as opposed to purchased
Increase sewing and upholstery skills

COMMUNITY INTERACTION

Agreement Not Expressed

F Become active in local church
Get Bachelor's degree

M Begin work on Master's degree

OTHER

Agreement Expressed

Stay longer than three years on farm
Set up child care and activities with other project families

Category

FAMILY AND INDIVIDUALS

Agreement Not Expressed

M Physical survival

F Show dogs in competition

LIFE STYLE

Agreement Expressed

Getting body in shape

Agreement Not Expressed

M Hunting trip
Quality of Life

F Growing own food
Meal planning
Developing friendships

FARMING

Agreement Expressed

Varieties of animals for different purposes
Organic sustainable agriculture
Reclaim damaged land, trees, etc.

Agreement Not Expressed

M Knowing inputs into farming enterprise
Buy as little equipment as possible

F Spread word about farming to others
Planning for farm

Figure 13. Expression of agreement among family members on value indicators. Second family, no children.

Figure 13 (cont'd.)

Category		
BUSINESS		
	Agreement Not Expressed	
	F	Get small home massage business going
ENVIRONMENT		
	Agreement Expressed	
		Get clothing as needed
	Agreement Not Expressed	
	M	Wood stove
	F	Clothing not important Get house in liveable condition Energy efficient window and floor coverings Decorating Experiment and learn with garden
COMMUNITY INTERACTION		
	Agreement Expressed	
		Church is not important Spirituality is important
	Agreement Not Expressed	
	M	No desire to return to school
	F	Satisfied with education Get things going for farm before getting involved in the community
OTHER		
	Agreement Expressed	
		Resourcefulness most important qualities they have Help other do what project is doing

Figure 13. (cont'd.)

Category

Agreement Not Expressed

M Productiveness in working with hands
Want others to benefit from project

F Desire to learn to spin

Category

FAMILY AND INDIVIDUALS

Agreement Expressed

Spend time with children and whole family
Include children in farming and other activities
Share farm activities with extended family
Plan for future as a couple

Agreement Not Expressed

M Desire to be strong, fatherly figure to children

F Take children to bird sanctuary
Plan teaching activities for children
Concern about childrens' safety from roads

LIFE STYLE

Agreement Expressed

Home cooking
Motivated to carry out family and farm activities
Share values with people who hold similar ones
Get on health maintenance program

Agreement Not Expressed

M Desire to avoid split family or problems with children when they get older
Become self-sufficient in constructoin skills

F Nutrition planning
Friends visit family at farm
Take walks, go grocery shopping
Taught to be aware of others' needs
Success in the outside world is not important
Join food coop
Take child to Dentist

Figure 14. Expression of agreement among family members on value indicators. Third family, two children.

Figure 14 (cont'd)

Category

FARMING

Agreement Expressed

Considering getting dairy goats
Purchase as little equipment as possible

Agreement Not Expressed

F Enterprise planning
Take care of land - make it well
Get chickens for the children to take care of
Desire to work on farm for rest of life
Bartering
Self-sustaining farm
Get chain saw

BUSINESS

Agreement Expressed

Plan to open home baking business

Agreement Not Expressed

F Learn computer skills

COMMUNITY INTERACTION

Agreement Expressed

Go grocery shopping for entertainment
Do not attend formal church

Agreement Not Expressed

M Joined environmentaland church organizations as a youth.
Take vocational class to learn construction skills

F Going to library
Enroll children in pre-school

Figure 14 (cont'd.)

Category

ENVIRONMENT

Agreement Expressed

Build a house in the future
Build shelves in kitchen
Organize space to keep table clear for eating

Agreement Not Expressed

F Rearrange house
Get wood stove

OTHER

Agreement Expressed

Develop organization skills
Communicate with other project personnel

Agreement Not Expressed

M Job change

F Friendship with other project families

Category		
FAMILY AND INDIVIDUALS		
Family 1	**Family 2**	**Family 3**
Time with children		Spend time with children and whole family
Children work with parents		Include children in farming and other activities
Importance of extended family		Share farm activities with extended family
Want children raised raised in the same way he was		Wants to be a strong fatherly figure to the children.
LIFE STYLE		
Meal Planning	**Meal Planning**	**Meal Planning**
Baking, canning home food preparation	Growing own food	Home cooking
Importance of a regular health maintenance program	Getting body into shape	Get on health maintenance program
Planning winter vacation	Hunting trip	
Desire to entertain	Developing friendships	Friends visit family at farm

Figure 15. Evidence of agreement between families on expressions related to concrete value indicators in specific areas of life.

Figure 15 (cont'd.)

Category			
FARMING			
	Family 1	**Family 2**	**Family 3**
	Animals to provide fiber	Varieties of animals for different purposes	Consider getting dairy goats
	Cut down on equipment needs for crops	Buy as little equipment as possible	Purchase as little equipment as possible
	Provide good research data	Knowing inputs into farming enterprise	
	Practice preventive maintenance	Reclaim damaged land, trees	Take care of land make it well
		Planning for farm	Enterprise planning
BUSINESS			
	Develop computer skills		Learn computer skills
		Get small massage business going	Plan to open home baking business
ENVIRONMENT			
	Make home cozy	Get home in liveable condition	Rearrange house
		Wood stove	Get wood stove
	Pick garden spots	Experiment and learn with garden	

Figure 15 (cont'd.)

Category		
COMMUNITY INTERACTION		
Family 1	**Family 2**	**Family 3**
	Church not important	Do not attend church
OTHER		
Stay longer than three years on farm	Help others do what project is doing	Communicate with other project
Set up child care and activities with other project families		Friendship with other project families

Agreement between all three families in the life style category occurred for meal planning, health maintenance, preparing their own food, and developing friendships and entertaining.

In the farming category, purchasing as little equipment as possible for the farm was a value held by all three families. Farm animals would be selected for different purposes by these families. Families 2 and 3 stressed the value of reclaiming the land.

Values expressed in the business category were held by two of the families rather than by all three of them. Developing computer skills was shared by the first and third families, while getting small businesses started was held in common by the second and third families.

All three families expressed the value of getting the house in liveable condition. Other values expressed in the environmental category were shared by two of the families. The first and second families placed value on their home gardens. Getting a wood stove was a shared value for the second and third families.

Church was the only community resource mentioned in these interviews. The second and third families did not feel that attending a formal church was necessary to gain a spiritual foundation.

The final category, Other, contains concrete expressions of values that do not fit into the other categories. Agreement was expressed by all families that staying for a longer period of time than three years was desireable. The first and third families felt that friendship and activities with other project families was desireable.

CHAPTER VI

SUMMARY, CONCLUSIONS AND IMPLICATIONS

Summary

Purpose

The purposes of this study were to develop and compare conceptual schemas for reduction of in-depth qualitative data using the microcomputer, and to determine the relative gains derived from the conceptual schemas developed in the study. The methodology that was developed utilized the StarSeries family of microcomputer software on an Apple IIe microcomputer to sort and analyze qualitative data in a variety of ways.

The study was guided by the following research questions:

1. What is the relative gain by using an a priori theoretical conceptual schema to analyze qualitative data as compared with a conceptual schema developed from and grounded in family responses?

2. What specific steps are required to utilize the microcomputer and available software for analyzing non-numeric data?

3. What values are identified in the statements made by family members?

4. What identified values are held in common between families? In what identified values do families differ?

5. What identified values are held in common among family members? In what identified values do family members differ?

Conceptual Framework

The overarching conceptual framework for this study was the human ecological framework. Human ecology is the study of the interrelations of humans and their environment. The assumption was made in studying the family ecosystem that the phenomena, in this case the expression of family values, and the family must be examined in their wholeness of interaction and interrelatedness.

The ecosystem has three central organizing concepts: the environed unit, environment, and the interactions and transactions between them. In this study, the family was the environed unit. Their environment was their farmsite and neighboring community. Examining the values held by the families can enable researchers to understand the interactions and transactions between the families and their environments. Data were collected based on the Family Farm Ecosystem model developed by Bubolz, Sontag, and Ledwith (Appendix A).

Williams (1965) identified fourteen theoretical values that are held by many American people. He posited that social norms are the rules that guide people in reaching goals that are valid and valuable for human beings.

Values have four qualities, according to Williams. They have a conceptual quality and are abstractions drawn from individuals immediate experiences. They represent actual or potential emotional mobilization. Values are the criteria by which goals are chosen. Values are important.

Williams considered evidences of values as pointers that indicate what the value holder means. When used in combination, values indicators gain reliability. He implied that values are arranged in a pattern, interdependent, and subject to reciprocal or mutual variation.

Methodology

This study isolated some of the relationships between identified values held by the three farm families within their ecosystem. Both Williams' descriptions of value systems and the ecosystem approach to the study of the family embrace the concept that values and behavior are interdependent and subject to reciprocal or mutual variation.

The families studied in this project are part of a large research project which involves study of various aspects of small scale farming. The husband and wife in each family were interviewed by the principal investigators and this researcher during the first month in residency on their small farms. Interviews were conducted in the participants' homes, and were the first interview the research team had with each family.

Interviews with the second and third families were conducted eleven months after the interview with the first family. During that time, researchers had gained experience in the interview process and project management. They had also become more sensitive to the needs and areas of sensitivity that were expressed by family members. Interviews with the second and third families were changed somewhat to respect the participants' sensitivities. The data and findings need to be examined with this in mind.

Interviews were recorded on audio tape, then transcribed into microcomputer readable format using an IBM-PC microcomputer and a WordStar (1983) word processing software program. The data were then transferred to an Apple IIe microcomputer readable format. Sorting and computer analyses were completed on an Apple IIe microcomputer using the StarSeries software programs.

Coding Schemas

An a priori values coding schema for data analysis was developed, based on the work of Williams (1965). His work was selected because it was well known, had a theoretical base, and has been tested. The coding schema consisted of two levels of value indicators with fourteen terms in each level. (Figure 2).

Interviews were searched four times, using the coding schema that had been developed. Value indicators were marked for identification. The results of the four searches of data showed that researchers frequently used the theoretical terms in their speech, but family members did not. Thus, the theoretical coding schema did not identify the values held by family members.

A second coding schema was developed for the purpose of bridging the gap between the theoretical level coding schema and the natural language used by family members. This consisted of twenty two value flags which were words used to alert the researcher that a value was about to be expressed in lay terms. (Figure 3). The data were searched twice to identify and mark value flags. Numerous expressions of value flags were noted. Indexes of each interview were created to

enable the researcher to locate value indicators on printed copies of each interview (Figure 4).

Searches using value flags allowed the researcher to identify concrete or specific expressions of values by family members. (Figure 5). Value topics were identified by using value flags. The researcher then analyzed the context of the statements surrounding the value flags and assigned a value topic. The topics were then grouped into categories (Figure 8) that correspond to the Family Farm Ecosystem model. (Appendix A). During this process, the theoretical values, based on William's schema, clearly emerged in the later stages of the project. The researcher worked to identify the theoretical values in the data throughout the research process.

Results and Findings

Assessing the importance of values to the respondent is difficult. If asked directly, respondents may express values that they feel they should hold, or that they think the interviewer wants to hear. For this reason, unobtrusive measures of phenomena such as values have been developed in which occurrences of behaviors are counted as an indicator of the presence of the phenomena under study.

In order to gain a more complete understanding of a phenomena such as values, qualitative and quantitative measures can be used together to extend or enhance the researcher's understanding. For example, in the interview, members of Family 1 stated they wanted to go back to school, while members of Families 2 and 3 stated they were satisfied with their formal education, and did not want to return to school. When analyzed numerically, little difference between the families was

noted for the value topic of education (4%, 4%, and 6% respectively).

Another instance in which qualitative and quantitative data analysis enhanced the understanding of the value was with the theoretical value of religion. During the interviews, the question that was asked to elicit family values about religion was defined as referring to the concept of spirituality as well as, or in place of, attending church. Both Families 2 and 3 expressed the importance of developing spiritually, but did not feel that church attendance was necessary to accomplish this. Family 1, on the other hand, expressed the desire to become active in a local church. Yet when analyzed by counting the occurrences, the value topic of religion was mentioned slightly more frequently by Families 2 and 3 (6% and 3%), than by Family 1 (1%).

Thus, the stated importance of a value may or may not be reflected in statements of behaviors which represent that value. For this study, the frequencies of expression of theoretical values in behavior statements by family members were used as indicators of the importance of these values.

Data were analyzed in response to the research questions. Theoretical values and value topics were identified and rank ordered for each of the families. Value patterns were identified where they occurred.

The most frequently expressed value topics for the first family consisted of family life, animals, and small home business. The second family expressed farm enterprise, resources/skills, and health most frequently, while the third family indicated life style, farm

enterprise, and the research project more frequently than other value topics. Farm enterprise is the only value topic in which there is overlap between the second and third families. No overlap was found between the first family and the other two families.

A unique set of value indicators was identified for each family through microcomputer sorting and hand analysis techniques. Comparisons between families based on their concrete expressions of values showed agreement between families in all seven categories (Figure 15). When the concrete value indicators were translated into the higher level theoretical values, the three families were found to be similar in several values, including efficiency and practicality, activity and work, helping and giving, and science and research.

Results from analysis of these interviews revealed that two values, nationalism and patriotism, identified by Williams were not referenced by any of the family members participating in this study. The values of equality, freedom, fairness, and democracy were referenced only two or three times. Thus only part of Williams' schema was expressed frequently in this study.

Three theoretical values which were not included in Williams' American values emerged during the analysis of the family interviews. They included aesthetics, human relationships, and human continuity or rootedness.

The value topics and concrete expressions of values by family members resulted in a picture of a value system that is unique to each individual family. On the individual family level, families differ in the concrete values that they expressed in their every day

life. When their concrete or specific expressions of values were translated into the higher level theoretical values, however, similarities between families were evident.

The microcomputer applications developed for this project were effective in allowing the researcher to perform multiple manipulations and analyses of the data, using two different coding schemas. The coding schemas that were developed provided opportunities to look at slices of data on different levels of abstraction, and to make comparisons of them.

Interpretation of Procedures and Findings

Throughout the identification and analysis process, interpretation of procedures, data, and findings were required. Human thinking and decision making were necessary to interpret the theoretical and a priori coding schemas and to create a system by which they could be entered into the microcomputer. The microcomputer could then be used to perform the repetitive sorting and identification processes for which it was designed. The results of the microcomputer processes required human interpretation and analysis before the next step could be designed with which the researcher could be assisted by the use of the microcomputer.

Knowledge of theory, the research families, and the capabilities of the microcomputer had to be effectively interwoven to accomplish the data analysis for this project. Each step was a time consuming process which required the fitting together of many parts for the system to work as a whole. Sequential steps were based on previous procedures, and were not accomplished in isolation. Human thinking

was also necessary to instruct the computer to perform the required functions.

Time was required to learn the software programs, problem solving, searching, indexing, and printing using the microcomputer. All of this was in addition to the time required for data collection, application of theory and analysis and interpretation of data (Figure 10). Effective use of time was required in addition to the availability of time.

Conclusions

Use of a priori Coding Schema

In response to the first research question presented in this study, the development and use of an a priori coding schema based on William's (1965) work to identify American values, provided a theoretical foundation on which specific analyses of individual and family values could be made. When initially used, it did not identify the values held by individual family members, or by family groups.

Individual responses may be value laden, but unidentifiable from a transcribed interview because they lack a theoretical base to help organize and interpret them. A bridge is required to fill the gap between the theoretical and concrete levels of expressions of values indicators.

Analyses of the data on various levels illustrated differences in the ways language was used by researchers and family members. Researchers tended to speak in theoretical terms. Family members spoke in concrete terms. Thus, researchers need to communicate with research participants in language terms that are close to the

participants' patterns of communication.

Williams' work was an effective theoretical foundation on which to base an analysis of values. Findings supported the presence in these families of several of the American social values identified by Williams. Williams schema, however, needs to be updated to reflect values held in America in the 1980s. Three additional theoretical values that should be considered in addition to the original fourteen that Williams identified include aesthetics, human relationships, and human continuity, or rootedness.

The theoretical level of value indicators that was used in this study provided a foundation and focus for analysis of the data. It also established a structure for the study. This was helpful in maintaining a direction and focus for data analysis. There was a tendency to force some data into the pre-defined categories based on a coding schema. This is a questionable practice that requires further analysis to determine whether the data have become biased.

Use of the Microcomputer

The capability and flexibility of the microcomputer to analyze large amounts of data can not be overlooked. The applications of microcomputer technology and methodology provided the capacity to conduct multiple searches of the same data. The data have been searched, sorted, marked, labeled, and identified on 50 different terms. Each term has been searched four times. Time, fatigue, and human error would preclude the possibility of multiple searches of this magnitude by hand.

The use of at least five different microcomputer programs in the

analyses of these data is a rudimentary beginning in the exploration of qualitative data. Some of the steps were cumbersome, but provided a thorough analysis of data with little likelihood of data being lost because of the limited human capacity to hold myriad amounts and forms of data and information on a conscious level.

More than 100 pages of single spaced narrative were searched and analyzed for this project. Time saved by the use of microcomputer technology cannot be accurately measured at this time. Records of the actual time involved in computer applications and analysis were kept and are included in Appendix F. Time was required to learn and to use the computer programs at the beginning of the project. The development of new and unusual applications of the microcomputer programs required additional time. The entire process was time consuming and tedious to perform. The results, however, have yielded thoroughly analyzed data on which to base findings.

Microcomputer applications did not eliminate, however, the need for hand examination and analysis of the data. Numerous interpretations and judgments were required during each step of data analysis. In many instances, procedures were outlined using a pen and paper prior to applying them on the microcomputer. Procedures were developed and tried before they could be applied to data analysis. The development of procedures consumed more time than did the analysis of data.

The use of the microcomputer in analyzing qualitative data does not imply that data analysis will necessarily take less time than when the analysis is done by hand. When the microcomputer is used,

researchers may be tempted to do more analyses than would be possible without it. Thus, the time saved by using the microcomputer may be usurped by additional and more diverse types of analyses.

Identification of Values

The values identified by the three participating families created a unique picture of each family. On a concrete level, some patterns of values could be identified. After specific value indicators had been translated into higher level theoretical values, similarity of value patterns was also observed.

Families with children expressed similar concrete values related to raising their children and their extended families. All three families indicated values regarding meal planning, producing and preparing their own food, health maintenance, and friendship. Values held by all of the families related to farming included purchasing as little equipment as possible and selecting animals for a variety of purposes. Making the house cozy or liveable was a value expressed by all families in conjunction with their environment. Finally, all three families expressed the desire to stay longer than three years on the farm to be able to communicate with others about the goals and accomplishments of the project.

Family values cannot be readily identified by examining qualitative data for theoretical values or for concrete value statements without intervening steps. The use of value flags was an essential step in bridging the gap between statements made by the research families and theoretical values identified by Williams. The value flags alerted the researcher to the presence or possibility of a

value being expressed. Once the value flags were identified, surrounding text could be examined for the presence of values. Additional analyses could then be made in the process of identifying theoretical values from the concrete statements made by family members.

Generalizations of the research findings cannot be made without further research which would involve a greater number of families. The interviews that were analyzed did not provide information on why families hold the values that were identified. Checking with the families to confirm the findings included in this study is essential.

The processes of data analysis in this study utilized a grounded method of theory development. While an a priori theoretical schema was used, few pre-conceived ideas existed regarding the values or classifications of values contained in the interviews from the three farm families. As analyses proceeded, they were grounded in the data contained in the interviews. New theoretical concepts were developed based on the outcomes of the data. The concepts were then compared with reliable and established values theory. Based on this comparison, changes were made in the new concepts.

Implications

The coding schema used for this study was based on the work of Robin Williams. Other theoretically based work could be selected to provide the foundation for developing coding schemas for analysis of qualitative data. Further work needs to be done by researchers in the

processes of adapting existing theories to create contemporary coding schemas.

The present study was based on one interview with each of three participating families. It was the first interview in a long term research project in which the families are participants. Valid and/or reliable generalizations cannot be made from one interview with each family. All of the interviews conducted with the families should also be analyzed using the same criteria to gain an accurate, comprehensive picture of family values for these families.

Increasing contacts and time spent with the families in a variety of ways contributed to how much, and in what ways families and individuals shared personal and intimate feelings and life experiences with researchers. Family members responded differently to the ways in which interviews were conducted, and to the presence and participation of different researchers. Through passage of time and multiple contacts with researchers, participants tended to pick up and use "researcher language."

The researchers gained experience and developed awareness of family needs and sensitivities during the first year when eight interviews were conducted with the first family. This experience resulted in changes which were incorporated into the research process. Thus, the research process evolved and changed as the project progressed and will likely have implications regarding analysis and interpretation of data that were collected from Families 2 and 3 under different conditions.

Major implications for researchers resulted from the development and use of value flags to bridge the gap between natural and theoretical language uses. It may be more effective for researchers to reserve theoretical language for the research office and to communicate with participants in their natural language.

At first glance, some values expressed appeared to be contradictory to other values. Upon further probing, it was learned that some behavioral indicators of values were instrumental to enacting another value. For example, one family expressed the value of making the farm self supporting. However, economic and other resources obtained from off farm employment were temporarily required in order to amass the capitol needed to make the farm self-sufficient.

It is possible that some values expressed in the interviews may have been overlooked as a result of a missing value flag. Researchers could reduce the liklihood of missing data by sampling the transcripts for different or additional value flags. For example, words such as make, get, or getting might produce statements that include values held by the families. Care should be taken , however, to avoid generating so many flag words that coding and analysis become meaningless or impossible to accomplish.

Researchers who have had extended or multiple role contacts with research participants may inadvertently interpret data based on information gained from extended contacts. Analysis of data by individuals who have not been involved with the families can serve as a reliability check on data analysis.

Constraints of time on this study caused limitations in the type

and amounts of computer applications that could be considered. Future studies could carry the work that was started here into the use of data management programs to generate forms and to provide quantitative analysis to support the ongoing qualitative analysis. This would eliminate hours of tedious hand work.

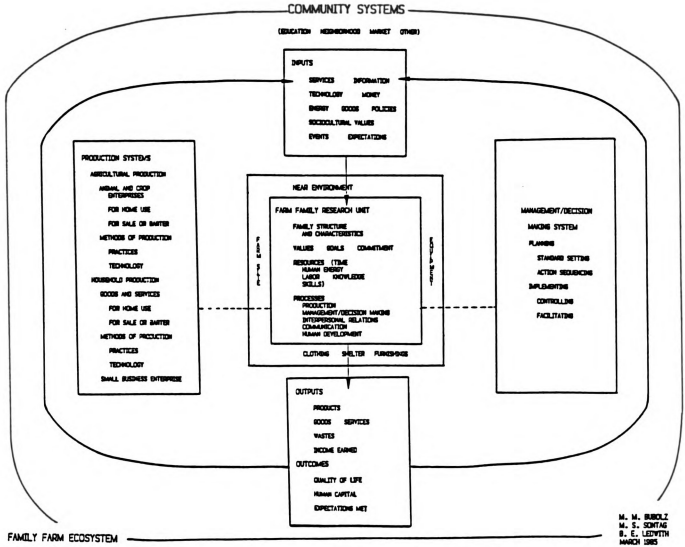
Microcomputers should be used in a manner that would take advantage of all of their capabilities. Word processing, data management, statistical and numerical analysis, graphics, and presentation applications would all contribute to comprehensive analyses and management of data on research projects.

Finally, both microcomputer and the human intellect are needed for effective research. While the microcomputer would allow for efficient and reliable repetitive work in the research process, the human intellect is needed to originate ideas, theorize, and interpret the data generated in the research process. Through the combined use of microcomputer technology and human intellect, qualitative and quantitative data can be analyzed for a more thorough understanding of the phenomena under study.

APPENDICES

APPENDIX A

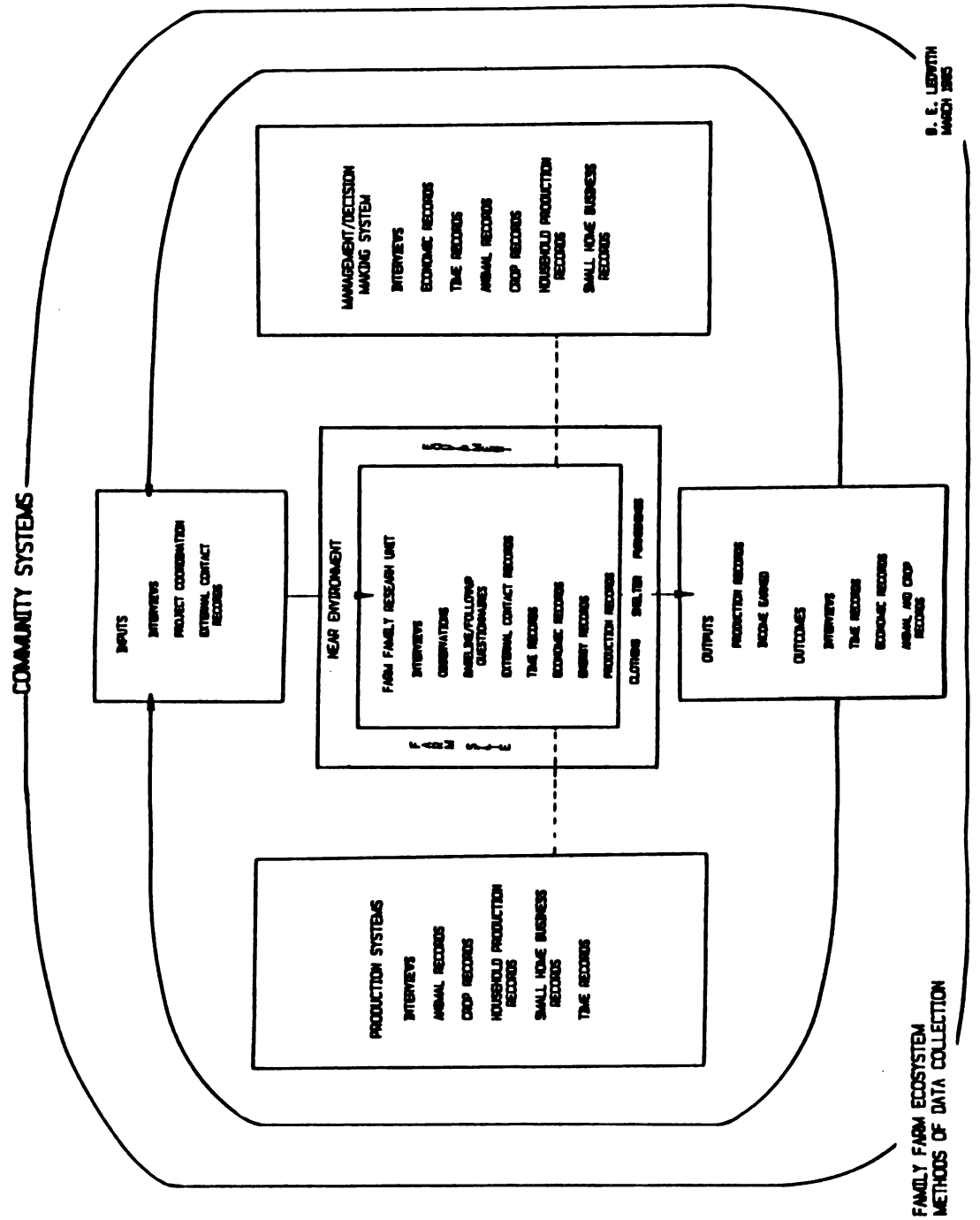
FAMILY FARM ECOSYSTEM


COMMUNITY SYSTEMS
(EDUCATION NEIGHBORHOOD MARKET OTHER)
INPUTS
SERVICES INFORMATION
TECHNOLOGY MONEY
ENERGY GOODS POLICIES
SOCIOCULTURAL VALUES
EVENTS EXPECTATIONS
PRODUCTION SYSTEMS
AGRICULTURAL PRODUCTION
ANIMAL AND CROP ENTERPRISES
FOR HOME USE
FOR SALE OR BARTER
METHODS OF PRODUCTION
PRACTICES
TECHNOLOGY
HOUSEHOLD PRODUCTION
GOODS AND SERVICES
FOR HOME USE
FOR SALE OR BARTER
METHODS OF PRODUCTION
PRACTICES
TECHNOLOGY
SMALL BUSINESS ENTERPRISE
NEAR ENVIRONMENT
FARM FAMILY RESEARCH UNIT
FAMILY STRUCTURE AND CHARACTERISTICS
VALUES GOALS COMMITMENT
RESOURCES (TIME HUMAN ENERGY LABOR KNOWLEDGE SKILLS)
PROCESSES
PRODUCTION
MANAGEMENT/DECISION MAKING
INTERPERSONAL RELATIONS
COMMUNICATION
HUMAN DEVELOPMENT
CLOTHING SHELTER FURNISHINGS
MANAGEMENT/DECISION MAKING SYSTEM
PLANNING
STANDARD SETTING
ACTION SEQUENCING
IMPLEMENTING
CONTROLLING
FACILITATING
OUTPUTS
PRODUCTS
GOODS SERVICES
WASTES
INCOME EARNED
OUTCOMES
QUALITY OF LIFE
HUMAN CAPITAL
EXPECTATIONS MET
FAMILY FARM ECOSYSTEM
M. M. BUBOLZ
M. S. SONTAG
B. E. LEDWITH
MARCH 1985

APPENDIX B

FAMILY FARM ECOSYSTEM

METHODS OF DATA COLLECTION


COMMUNITY SYSTEMS
INPUTS
INTERVIEWS
PROJECT COORDINATION
EXTERNAL CONTACT RECORDS
NEAR ENVIRONMENT
FARM FAMILY RESEARH UNIT
INTERVIEWS
OBSERVATIONS
BASELINE/FOLLOWUP QUESTIONNAIRES
EXTERNAL CONTACT RECORDS
TIME RECORDS
ECONOMIC RECORDS
DIARY RECORDS
PRODUCTION RECORDS
CLOTHING SHELTER PURCHASES
FARM SYSTEM
MANAGEMENT/DECISION MAKING SYSTEM
INTERVIEWS
ECONOMIC RECORDS
TIME RECORDS
ANIMAL RECORDS
CROP RECORDS
HOUSEHOLD PRODUCTION RECORDS
SMALL HOME BUSINESS RECORDS
PRODUCTION SYSTEMS
INTERVIEWS
ANIMAL RECORDS
CROP RECORDS
HOUSEHOLD PRODUCTION RECORDS
SMALL HOME BUSINESS RECORDS
TIME RECORDS
OUTPUTS
PRODUCTION RECORDS
INCOME EARNED
OUTCOMES
INTERVIEWS
TIME RECORDS
ECONOMIC RECORDS
ANIMAL AND CROP RECORDS
FAMILY FARM ECOSYSTEM
METHODS OF DATA COLLECTION
B. E. LEWITH
MARCH 1985

APPENDIX C

INTERVIEW QUESTIONS FOR FIRST FAMILY

Interview Questions for First Family

1. We'd like to know what you have done and have been doing since you moved here?

2. Since moving to the farm, have you had to make changes in any of your plans, e.g. for you, your family, or the farm?

3. What are they?

4. Are you pleased/disappointed with the changes you've had to make?

5. Have you thought about any alternatives?

6. How did you arrive at the decision?

7. Has (how did) the change affected you other plans?

In your proposal, you wrote about some of the things that were important to you, and what you wanted to achieve. As a way of helping us to understand why you made certain plans, or have new plans, we would like to talk with you about your values and goals.

Values are our ideas about what is most important about life as a whole, and about various parts of life. Goals are things we want to achieve and attain.

8. What are the general values that you hold for your family?

9. What does (the stated value) mean to you?

10. Are there any other values that you hold for your family?

11. Are there differences between the values that you have for yourself, and those that you have for your family? What are they?

16. What goals do you have for your family?

    Long term?

    Short term?

    Middle term?

17. How do your family goals relate to the goals you have for yourself?

    How are they alike? How are they different?

18. In thinking about your goals, would you share with us your long term and short term goals in the following areas:

Farming	Farm Equipment
Home Based Business	Record Keeping
Bringing up Children	Home Appliances/Furnishings
House Care	Clothing
Food and Nutrition	Gardening/Lawn Care
Medical/Dental Care	Pet Care
Recreation/Leisure	Community Participation
Church	

19. Have your goals changed in any way since you moved here?

20. To accomplish your goals, what kinds of skills do you now have?

21. What other skills do you need to acquire?

22. What other skills would you like to acquire?

12. Do you have any particular values regarding:

or

Do you have any other values regarding:

Farming	Recreation
Education	Religion/spiritualism
Education for children	Community participation
Extended family	Natural environment
Friends	Material goods (clothing, car)

13. Do you have an idea of how you came to hold the values that you have?

14. How do you feel about being able to realize these values here at your farm?

15. Is there anything else that you would like to say about your values?

We've talked about values. Now we would like to talk about goals. Goals are things we want to accomplish or achieve. They are based on our values. Values are translated into goals, which are then carried into action through the use of various resources.

Goals can be divided into three types of goals: long term, medium range, and short term. Long term goals are often the largest, and the ones that require more resources of time, energy, money, and a commitment to accomplish. Short term goals may be the stepping stones to accomplish medium range goals. Medium range goals, in turn, may provide the means for accomplishing long term goals.

APPENDIX D

INTERVIEW QUESTIONS FOR SECOND AND THIRD FAMILIES

Interview Questions for Second and Third Families

We would like to know what you have done and been doing since you moved here.

1. Since moving to the farm, have you had to make changes in any of your plans? e.g. for you, your family, or the farm?
2. What are they?
3. Are you pleased/disappointed with the changes that you have had to make?
4. Have you thought about any alternatives?
5. How did you arrive at the decision?
6. Has (have) the change(s) affected your other plans?

In your proposal, you wrote about some of the things that were important to you, and what you wanted to achieve. We'd like to talk to you about that. As a way of helping us to understand why you made certain plans, or have new plans, we would like to talk with you about your values and goals.

Values are our ideas about what is most important about life as a whole, and about various parts of life.

Goals are things we want to achieve or attain.

7. What are the general values that you hold for your family?
8. What does (individual or family value) mean to you?
9. Are there any other values that you hold for your family?
10. Are there differences between values that you have for yourself and those you have for your family? What are they?

11. Do you have any particular values regarding:

or

Do you have any other values regarding:

Farming	Education
Education for children	Extended family
Friends	Recreation
Religion/spiritual life	Community participation
Natural environment	Material things (clothing, car)

12. Do you have an idea of how you came to hold the values that you have?

13. Is there anything else that you would like to say about your values?

14. How do you feel about being able to express or realize these values here in this situation?

We've talked about values. Now we would like to talk about goals.

Goals are things we want to accomplish or achieve. They are based on our values. Values are translated into goals, which are then carried into action through the use of various resources.

Goals can be divided into three types of goals: long term, medium range, and short term. Long term goals are often the largest, and the ones that require more resources of time, energy, money, and commitment to accomplish. Short term goals are ones that can be accomplished in a short period of time, while medium range goals fall between the extremes. Short term goals may be the stepping stones to accomplish medium range goals. Medium range goals, in turn, may provide the means for accomplishing long term goals.

15. What goals do you have for your family?

Long term?

Short term?

Middle range?

16. How do your family goals relate to the goals you have for yourself? How are thy alike? How are they different?

17. In thinking about your goals, would you share with us your long term and short term goals in the following areas:

Farming	Farm Equipment
Home Business	Record Keeping
Bringing up Children	Home Appliances/Furnishings
House Care	Clothing
Food and Nutrition	Gardening/Lawn Care
Medical/Dental Care	Pet Care
Recreation/Leisure	Community Participation
Church	

18. Have your goals changed in any way since you moved here?

19. To accomplish your goals, what kinds of skills do you now have?

20. What other skills, knowledge, and other resources do you need to acquire?

21. What other skills, knowledge, and other resources would you like to acquire?

APPENDIX E

EXAMPLE OF INTERVIEW INDEX

Figure 16. Sample index created by using StarIndex to locate value terms sorted on three levels.

APPENDIX F

TABLES OF FREQUENCIES

THEORETICAL VALUES

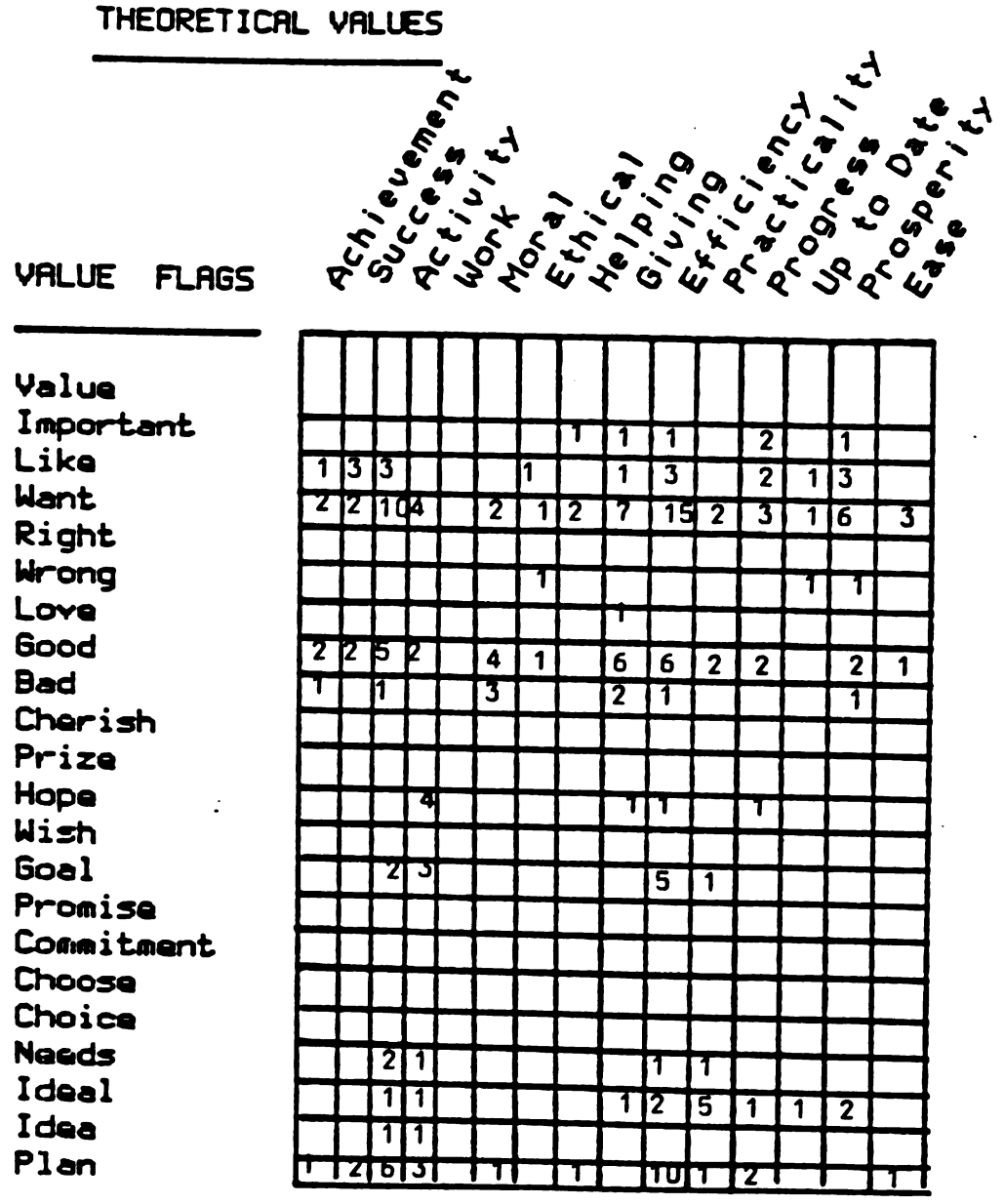


Figure 17. Theoretical values by value flags. Family 1 (two children)

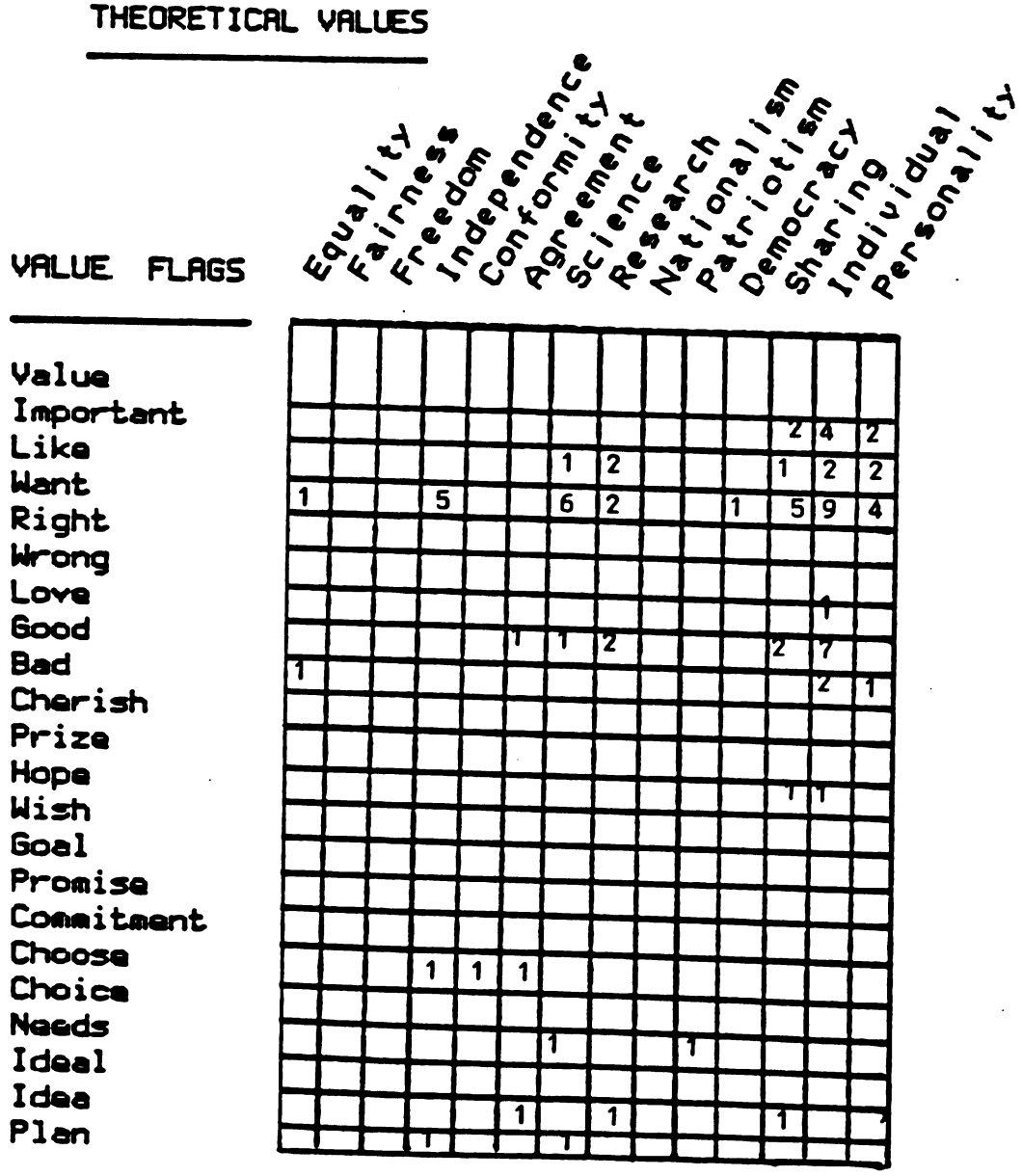


Figure 17 (cont'd.)

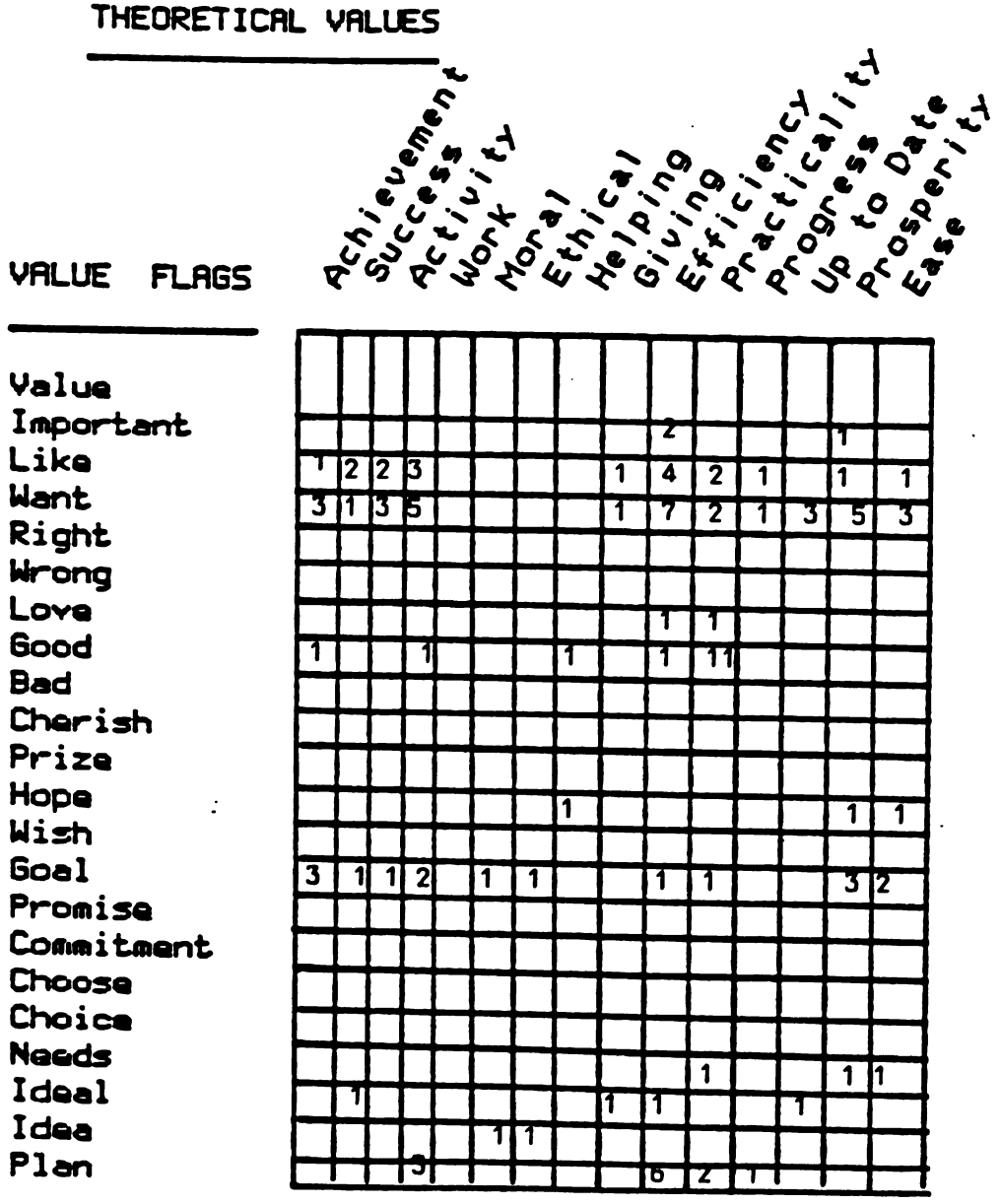


Figure 18. Theoretical values by value flags. Family 2 (no children)

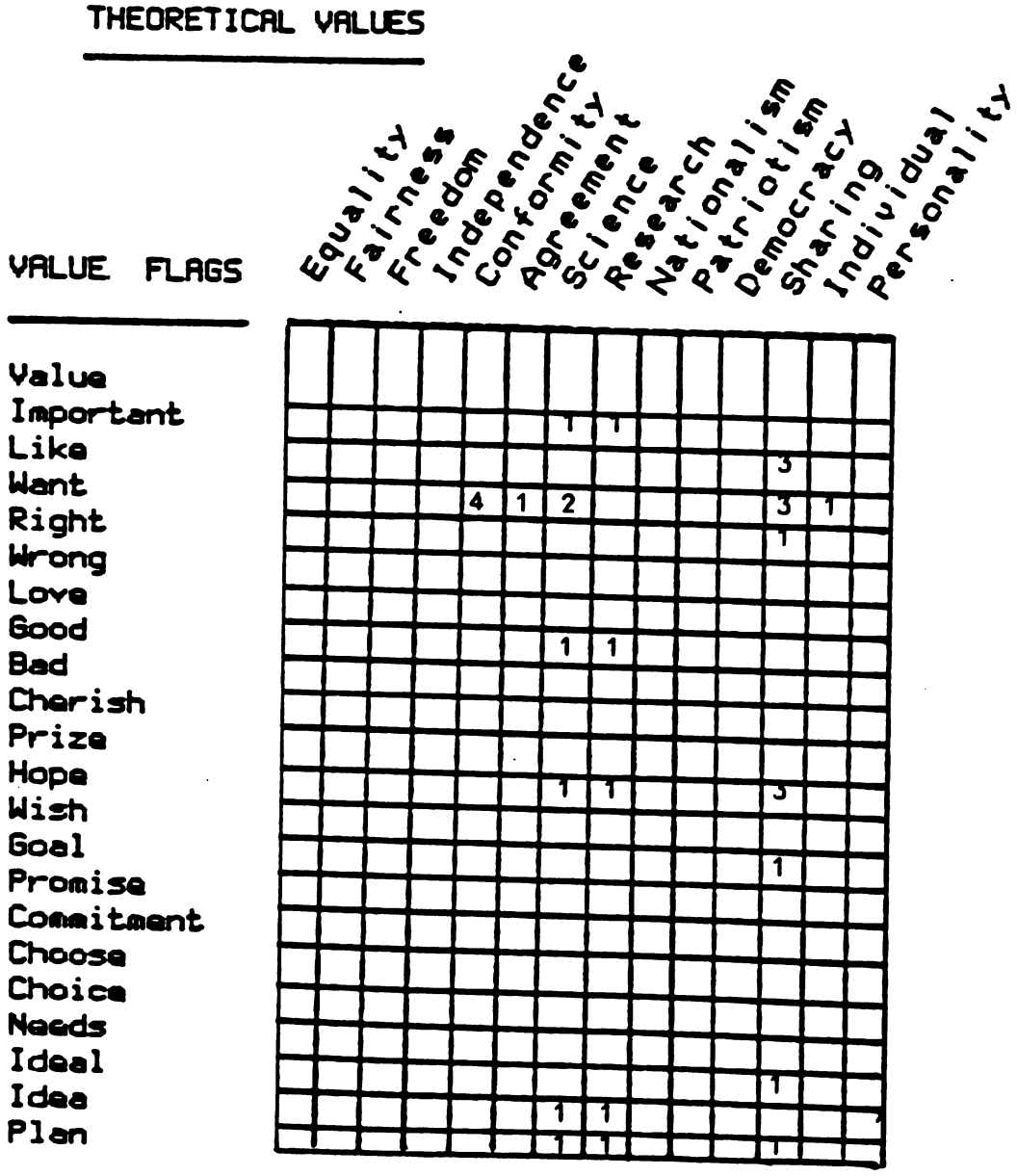


Figure 18 (cont'd)

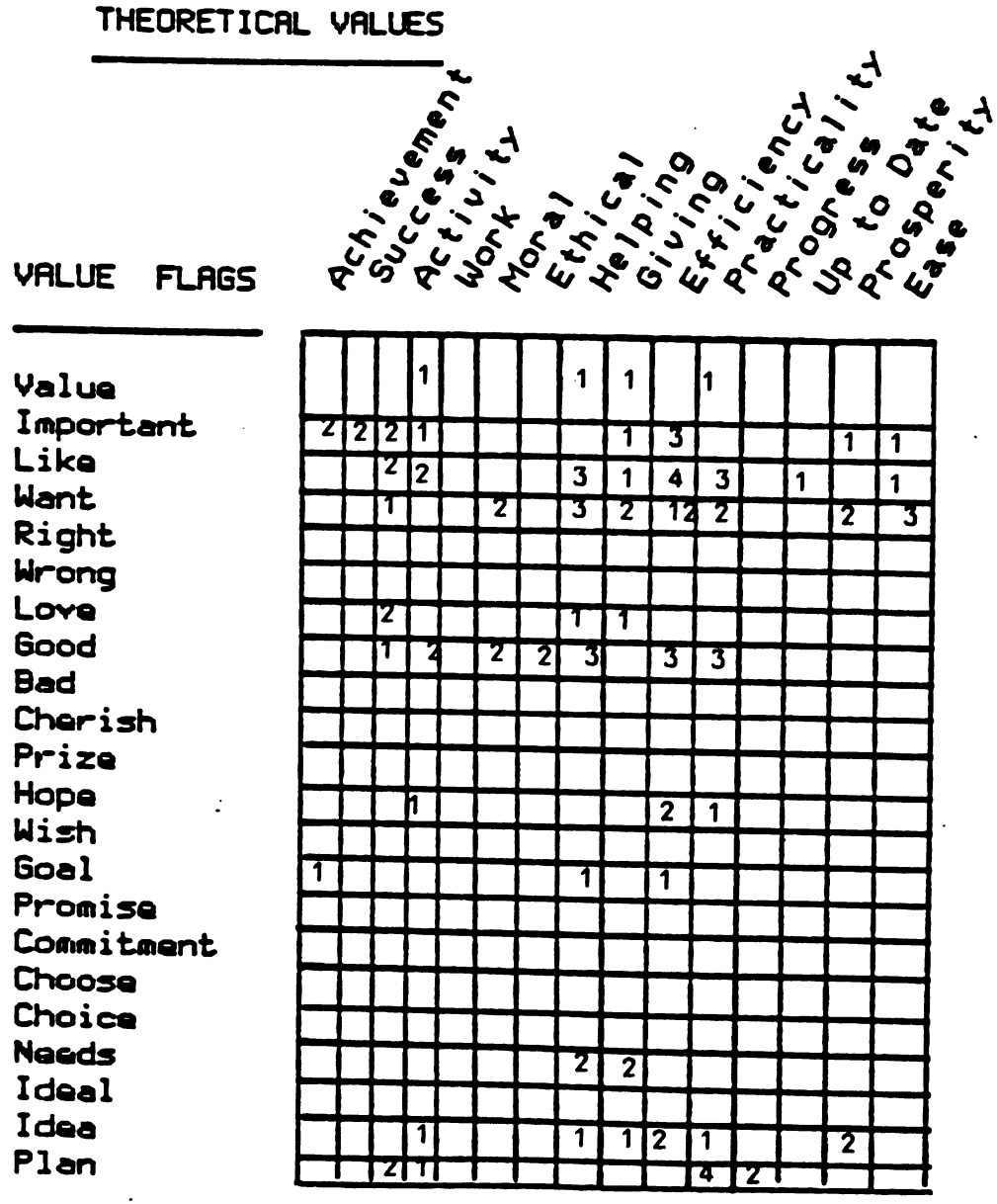


Figure 19. Theoretical values by value flags. Family 3 (two children)

THEORETICAL VALUES

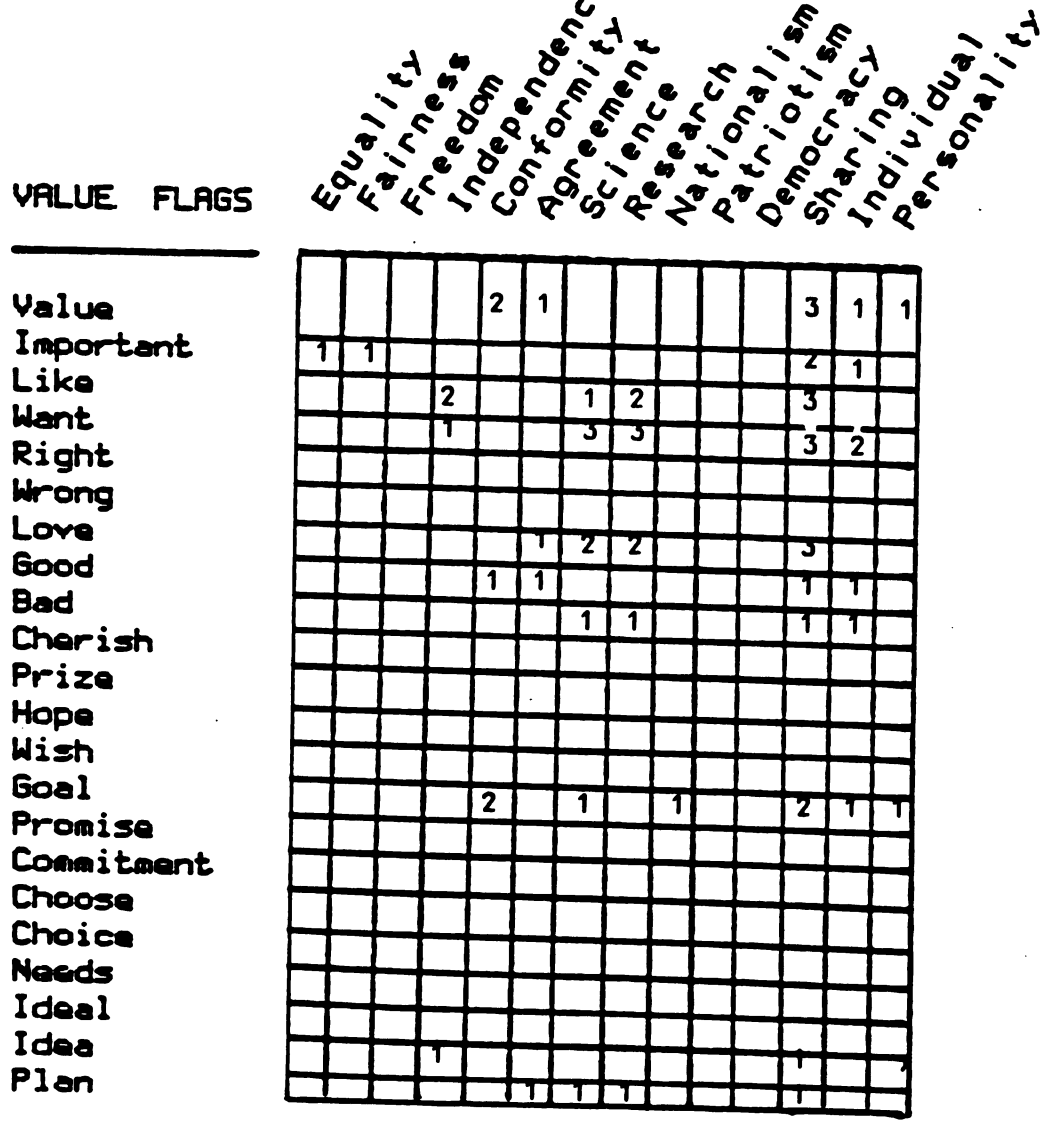


Figure 19 (cont'd.)

APPENDIX G

TABLES OF FREQUENCIES

VALUE TOPICS

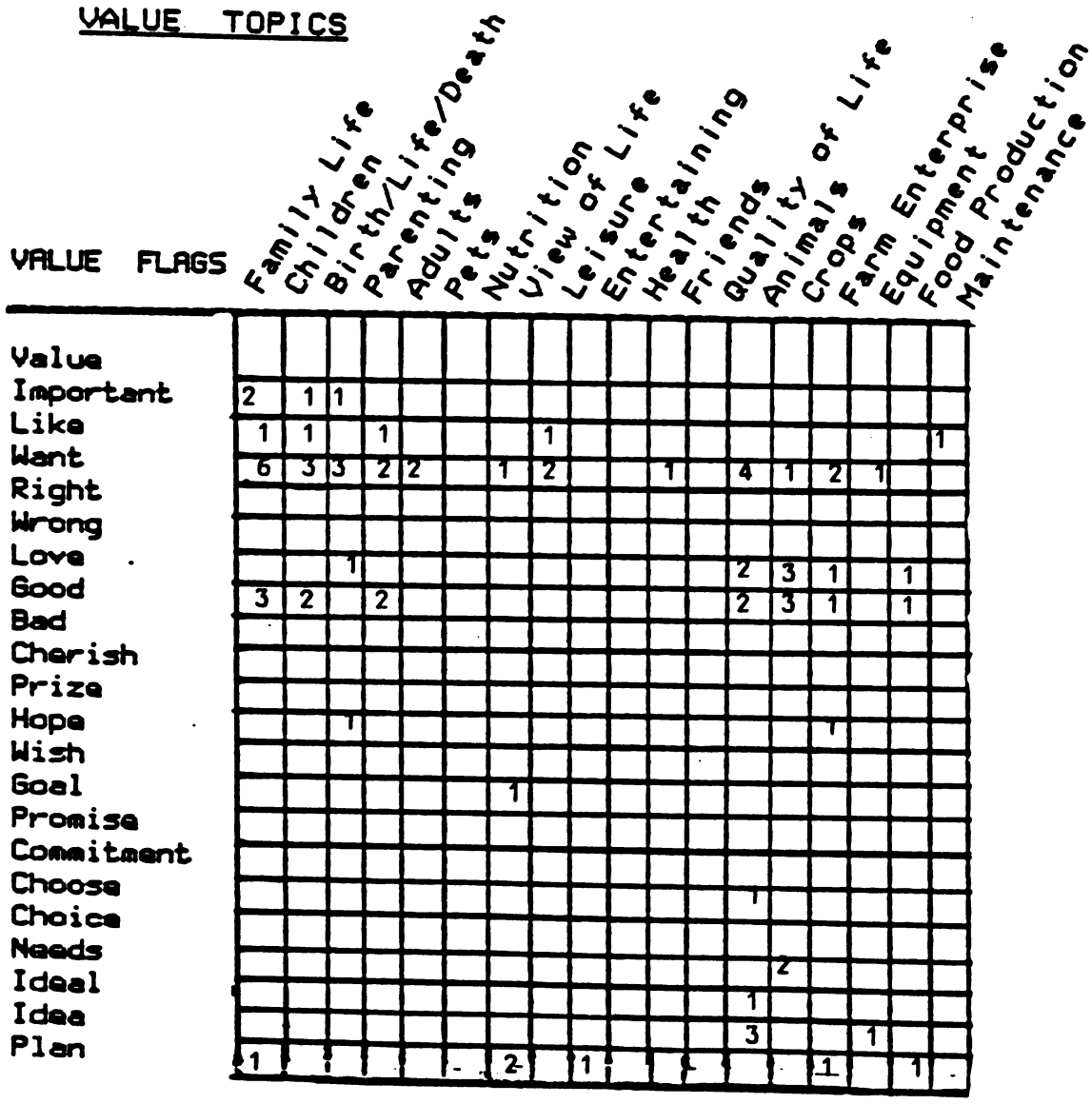


Figure 20. Value topics from value flags. Family 1 (two children)

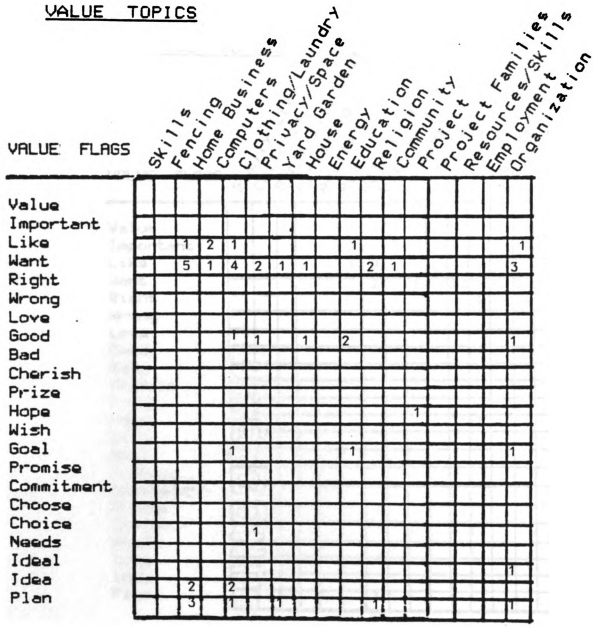


Figure 20 (cont'd.)

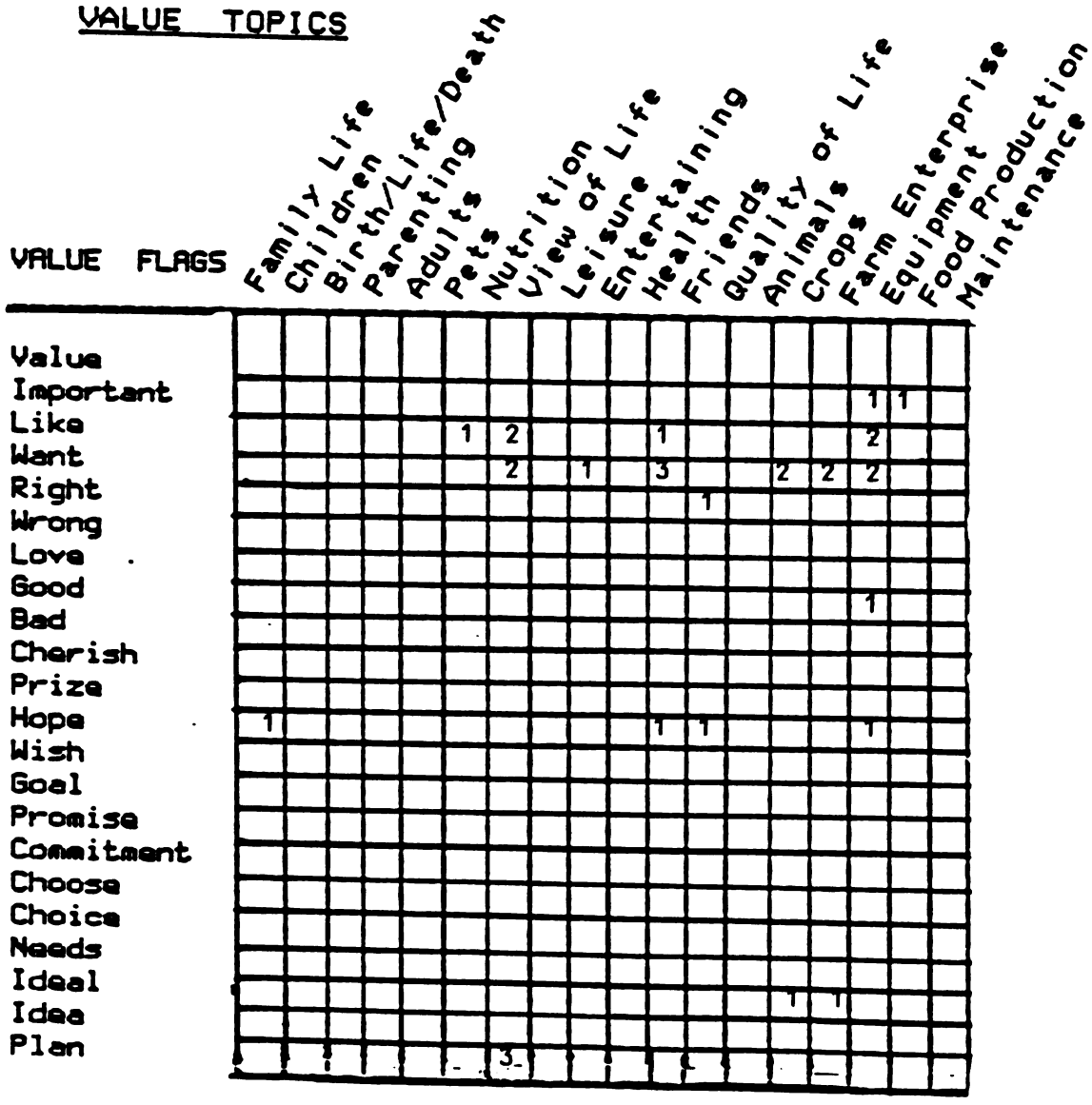


Figure 21. Value topics from value flags. Family 2 (no children)

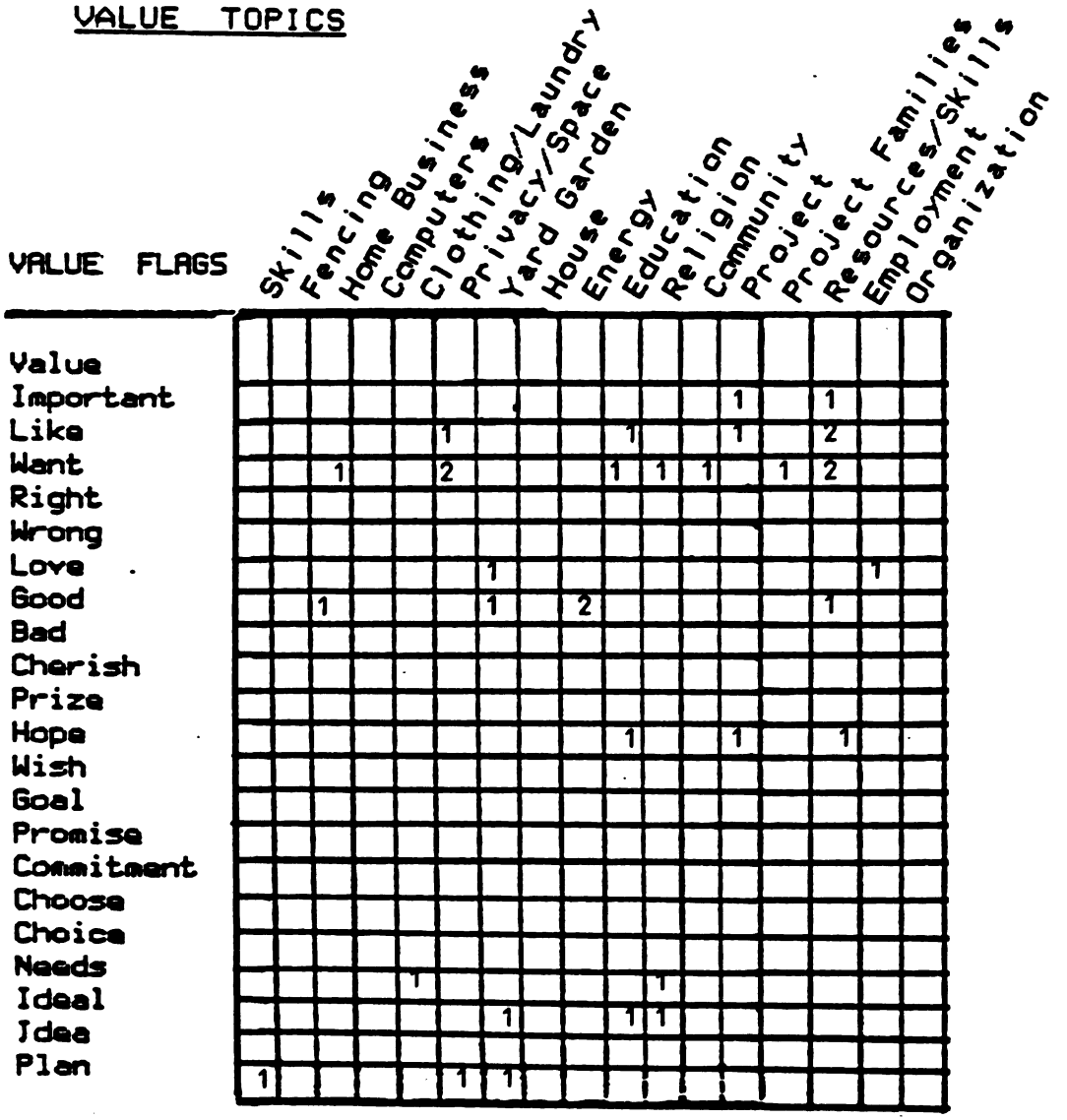


Figure 21 (cont'd.)

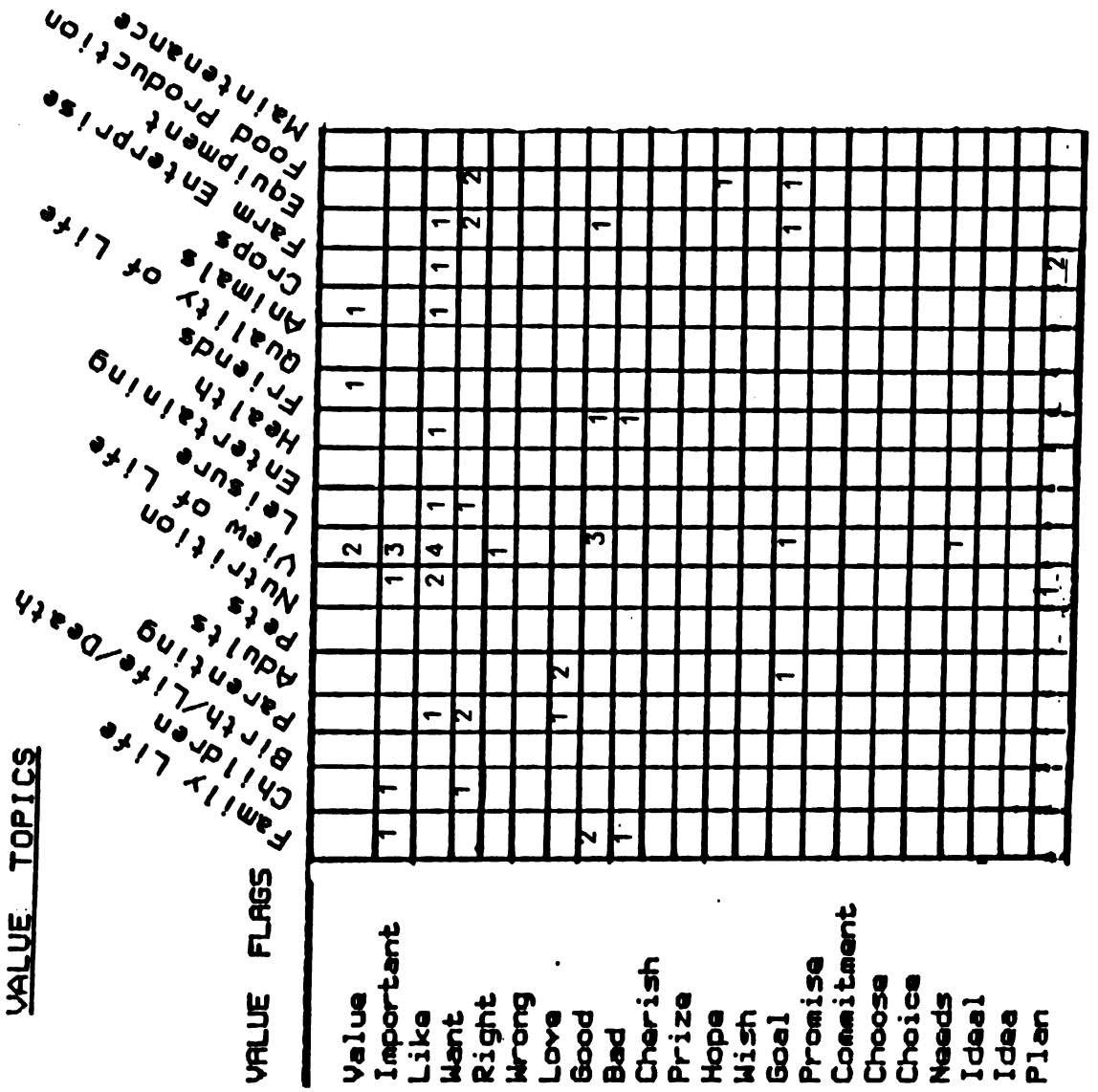


Figure 22. Value topics from value flags. Family 3 (two children)

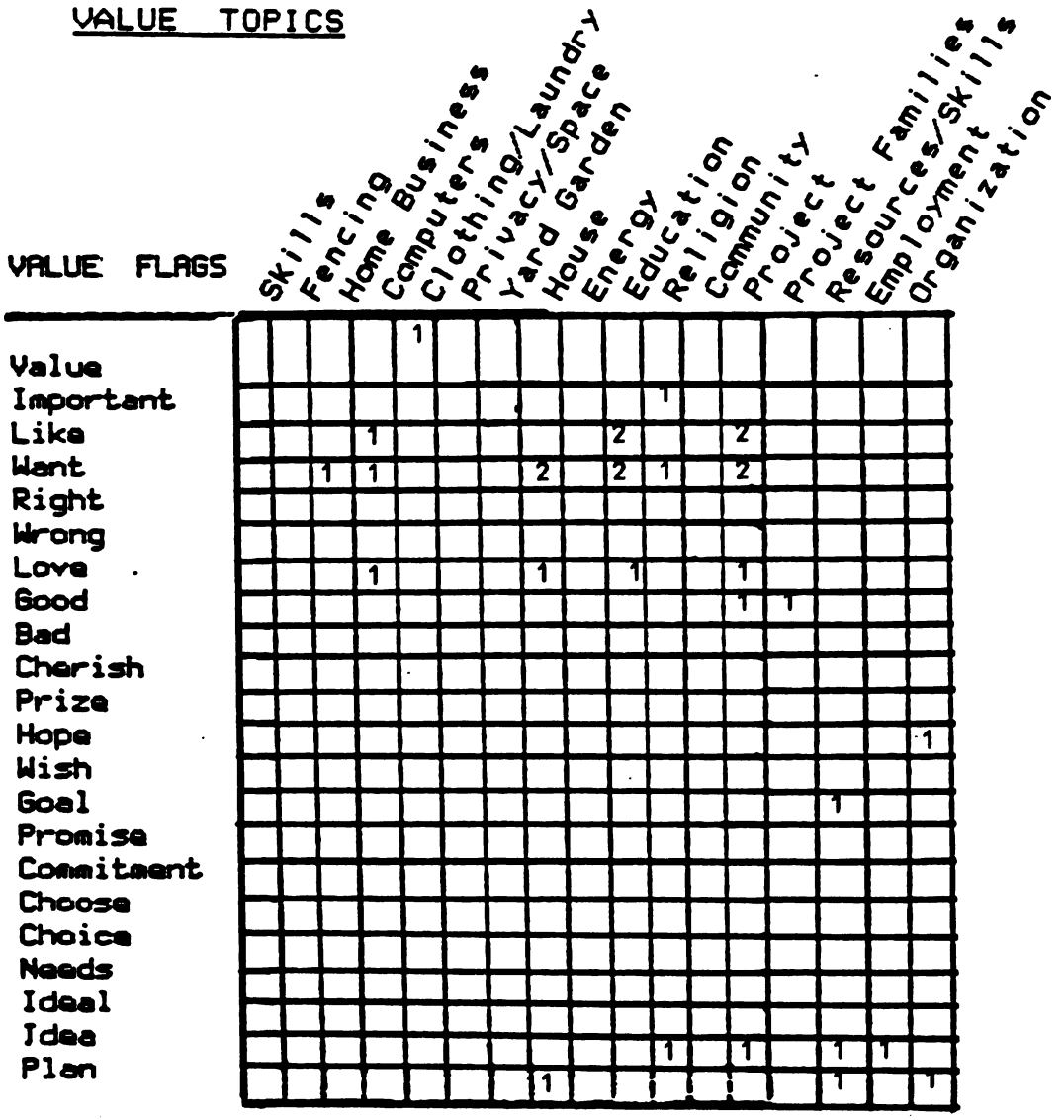


Figure 22 (cont'd.)

APPENDIX H

GUIDE FOR RESEARCHERS

GUIDELINES FOR USING MICROCOMPUTERS TO ASSIST IN ANALYZING QUALITATIVE DATA

Designing Analysis Procedures Suitable for Available Data

Selection of a Theoretical Framework

Microcomputers may be used to assist in analysis of qualitative data that are collected for current research projects, as well as for secondary analysis of previously collected data. The first step in qualitative data analysis is to select or determine a theoretical conceptual framework to use as a foundation for analysis.

Conceptual Definitions

Specific and accurate conceptual definitions need to be developed from the theoretical framework for use as a basis for coding. Key words on different levels of abstraction need to be identified for the purpose of conducting computer searches of the data. One set of key words should be derived from the theoretical framework on which the data analysis is based. Words for which conceptual definitions have been written may comprise the list of theoretical key words. A second set of key words should be identified from the participants natural language after the data have been searched for theoretical key words. Additional lists of key words derived from intermediate steps of data analysis may be useful to the researcher.

Coding Schemas

Qualitative data that have been recorded or transcribed from interviews or conservations will be recorded in the participants' natural language. Coding schemes that will bridge the gap between

natural and theoretical languages are necessary. The number and types of coding schemes required are dependent on the data analysis goals for the project.

Four increments, with their unique coding schemes for identifying theoretical values from interviews transcribed in the participants' natural language, were effective for this project. Hand analysis of data identified through the search processes completed the application of coding schemes to the analysis of qualitative data.

Minimum Microcomputer System Requirements

Hardware

Microcomputer with at least 128K memory

Monochrome monitor

Two disk drives

Dot Matrix Printer

Unnecessary problems may occur as a result of mixing microcomputer hardware components or systems. Care must be taken to insure the compatibility of the microcomputer components with each other, the entire hardware system, and the software being used.

Researchers should select a microcomputer system that is the same as, or compatible with ones currently in use, or planned for use within their institution. This will prevent the additional steps that are required to transfer data from one system to another when more than one microcomputer is used for specific research projects.

Software

Select an integrated software package with the following

capabilities:

Word processing to include spelling, indexing, and merging programs

Data management

Graphics

Financial Management (Spreadsheet)

Examples: StarSeries

PFS Family

AppleWorks

When using integrated software packages, the user is usually required to learn only one program. The procedures and commands for different programs within the package are usually similar, or the same. In addition, the programs can "speak to each other" and read data from one program into another within the same package. Thus, the researcher should be able to perform several different analysis functions on the same data set without entering it into the microcomputer more than one time.

Initial data management and reduction procedures may lead to additional analysis requirements as the project progresses. Care to select software packages that are powerful enough to perform all the functions that may be required for the complete research project is essential.

Some manufacturers produce software packages in several versions suitable for different microcomputer systems. Procedures for using various versions of the same software packages are often similar or identical. Thus, the researcher can apply the methods used on one

system to another system with a minimum number of problems. The advantage of selecting a multi-version software package is that new methodology may not have to be re-learned if different microcomputer systems are used for data analysis processes.

Microcomputer Procedures

Marking Key Words

After the identification of a theoretical framework for use in data analysis, developing conceptual definitions from the theoretical framework, and creating key words based on the theoretical framework and the natural language contained in the qualitative data are necessary to begin the data reduction and analyses processes. As the data set is searched for all examples of each key word, they are identified and marked in the interviews contained on the computer diskettes. Marking the key words on the disks serves the purpose of high lighting them for easy identification on subsequent searches.

Creating Indexes

Researchers need to ascertain whether their software package contains an index program. Indexes are useful in showing key words on different levels of abstraction. They provide the researcher with ready access to the page on which specific terms occur. When sorting through many pages of qualitative data, the index capability is an effective time saver. Initial patterns of behavior occurring within the data may be identified through studying the indexes. Indexes are also helpful in identifying key words on the hard copy versions of qualitative data.

Sorting and Analyses Processes

Between each microcomputer sorting process, hand analysis of the identified data is required. This serves three purposes: 1. It permits the researcher to study small slices of data at one time. 2. It allows the researcher to identify the next steps in the data analysis process. 3. It helps the researcher to determine what directions to give to the microcomputer to perform the next layer of data reduction.

The processes of microcomputer sorting and hand analysis of data should be repeated for each level of analysis. It is at this point that microcomputer methods for data management using data processing software should be developed. They would assist researchers in making comparisions between the slices of data, thus eliminating much of the tedious hand work that is required without the assistance of the microcomputer.

Data Collection

A single interview can provide researchers with a glimpse of the phenomena being studied. The findings from one interview need to be confirmed by analyzing subsequent interviews with the same participants or by analyzing interviews from a larger sample of participants. Analysis procedures for all interviews should to be consistent.

Following the analysis of the first interview, it would be desireable to return to the participants within one month for the purposes of providing feedback to them, and to have them validate the findings. Subsequent research procedures can be developed as a result

of analysis of initial interviews. Future interviews can be developed to elicit more information from participants on the same phenomena. Validation from larger numbers of participants would be required before any generalizations about the participants could be made.

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