3

METHODOLOGY

RESEARCH INTENT

This research study describes the social, behavioral, temporal and spatial qualities of a sample of professional homeworkers.

Many accounts of homeworkers are anecdotal descriptions of a few individuals portrayed in the popular media. But this imagery is founded upon much speculation and little empirical data (for some examples of popular press articles, see Brooks, 1984; Eder, 1983; Morf, 1983; Renfro, 1982; Schiff, 1983; Toffler, 1980). A few recent empirical studies address professional homework issues. These include studies by Olson (1983a, 1983b), Pratt (1984), Christensen (1985), Hirshey (1985), McLaughlin (1981), McClintock (1984), Ramsower (1985), Horwitz (1986), Becker (1981) and Antonoff (1985). Findings from these studies are discussed in the following chapters of this report.

The earlier research studies of homeworkers primarily focused on identifying the job and worker characteristics best suited for working at home. Recent work, including this one, is beginning to provide detailed information about the working and living patterns of homeworkers, and the adjustments and consequences of working at home.

When multiple divergent activities (i.e. housework, childcare, leisure, professional work) occur in the same space, changes in the structure of homes and neighborhoods, living and work patterns, may occur to accommodate such activities. Identifying these patterns, and assessing their success or hinderance in accommodating multiple roles in the same place, is the research intent of this study.

This report highlights those issues involving (1) the temporal allocation of activities in the home; (2) the importance of, and involvement in, community services and amenities for homeworkers; (3) preferences of physical home and workspace qualities; (4) the existing physical home and workspace conditions; (5) the success or hinderance of spatial, temporal, structural, and behavioral adjustments to fit professional work into domestic and leisure routines of the home; and (6) the changed meanings and feelings of home. These issues are each covered in chapters 5 through 10.
RESEARCH DESIGN

This study is a cross-sectional survey design, consisting of self-administered questionnaires, face-to-face interviews, a modified time diary, and photographs, sketches and a physical inventory of the home and workspace. One of three women interviewers met with a professional homeworker in his/her home, sometime between August and December 1986. The average length of interview time was 1 hour, 15 minutes, but ranged from 20 minutes (for interview only) to 3-1/2 hours. We paid each respondent $10 for his/her participation.

We conducted the interviews in a personal, conversational manner, probing frequently. This interview style elicited much information from the homeworkers. Even in response to fixed scale questions, they would mention episodes or explanations relevant to their answers. All of this discussion was recorded and used to interpret data analyses.

We interviewed a total of 104 homeworkers. In a few instances we could not complete the entire interview in the time allotted by respondents. In most cases this involved not completing the time diary (see description below).

SELECTION CRITERIA

Selection criteria for being interviewed included:

(1) regular work setting at home. Respondents could have other work settings, but a regular one (based on their own account) was at home. Since this was the central focus of the study, this selection requirement was essential.

(2) work a minimum average of 20 hours per week at home. Again this was a selection requirement to ensure that the sample would involve only people who actively use their home as a work setting.

(3) residence in metropolitan areas of Milwaukee, Minneapolis/St. Paul, Chicago, Los Angeles, or Sacramento. These areas were selected because of the proximity to the researchers, and because of a large number of homeworkers residing in these areas. A variety of areas was selected to allow for a variety of housing and community conditions. From these areas, 45 of the homeworkers lived in the Milwaukee area, 14 in Minneapolis/St. Paul, 27 in Chicago, 8 in southern California, and 10 in Sacramento. The small number in California does not reflect the small number of actual homeworkers residing in that state, but rather difficulties in contacting and scheduling interviews with homeworkers during the short stay of the researcher in California.
(4) use of a computer at home. Since one intention of this study was to make design recommendations for telecommunications equipment, this was an important requirement. There were 10 people who did not have a computer system in their homes. We interviewed these people and included their responses here because the nature of their work was very similar to the rest of the sample.

SAMPLING

Although probability sampling provides the opportunity for confidence in generalizability and use of inferential statistics, such sampling techniques could not be used in this study. A comprehensive sampling frame for professional homeworkers does not exist. Statements on the IRS Schedule C forms allow the taxpayer to indicate whether or not s/he is declaring part of the home as business. However, such statements would only include those persons making such a deduction from their home (e.g. some people work at home but not in a distinct work area and so cannot make such claims), and who are self-employed. Further, the names and addresses of these claims are confidential.

We conducted nonprobability sampling from a number of lists and personal references. Locating members of this "invisible" workforce began as a challenge. As time went on, and we understood the characteristics of this population better, it was rather easy to locate such people.

We gathered names of people from a number of different sources. The director of the National Alliance of Homebased Businesswomen provided us with a mailing list of members. We purchased a marketing list called the Cottage Industry File from Dun's Marketing Services. This list was derived from credit and insurance applications of businesses, as recorded by Dun & Bradstreet, who had listed their home addresses as their business addresses. This includes over 700,000 businesses. A subsequent telephone survey by Dun's Marketing tagged those individuals who indicated an interest in or ownership of a personal computer. This final list includes 8713 businesses.

Since the selection criteria required that the person use a computer in his/her work, work an minimum average of 20 hours a week at home, and reside within certain metropolitan areas, we did not randomly select from these lists, but rather contacted each individual by mail in the designated metropolitan areas (see Appendix A for sample letters). Our response from these requests was quite low: 5%. We called a portion of the nonrespondents in the Minneapolis and Milwaukee areas for whom we could locate a phone number. Although some of these nonrespondents did not want to participate, others mentioned that they did not meet the requirements: they did not own a computer (a sizeable number from the Dun's list did not own a computer, even though these persons were tagged on the listing as such owners) or did not work the minimum average number of hours per week at home.
We then contacted professional organizations whose members we felt might, by the nature of the organization, comprise a substantial number of people who work at home. Most directors gave us mailing lists with members' phone numbers. Since the numbers of members on these lists were large, and only a small percentage were assumed to be homeworkers, we contacted a sample of these people by phone. The response rate for those meeting sample requirements was quite high when solicited by phone. Sometimes the organizational contact would announce the study at a meeting, and allow people to pick up a letter describing the study and how to contact us.

We also contacted organizations known to have formal telecommuting programs. All but one gave us the names of their homeworkers or sent them a letter of introduction to the study and how to conduct us if they wished to participate. Electronic Survey Unlimited kindly referred us to a number of these programs within our interviewing areas.

A final source was personal references. Friends and colleagues often told us of acquaintances who worked at home. Also, respondents would know of other people who worked at home and gave us references.

The sources, and number of respondents, are included below:

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<td>Respondent Sources</td>
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| Dun's Marketing Services Cottage Industry File: 11 |
| National Alliance of Homebased Businesswomen: 7 |
| Firms with Telecommuting Programs: 17 |
| Personal Referrals: 34 |
| PC User Groups: 3 |
| Word Processing and Transcription Network Organizations: 6 |
| Independent Writers' Association: 19 |
| Independent Computer Consultant Organization: 2 |
| CompuServe Work-at-Home Interest Group: 2 |

No claim is made here on the representativeness of this sample or sampling technique. The following chapter on Sample Characteristics describe the variety of individuals—variety being one characteristic we sought. Some sources became available to us at the conclusion of the study and had we had more time we could have solicited more people for participation.
INSTRUMENTS AND VARIABLES OF THE STUDY

We used 3 instruments to collect information (see Appendix B). An interview form included both fixed and open-ended questions. After the interview, the respondent completed a self-administered questionnaire. While s/he did this, the interviewer completed a physical inventory of the workspace(s), a detailed, scaled drawing of the area, including furniture, and a diagram of the layout of the home.

Figure 1
Door to Homeworker's Office

Operationalizing terms is a difficult task, but even more so for the definition of a workspace. Certainly someone who has a separate, defined room, with a sign on the door that says "Office" (see Figure 1), has a clearly defined work area. Other areas are not so well defined physically. In addition many people use multiple areas in their home for working. Since it was impossible to inventory the entire home, we focused on those areas which homeworkers felt were their primary workspaces (we did ask questions about other areas in the home they worked in but did not complete a physical inventory on these areas unless specified as a primary workspace). Although all had at least one primary workspace, seven had two, and one person claimed three. A workspace could involve exclusive use of an entire room, or it could be one area among others within a room. Our definitions for what constituted a primary workspace, and what constituted the work room, are as follows:

**Workspace:** The area bounding the equipment, furnishings, material and circulation space used primarily for work purposes.
**Work Room:** The room encompassing the workspace which is bounded by walls (with or without doors and thresholds) and/or full-height vertical or horizontal structural divisions. Definitions for these latter conditions are:

- **Full-Height Vertical Structural Division:** This includes arches running the length, or at least 50%, of a wall opening (as distinct from a threshold or open doorway at a width equivalent to a double door or less), or any wall with an opening in it (without doors) larger than a double doorway.

- **Horizontal Structural Division:** This includes a floor extension at a 90o angle from the major axis, with no walls or full-height vertical structural divisions. It also includes an alcove within a larger space, as defined by a narrower width and depth than the larger "room" to which it is attached, but deeper than a conventional closet size or bay window.

Thus, a workspace could be the same as a work room if this was a room bounded by walls and/or structural divisions, AND was used exclusively for work-related purposes. When the room in which the workspace was located was not used exclusively for work-related purposes, then there would be different characteristics between the room and the workspace. We use the terms **exclusive** to refer to those work rooms exclusively devoted to the respondent's professional work, and **shared** refers to those rooms where other regularly-occurring functions besides professional work occur.

Some layouts representing these alternatives are seen in Figure 2.

Other terms used in the report frequently include: **work**, referring to one's professional, paid work; **domestic**, referring to house care, child care, meal preparation, and other house and household maintenance activities; and **leisure** referring to non-maintenance activities, such as exercise, socializing, watching TV.

The following lists the other variables examined in this study, and the location of the specific question, scale, or code reflecting that variable on the instruments. These instruments are referred below as I (interview), Q (self-administered questionnaire) and H (home inventory). Reference numbers the numbered item on these instruments, which are located in Appendix B.

**Physical Characteristics of Workspace and Work Room**

An approximate-to-scale drawing was made of the workspace and work room, which included furniture, equipment, fixtures and materials. From these drawings the following information was calculated:
Figure 2
Some Layouts of Workspaces in the Home

WORK  DINING  KITCHEN
LIVING R.M.

FOYER
DINING  WORK  DEN
KITCHEN

DINING  LIVING R.M.
WORK  KITCHEN

BEDROOM  WORK  LIVING R.M.
KITCHEN
Square footage (H)
Wall perimeter footage (H)
Square footage occupied by furniture (H)
Square footage occupied by horizontal work surface space (H)
Number of electrical outlets (H), phone outlets (H)
Number of TV sets (H), musical equipment, e.g. radios or stereos (H)
Number of phones (H)
Number of portable desk lamps, floor lamps, fixed overhead lamps, track lighting systems (H)
Presence of answering machine (H)
Number of walls with windows in them
Floor surface material
(e.g. carpet, wood, concrete slab) (H)
Presence of visible wiring, cords or cables (H)
Presence of plants (H)
Types of visual and art displays (H)
Types of outdoor views (H)
Locked access (H)

Boundaries (H): This could include wall (with or without door and threshold), full-height vertical structural division (defined above), horizontal structural division (defined above). For a nonexclusive or shared workspace within a work room, boundaries between the workspace and other areas in the room could be: partial-height vertical structural division (change in floor level less than 2' and without any wall or structural division), vertical artificial division (includes bookshelves, hung fabric or bamboo with open space along both long sides), horizontal artificial division (includes change in floor material), and/or spatially defined by layout configuration of furniture and equipment only.

Presence of computer equipment (Q3 and verified by H)

List of improvements made to workspace since working at home (Checklist and Open-ended, Q1); whether wanted to make improvements but could not because of landlord (Open-ended, Q2)
Other areas of the home used for work (Open-Ended, I28)

Relation of Workspace to Other Parts of the Home

Number of phones, on same and different floors (H)
Adjacency to other rooms in home by: walls, structural divisions, within work room, not adjacent (H)
Location to other rooms in home by: same floor, different half-floor, on different full-floor (H)
Characteristics of path from front door to workspace: rooms and doors passed (H)
Housing Structure

Type of structure (single house, duplex, etc.) (H2)
Street entry (shared or separate; number of residences sharing entry; locked entry; location of access) (H4,H5,H6,H8)
Presence of separate workspace entry from outdoors (H9)
Entry characteristics (e.g., publicity of business, doorbell) (H10)
Number of doors to dwelling (Open-ended, I23)
Presence of yard, balcony, porch (H13)
Orientation of facade (H16)

Perceptions of Physical Qualities of Workspace

Reasons for choosing present workspace (Open-ended I26, I27)
Characteristics of ideal workspace (Open-ended and Fixed scales, I32,I34,I35,I36)
Beneficial and problematic features of existing workspace (Open-ended, I29, I30)

Neighborhood Characteristics

Personal attachment to neighborhood (Fixed scales, Q4a through Q4d)
Attentiveness to neighbors, neighborhood activity (Fixed scales, I56,I57,I58,I59,I60,I61)
Importance of neighborhood amenities (I63,I69)

Work Characteristics

Job Characteristics Inventory (JCI): a standardized scale (Sims, Szilagyi & Keller, 1976) to measure individuals' perceptions of task characteristics. These consist of five-point rating scales along dimensions of autonomy, opportunity to make friends, working with others, task identification, and variety. This classification of work better reflects the differences in work conditions than the professional/clerical distinction made by Olson (1983a, 1983b) and others. Scale items were modified for this study because of problems discovered at pilot testing. It was also shortened given the length of the present study instruments. (Fixed scales, Q8)
Length of employment, regularity of work schedule, number of hours worked, occupation (Open-ended and Fixed scale: I2,I3,I4,I5,I6, I7,I8,I9,I10,I11,I12,I13,I14)
Business meetings outside home and at home (Open-ended, I17,I18)
Importance of computer in doing work (Fixed scale, I19)
Use of phone in work (Open-ended, I20)
Employees in home (Open-ended, I40)
Personal and Household Characteristics

Family Environment Scale: Subscales of standardized instrument (Moos, 1986) to measure social-environmental characteristics of all types of families. The only subscales used here were those measuring control (the extent to which set rules and procedures are used to run family life) and organization (the degree of clear organization and structure in planning family activities and responsibilities). These scales were modified, replacing the word "household" with that of "family," using a 3-point instead of 2-point scale, and shortening the number of items because of the length of the present questionnaire (Fixed scale, Q4f through Q4m)
Education, income, financial expectations (Fixed, Q11 to Q18)
Household occupants (Open-ended, I1)
Tenure in home (Open-ended, I21, I22)

Activities in Typical Working Day

This was done with a modified, retrospective time-diary form. We gave each worker a chart which was divided into half-hour intervals from midnight to 11:30 p.m. We also gave them a card which listed these activities: (a) working, (b) housework or childcare, (c) leisure or exercise, (d) non-work related travel, (e) sleeping, (f) eating. They filled in, for each time period, the activity they would be engaged in on a typical working day or their last working day. If they would do more than one activity at a time (for example, eating while working) or if they did two of the activities sequentially within a half-hour interval, they indicated this by putting in more than one activity code. If they did activities not listed on the code form, they left the cell blank (often they told us what these were; many times it would be civic or religious activities). They were also to mark for each time period whether or not they were usually at home, and whether or not other people were at home during that time. (I15)

Fit, Conflicts and Adjustments

Rituals and special activities before starting to work (Open-ended, I50)
Enjoy working at home (Fixed Scale, I31)
Effect of working at home on communication, satisfaction, stress, conflicts, quality of relationships (Fixed, Q7)
Methods used to adjust to noise (List and Open-ended, Q9, Q10)
Changes in household responsibilities (Open-ended, Q38, Q39)
Examples of conflicts between work and domestic activities (Open-ended, Q43); disruptiveness of such conflicts (Fixed scale, Q44, Q45)
Extent adjustments made to working at home (Fixed scale, I48, I49)
Arrangements made to minimize conflicts between work and home (List and Open-ended, I47)
Changed feelings towards home (Open-ended, I37)
Extent work, domestic and leisure activities overlap in space, time, mentally (Fixed, I52 through I54)
Other activities which occur in workspace at same time as working (Fixed, I55)

PILOT TESTING

A form twice in length to the present one was pilot tested with a number of different homeworkers (other than those in the final sample). Extensive modifications were made and the number of questions on the interview and questionnaire was reduced.

Since this research study was exploratory, intent on the discovery of the many facets of professional homework and their interrelationships, we did not conduct retest reliability and construct validity tests. Such checks are appropriate for studies with a few, clearly defined variables. This study, however, covered numerous variables in an attempt to discover those which seem most fruitful for further directed research which could be validated.

We conducted tandem interviews (i.e. 2 interviewers for one respondent) at the initial and middle stages of data collection to provide a measure of reliability between interviewers in asking and prompting questions, and in interpreting answers.

CODING AND DATA ANALYSIS

Two judges developed a coding scheme for the answers to the open-ended questions and to the graphic descriptions of the homes and workspaces. The coding schemes of each were then compared. Categories which were created by both judges were included in the final codebook. When categories were not listed by both judges, discussion between judges ensued until they mutually agreed upon the appropriate classification, which was then included in the final codebook. We intended individual category descriptions to be numerous and narrowly defined rather than broad and encompassing. For example, to the question "What features are beneficial in your current workspace," responses of "view to outdoor landscaping," "view off to a distance," "view to the backyard to watch children," and "any view" are all separate categories and are not subsumed under one classification of "View." Such detailed classifications reduce error in multiple-judge coding, but also increase the complexity of the analyses and interpretation. But for an exploratory study, this detailed approach was deemed most appropriate.
All data was coded, verified, and analyzed using the SPSS-X software program.

Since most scaled items were considered ordinal, the statistical analyses undertaken are nonparametric, except in a few instances where descriptive means are reported (e.g. for information on the number of hours worked per week).

The answers to one question, "How have your feelings about your home changed since you started working at home," were analyzed by qualitative data analysis technique (Miles & Huberman, 1984). Three researchers separately developed classification schemes and sorted responses into categories. Interjudge reliability was not the purpose here. Rather we wanted to discover the number of different ways this information could be classified. Some judges developed 2 to 4 different classification schemes for the same set of responses.