ASPECTS OF TIME

AND THE

STUDY OF ACTIVITY ROUTINES

by

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ABSTRACT
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Thesis Title: Aspects of Time and the Study of Activity
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     This study emphasises the importance of understanding
urban activities. Planning--especially in its physical
concerns--has, typically, attended to land uses, structures
and certain occupancy characteristics while neglecting the
dynamics of environmental use and behavior in terms of
social interaction and activity.

     It isolates itself from areas that are particularly
sensitive in respect of social needs and well being; and
is castigated for misunderstanding or misconstruing the
urban condition. It finds difficulty in communion with
disciplines such as sociology, social psychology and social
planning because its theoretical notions and operational
methodology is restrictive in these areas.

     Attempt is made here to marry physical situations to
their social milieu of interaction and process through both
conceptual scheme and operational measuring techniques that
accommodate some of the disparate issues of physical and
social concern.

     It is suggested that activities be conceptually and
operationally defined in terms of temporal notions and
measures which emphasise their dynamic flow qualities.
Thus, for example, the extent of individual and class Time
Horizons is given as indicator of the general scope of
pertinent activities. And the acting out of activities
within that scope, on a diurnal, monthly and yearly basis,
is given a Time Budget measure designed to record Inputs
(actor contributions) and Outputs (satisfactions) of
activities.

     A Test Case, focusing on the Time Budget as opera-
tional measure of overt activity, is presented.

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INTRODUCTION

Attention in the formulation of this study was given first to Time and subsequently to Activity. This is important, because the order of attention influenced the exploratory questions which were raised.

Thus research progressed as enquiry into what is time, how does it constrain us, how do we use it as framework and as measure of our actions, how applicable is it to the explanation and measurement of activities or, indeed, of other aspects of planning? This is specifically different (as will be further emphasised and explained) from a study of activities, the realization of their temporal component, and an investigation of its potentiality in their study. We are interested in the possibility that time as a comprehensive formulation may explain certain aspects of activity.

This interest points to the fact that immediate concern was not given to a particular planning problem or task, but to an existential phenomenon of implication (possibly but probably) for planning. In the same way, Space, might, as concept or object or both, be evaluated for planning implications in respect of use and form; so far, it has not--by custom and agreement we presume a mutuality, congruence and synonymity between space and certain aspects of planning to which it is commonly married. Thus, we should; (1) consider time (or space) as a phenomenon with its own inherent and

individual characteristics--duration and sequence are
examples; (2) consider all aspects of activity (or form and
use) which are potentially relevant to planning--this would
be a special and particularised list which, as we shall see,
can readily embrace aspects beyond those that are notionally
relevant to the disciplines of sociology (e.g., participation,
communication) and social psychology etc., (3) ask, in opera-
tional terms, how satisfactorily the aspects of time will
measure and reflect those of activity (or form) which we have
specified to be relevant.

Patently we will expect a certain natural congruity--
we have empirical knowledge (as guarantee) and the results
of prior study as suggestion. But, (to repeat), we must
nevertheless examine our commonly held associations in some
depth, at both conceptual and operational level to judge
the extent of their validity.

To evaluate implications of time for the activity com-
ponent of planning necessitates criteria, designed to reflect
the particular cost of our planning concerns. One criterion
will generally be sufficient to our purpose, for it explic-
itly directs all others that follow; it is that the utility
of time in explaining the nature and variability of activi-
ties will exist only in as much as the explanation is of use
in a practical planning situation, to a major, expert and
well-financed, planning office. This is, to be sure, a stiff
criterion for a first study, but it will be interpreted

loosely as a general guide rather than as an overrealistic constraint. If time could explain little save, for example, the micro-sociology of interaction taking place in an activity, its application and lesson might certainly enhance the sophistication of the planning staff but we would not deem it a comprehensive measure providing insight or data amenable to policy, design, and control procedures.

Of the two components, activity and time, activity is the more intuitively comfortable. It implies common notions, common things, and understood realities. Time, by comparison, is either abstract in concept or dominantly concrete, a manageable continuum of seconds and minutes; it may be useful to offer some ideas and notions of time with a view to diminishing, somewhat, the hiatus between these two levels of conceptualisation. To this the remainder of the introduction is devoted. (Such devotion should not imply that the commonly imagined comprehension of Activity is valid and requires no clarification. We have emphasised that this is not the case, but the common comprehension is probably sufficient to be carried until later in the study as a satisfactory understanding.)

Time. Man lives amidst change; even before he becomes aware of the fact that he himself is changing, he sees continuous changes in the surrounding world. The birth of the notion of Time is no doubt the result of the experience of

successions of which some are periodic and others not, of continuous and discontinuous changes, or renewals and of relatively permanent states. In his effort to master the fundamental conditions of existence it is not surprising that man should use these occurrences as natural frames of reference against which to locate other changes, and as a means of measurement.

But consider further the apparent simplicity of this Time notion and of the synthesis it implies in the utilisation of observed phenomena. Where and why do we get the ability for such conceptual summary and how is it related to our immediate experience? Historically this has been a question of epistemology which has, in turn, led to more specifically psychological questions,[1] (that come close to our concerns). In recount this history will be brief with but sketchy reference to the main themes of its content.

All philosophers have agreed that time does not exist without changes. But what changes, in our sensations (of the seasons for example) or in our thoughts. Much attention and argument has been devoted to the explanation of one or the other approach, leading, contemporily, to the agreed conclusion (which in resolution seems clear) that the idea of time is born in the life of thought. It was in moulding this conclusion that Kant showed the notion of time to be a

way of considering events, not a copy of them; we might add
to this that the way of considering a situation is likely to
condition future responses to it. Our conceptual summary of
time is, then, of supra-sensational origin. It is the tem-
porality of the conscious, revealed by our only experience,
that of the present; the present does not exist without its
horizons, for it is the present of a being in a perpetual
state of change. Consciousness reveals time which thus
seems like a dimension of our being.[2]

It was Kant also who prepared the way for the psycho-
logists by diverting them from the search for a reality in
itself (as a result of his demonstration that the origin of
time notions is in the activity of the mind).[3] By making
time a form of sensitivity he reshaped the whole problem;
after him philosophers and psychologists were less concerned
with the notion of time than with our awareness and use of
it. To explain developments in the post-Kantian period we
should turn to the discipline of psychology.

The first quarter of the twentieth century saw the whole
of psychology turned into a science of human behavior, and by
the 1920's the attitude of this new psychology to time had
been formulated in the work of Pieron and Paget.[4] It
stressed that psychology has better things to do than to con-
centrate on the study of thought (Kant's suggestions were
inspirational), and that it must start out from action.
"The only question" asserted Paget, "was what action do we
have on time." And in answer he (and others) concluded that

<u>the first action relating to time is behavior of effort</u>
which, like expectant behavior, gives rise to feelings of
duration. (We shall later characterise, somewhat crudely,
this behavior mode as one aimed at the formulation of a time
horizon which sets the limits of an individual's future and
his expectations as efficacious actor. In a sense the actor
must know who he is (in time) <u>before</u> selecting time
<u>expenditures</u> for specific acts which fit to and confirm that
knowledge--in the young a time horizon is so short that the
immediate time expenditure or action is often the limit of
their extent and, in a sense, the present is the future.)
This feeling is <u>not a primary action</u> (or activity) but a
regulation of action due to the necessity of our adapting
to irreversible changes, (the continuity of life which is
at the root of time notions).

Our notion of time (however primitive) is, therefore, a
mental construction of fundamental importance in orientation
and functioning; having constructed the notion of periodici-
ties our first related action is a behavior of effort de-
signed to allot durations in the structure of time <u>as a</u>
<u>schematic regulation of future time expenditures</u>. This is
central to our future discussion; man makes regulations of
duration as a hold on the changes which his time notion has
pronounced, and he makes these before and independent of
primary actions or activities.

In fine, the problem is no longer to know either what time is or what is the nature of one's notion of time, nor is it even to seek the genesis of time in some intuition or construction of the mind; it is to understand how man reacts to the situation imposed on him of living in time. Far from being misconstrued, the data supplied to our conscious mind find their true significance in this situation. "They are not a mere copy of reality but a collection of signs, formulae and useful interpretations which develop in action itself, and serve in return as a guide (not an explanation) for our activity as we become conscious of them." Patently, this present-day formulation of the problem sees time not as a variable to be explained but as an explanatory variable; this accent makes it amenable to our purpose, which aims at the practical usefulness of aspects of time.

City Planning save for certain of its specialised urban design functions is not a visual art. The city is not a work of visual art. Its mental images evolve only as a sequence of perceptions in space and in time. In this respect it is akin not only to the products of the Spatial arts, but also of the temporal arts, "to works of music or literature."[5]

Activities are the ingredients of the temporal matrix; this is why they become the focus of this study. They tell the story of how the city lives rather than of what it is, of how it is used rather than of what it contains. They

describe the dynamism of change by the minute, the hour and the day, in a way much different from the more gradual (by comparison) development of the Spatial dimension.

It is to the further explication and examination of the correctness of such summary statements (or convictions) that the remainder of this study is devoted.

SECTION 1:

ASPECTS OF TIME

SECTION 1. Aspects of Time

In this section, six aspects of time are examined. The first three aspects--Time Budgets, Social Time and Psychological Time--are designed to explain the notion and (typical) method of measurement of time periodicities either 1) in the way in which we allot expenditures of time in some periodic, though not necessarily repetitive, diurnal or monthly or yearly cycle, or 2)in the way the calendrical flow of time can be divided or described in a manner which often disregards or unequalises chronological periodicities--this is the realm of social and psychological time. These distinctions will be clearer upon further explanation; at this point it is important to appreciate that emphasis will be upon the cyclical duration and sequence of time and ways in which they can be described, either calendrically, socially, or psychologically.

Aspect 4, Time Horizon, has been mentioned in the Introduction. It is concerned, primarily, with the duration of an individual's perceived future of expectations and reasonable actions. It is, then, a global all-embracing time constraint within which and toward the fulfillment of which the individual engages upon time expenditures, each of duration and sequence.

Aspects 5 and 6 introduce terminology to be used in further Sections of the study, and some conceptual notions as to how time can be useful as description and causal link in statements about urban process, change and growth.

Clearly the choice of these aspects is such as to preclude an interest in much of the fascinating research into time--we have, for example, already rejected most of the philosophy of time, and we will not review the well-developed study of cross-cultural differences in time use and perception. Here is the first exercise of our criterion of 'physical planning relevance.'

(1) <u>Chronological Time and Time Budgets</u>: (the historical review of time budgets in Appendix 1, shows that) the time-budget concept is closely allied to (and derives from) studies of household budgets of income and expenditure--both are records (often sequential, or at least ordered) of the flow and priorities of a <u>resource</u> expenditure. It is interesting to note how well the time and money terms fit into the series of modern colloquialisms: time can be saved, it can be spent, or wasted.[1] It is very much like money, for some time is money. Today in urban life, time because of its value, is managed; it is understandable that attempts have been made to set up budgets (or, more properly, accounts) of time management by individuals and groups or by firms and other entities in the urban scene.

One important omission of the money-time analogy is that a housekeeping or money expenditure record of a household or individual (or firm) need not encompass all human concerns, even all economically relevant concerns. Expenditure of money except in a few cases is not a fully reliable measurement of the range of involvement; time, in contrast,

is, in its chronological sense, a container of all that is undertaken. (This is not, as we shall see, to say that a record of the chronological use of the time resource will provide all relevant information about the conditions and aspects of the activity therein.)

Time-budgets are generally constructed from the reported data of individuals (or firms or organisations) concerning the way in which they have used time in pursuit of a range of classified purposes. Depending on methods of research (measurement, aggregation, analysis etc.), interest and purpose, the reporting may consider intervals as little as five minutes or as great as 24 hours or a week or month. The data can be constructed so as to,[2]

a) point to the nature and duration of expenditures,

b) provide a picture of the social structure which surrounds the respondents, by asking questions illuminating the situational properties of each expenditure,

c) be related to the spatial setting which binds both the expenditure of time and associated structures (social, economic etc.).

In fine, the procedure of time-budget analysis can answer the following questbns.

Where (did you spend your time),

When (in day, week etc.),

What (did you do--a general classification of activity types perhaps),

With whom,

For how long,

How much,   These factors can, on occasion, be

How often   interpreted as _intensity._ We shall

How regular   note (page 26) instances where such

                   a summary is inapplicable.

Time-budget data does not answer 'Why' questions about time

allocation and expenditure. It is directly quantifiable.

However, the analysis of the data can elicit certain laws

or rules in respect to conditions concomitant to various modes

of time expenditure. Thus Sorokin observes that for some

expenditures, "the longer the time consumed...per participant,

the less the percent of participation (number of participants)

in it tends to be," and that "there is an inverse relation

between the amount of time spent on an act and the number of

times it occurs daily"[3] (apart from the obvious condition of,

for example, an eight hour expenditure). Or, with but little

extra informational input, a more refined and operational rule

can be divined--thus Simon offers a prediction "that might be

described as the 'Gresham's Law' of planning. That is, daily

routine drives out planning." Stated less cryptically, we

predict that when an individual is faced "both with highly

programmed and highly unprogrammed tasks" (information about

program is not directly included in time-budgets), "the

former take precedence over the latter even in the absence

of strong overall time pressure."[4] We shall refer to these

types of interpretation and analysis as <u>Configuration</u> (interpretation similar to that of Sorokin) and <u>Sequential Rules</u> (Simon).

Time-budget data can, on occasion, be replaced or, better, supplemented by the analysis of records such as school attendance lists, library returns, entertainment attendance records and other unobtrusive measures. The nature of the study obviously influences the usefulness of each technique, but it would seem that an analysis from records generally eliminates detail information (about individuals for example) whereas the survey technique can focus on a particular group, a particular time of day or a particular aspect of behavior.

In fine, "time (along with space) is a universal container of human phenomena." (Sorokin). It is, furthermore, capable of measurements "along a single dimension."[5] Thus, because everybody has to be somewhere (or has to be doing something).....a single number representing time expenditure has the potential of placing a particular segment of human behavior in a useful perspective. We conclude that empirical information about the way people spend time can be an indispensable guide to the understanding of daily social life. Carried one step further, time-budget data can usefully compare and emphasise the most significant differences in social life occurring over a chosen time-period, as well as reflecting the actual day-to day effects of technological or of behavioral change.

(2) Social Time: chronological or container time,
time as a resource, is but one aspect of the phenomenon.
Time may have social meaning independent of its resource
attributes in their relationship to chronological events.
October, 1929 becomes, for example, socially important as
the month of the Wall Street crash; it has significance
for, and gathers the sentiments of, many people in a way
that no other such point in time can replicate. History
or future plan can thus mark temporal points with a sig-
nificance unrevealed by chronological time and its measure-
ment, except in that any such point corresponds to untypical
perturbations or noise in the ongoing record of the process
of time expenditure (measured by a time-budget technique).
A point so marked may be the culmination of an earlier
process, a single random event, or the inauguration of a
process; each point and related process acquires a social
meaning that becomes dynamic in its own right.

Related to social meaning is the concept of time
social sequence[6] which may, for example, indicate priority
of events (work before play) in the sense of scheduling
while at the same time expressing a social (or moral or
cultural) preference and distinction. The fact that
"Negroes habitually eat after whites" is chronologically a
temporal segregation; the implications of social process and
meaning, however, go beyond such straight forward sequence and
relate time to social variables.

(In caution, we shall encounter three uses of sequence, two have been mentioned. The first is the management of time explained by the budget expenditures, the sequence (loosely interpreted to include priorities) of allocation which can, by interpretation, be useful in suggesting configuration and in revealing sequential rules. Social sequence (the second use) requires (or adds) additional information to the time-skeleton of process. Firey, in his recognition of sentiment and symbolism as influential variables in economic decisions (money expenditures) implicating land use in Boston, points, analogously, to the curious sequence and apparently unpredictable nature of expenditure measured and analysed only as resource independent of social meaning and sequence.)

In respect to the suggestion of measuring social change by the time series or longitudinal comparison of time-budgets, we should observe that perhaps periods of years, months, weeks, or days, are not the only and possibly not the most readily applicable temporal measures in a system of social dynamics. This, as suggested, is because the methods we adopt for assigning a time to events changes when the character of the events changes. Equal periods of resource time may be rendered socially unequal and unequal periods may be socially equalised: the search for social periodicities may be difficult in terms of calendrical or chronological periodicities alone, but may be found quite periodic

eight-hour work day. But these variations may be explained only by the recognition that the social life of a group is expressed in its time expenditures (and, as we saw, in its expressions about them). As Horton writes in his investigation of Colored People's Time, "negro street time is built around the irrelevance of clock time, white man's time, and the relevance of street values and activities. Like any one else the dude is on time whenever he wants to be, not on time when he does not want to be and does not have to be."[7]*

(3) Psychological Time: evidently, comments on social time and the adequacy of a chronological measure are largely relevant to the psychological realm. We can repeat the same cautions, we can note that time can have psychological meaning,--activities which are perceived as pleasurable appear to pass quickly in time,--or psychological sequence--the saying "many a slip twixt cup and lip" can be borne in mind so as to extend the shortest of temporal sequences into a perceptual period more easily

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There are many other characteristics of social time to which we might draw attention. The way we express the change of social phenomena in terms of other social phenomena taken as points of reference--"all that has changed since Kennedy was killed": or the references we make to generally comprehensible time durations without any mention of chronological or astronomical phenomena,-- "for a semester," "for the duration of lent"--often without even a fixed relationship between these durations and astronomical phenomena, since the social intervals may vary independently; all these are interesting mannerisms and techniques. Yet we must maintain, (and have tried to illustrate), social time which will condition or reflect behavior in time in fundamental ways that are of interest to planning.

recalled than the processes of 'filling the cup.' We can
also observe; (a) that psychological periodicities may
unequalise temporal ones--as was seen to be true of social
periodicities--so that in an analysis of change the dimen-
sional contortions or functional elaborations of largely
qualitative psychological processes, as they effect quanti-
tative time data, must be observed; (b) the personal indi-
viduality of psychological time formulations may make for
difficulties in the generalisation of meaning and sequence
phenomena to larger psychological or sociological units of
reference; (c) the use of psychological time is an impor-
tant consideration.

(4) Life Pattern Time (or Cultural Time): Summaris-
ing and adding to the above temporal aspects is the condi-
tion of time perspective or time horizon. Banfield
explains that in most behavioral and social science the
individual is thought of as having goals (images of future
states of affairs toward the realisation of which action
is directed) or as being able to make preference orderings
of "prospects" (images of future states of affairs).[8] In
some sense he is future-oriented, the question of how far
he looks into the future while still visualising himself
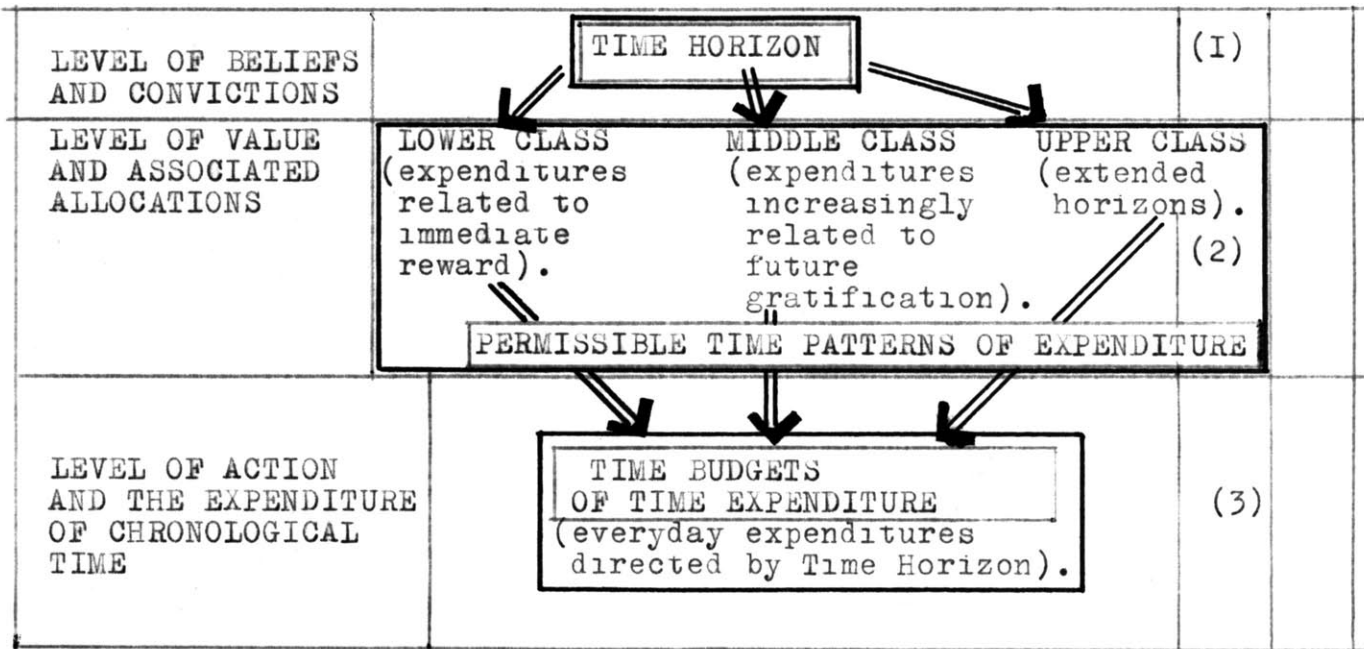as an efficacious actor is of equal and crucial importance.

The future beyond which a person does not take account
is beyond his time Horizon; the horizon is a crucial factor
in fixing the terms on which he trades present for future

satisfactions. It governs therefore his general life pattern of time within which time-budgets will be described and social/psychological aspects become pertinent. It might be thought of as the containerisation of the life resource of time so as to decide among many alternatives, to decide what pattern of expenditure of the daily resource of time is most applicable and permissible. The individual therefore not only expends time in observable configuration and according, on occasion, to sequential rules, but has prior rules and personal decisions which lead to a choice of the kinds of time expenditures which are later susceptible to those configurations etc. (see Diagram 1). How does he arrive at these general, individual, time dicta or allocations, (levels 1 and 2, Diagram 1)?

First, what we have referred to as a choice among alternatives is in fact a limited proposition, the individual's ability to choose is governed by (1) his psychological set, and/or (2) skills, abilities and cultural background. Authors have settled on either(1) or (2) as explanatory of life pattern time choices, but few see them as constituents of the same phenomenon.

Banfield, for example, refers to the individual's free time as a "completely subjective orientation,"[9] and Martineau is able to summarise "certain psychological differences or contrasts between social groups."[10] Both

LEVEL OF BELIEFS AND CONVICTIONS	TIME HORIZON	(I)
LEVEL OF VALUE AND ASSOCIATED ALLOCATIONS	LOWER CLASS (expenditures related to immediate reward). MIDDLE CLASS (expenditures increasingly related to future gratification). UPPER CLASS (extended horizons). PERMISSIBLE TIME PATTERNS OF EXPENDITURE	(2)
LEVEL OF ACTION AND THE EXPENDITURE OF CHRONOLOGICAL TIME	TIME BUDGETS OF TIME EXPENDITURE (everyday expenditures directed by Time Horizon).	(3)

NOTE: By virtue of his Time Horizon an individual (or firm etc.) establishes certain preferred patterns or ways of expending Time.

Having decided on a general pattern (which is probably a permissible one decided by his social group etc., rather than one chosen rationally from consideration of alternatives), he acts out appropriate day to day Time Budgets.

THE SEQUENCE LEADING TO THE TIME BUDGET OF DAY TO DAY TIME EXPENDITURE

DIAGRAM I.

then examine how this psychology (or life time pattern

choice) expresses itself in time expenditure; their model

of action is,

Independent Variable	Intervening Variable	Dependent Variable
Time Horizon	Time Pattern of Expenditures and Time-Budget	Individual Development
		Societal Development
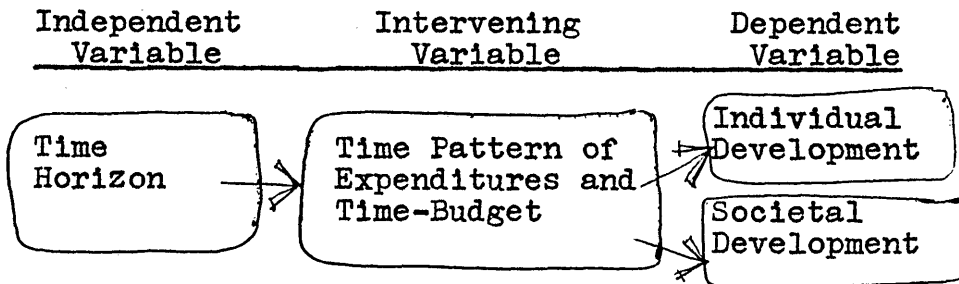
Evidently, this model does not explain how the time

Horizon is formulated as a prior condition to the choice

of time expenditures. Anthropologists, featuring the

cultural variables (preference 2) see the Horizon as the

result or at least the concomitant of certain values,

teachings and prior time expenditures which vary fairly

constantly by class and social group.* In the course of

their writings, White, Horton and Henry reformulate the

model as below:

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This viewpoint tends (as does Banfield's) to encourage
authors to beg the question of objective situation
(physical, social etc.) in relation to class or generalised
social group. It does not examine situation as an integral
influence on TH, but as (tacit) complement to it. Though
the viewpoint is on occasion the basis for policy (e.g.,
welfare colonialism) which seeks to change TH so as to
affect behavior (e.g., stop riots), there is no indication
of just how situation changes (model cities, job training)
interact with the goal of behavioral change. (As extreme
example the middle class boy (with long TH) who becomes
markedly present-oriented in Vietnam would suggest examin-
ation of the relevance of this viewpoint in relation to
varied situational conditions.)
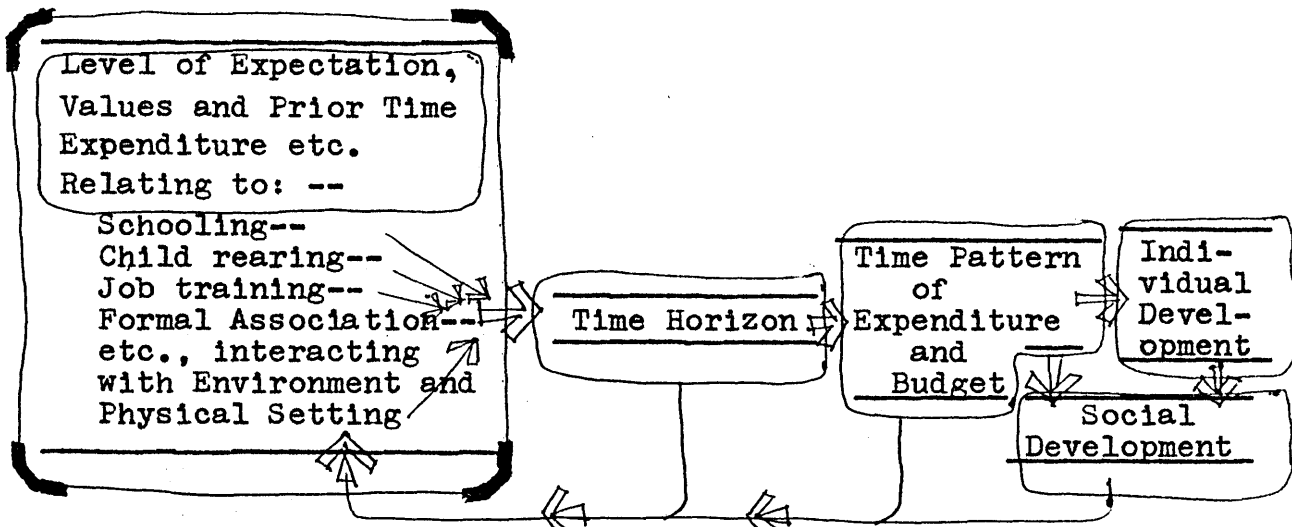
This will be our choice of model. It suggests some evidence encouraging to our aim of relating time and activities. That is, that the general _temporal_ framework by which people are contained and within which they see themselves acting constrains the range of _activity_ upon which they engage: lower class lack of emphasis on schools for example, will result in low achievement which reinforces the notion of a job with limited continuity and future orientation. This is further developed.

It is interesting, finally, to record Martineau's summaries (of research) by class:[11]

Middle Class;

1) Pointed to the future,

2) Viewpoint embraces a long expanse of time,

3) A well-structured sense of the universe,

4) Horizons extended or not limited,

5) Greater sense of choice making as to, time expenditure,

6) Abstract in thought,

7) Tied to national happenings.

Lower Status:

1) Pointed to the present and past,

2) Lives and thinks in a short expanse of time,

3) Vague and unclear structuring of the world,

4) Horizons sharply defined and limited,

5) Limited sense of choice-making for time expenditures,

6) Concrete in thought,

7) World revolves around family and body.

They offer some confirmation of our contention that (1) individuals and groups, with an intimate nexus of a common and mutually understood rhythm of social activities, constrain by that intimacy,* the round of behavior and activity; and that (2) "A man's sense of time derives from his place in the social structure and his lived experience," (Horton).[12] (We have seen that devolving from this nexus and sense is a pattern of permissible time resource expenditures overlayed and reinforced by social and phychological constructs which set the expenditure to fit behavior).

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*Clearly, there should be criteria or parameters which can explain preconditions necessary to the fit of a time pattern of expenditure and a time budget to a temporal horizon. These criteria, applied by the individual, might be; aptitude (does this or that expenditure fit with my T.H.), opportunity (if it fits, how convenient and permissive is it), constancy (how long can this apt and opportune fit be maintained)?

(5) <u>Time as Causal Link, in the Description and</u>

<u>Measurement of Large Scale Social and Urban Change.</u>

Here we investigate time as <u>setting</u> and time as <u>sequence</u> (the
third use of this term).

Time as <u>Setting</u>. Particular periods in time frequently
form a backdrop against which events assume differing
meanings. Everyone is aware of and has a certain image
describing such periods as the Medieval Period. the
Renaissance or the Victorian Era.[13] Here time refers to
temporally limited structural patterns, value orientations
and the like, toward the description of which we might group
various representative sets of time-expenditure configurations
(by class, for example,) so that particular expenditures are
evaluated in terms of their relation to the larger pattern
or <u>setting</u> rather than as events independent of it. Historio-
graphers at one extreme tend to focus on time as setting and
ignore individual relationships, whereas comparative socio-
logists at the other extreme, often ignore groupings and
patterns of configuration as they tear a particular relation-
ship out of the large tapestry of which it is part. Ideally,
time as historical or contemporary setting could serve as a
test factor for the particular investigations of the socio-
logist--i.e., do they occur under this or that grouping or
pattern.

All this suggest that an important function of time as
setting is to segregate particular patterns of occurrences

or to combine them so that they form a pattern of more extensive representation and relevant to a larger population, defined by group or class or by a specific behavior mode cutting across such boundaries. It suggests, in short, an elaboration of the more familiar method of correlation; is (A) present whenever (B) is present? Do variations in (A) coincide with variations in (B)--or occur following an appropriate time lag? In these questions we are concerned with what is happening at a particular point in time; without the time link the questions would be meaningless.

(Logically, the configuration of one time budget is no less a measure of setting than is a grouping or pattern of budgets, and might be a causal link in the investigation of, say, changes wrought by new technology in the home. We shall confine the use of setting and of sequence (see below) to the analysis of a large scale changes in social structure and urbanisation.)

Time as Sequence. We gain more assurance that an observed correlation represents a causal link if we can establish a sequence of events. We want to establish a relationship in the context of consecutive time periods.

Certainly there will be many kinds of sequences, (ordered, unordered, etc.), but they will all be modifications of the temporal concepts Before and After, as a means of determining whether A could have caused B. (Again, attention is drawn to the repeated use of Sequence.)

(6) <u>Time as a Measure of Change, In Small and Large</u>

<u>Scale Situations</u>. We have noted that time-
budgets (singly or in aggregate) can be compared over time
to note changes in any one expenditure or in the configura-
tion or setting. This opportunity suggests that we might
abstract some additional indexes from the time-budget data
as measures specific to change. Suggested indexes are,
duration, rate, intensity and interplay.[14]

<u>Duration</u> refers to the time-taken in the general
scheme of comparison for any 'measured change' in the rela-
tive importance of one or a configuration of time expendi-
tures. The criteria by which a change is measured to have
taken place can be phenomenological (a large change whose
impact can not be disregarded) or arbitrary (as in the
decennial periodicity of the Census data). A degree of
precision might be obtained by subdividing (arbitrarily)
qualitative units (such as phenomenological stages) into
equal quantitative units and describing these units in
terms of duration. And duration might, in turn, become an
important variable in a conceptual scheme. (Attention
would obviously be paid to the potential error of inference
and deduction based on changes reflected by analysis of
different unit lengths--change in the period of a decade
might obscur subtle patterns of change by year and by
monthly intervals. <u>Cycles</u>, which are major variations in a

trend should be distinguished, as should <u>noise</u>, the incon-
sequential perturbations of trend.)

<u>Rate</u> of change can be simply derived from duration
measures--e.g., 18 percent change in 10 years. For inter-
group and inter-cultural comparisons the meaning of rate
easily becomes obscure, due to value differences (etc.) in
the importance attached to and the preference for change.

Rate may take certain forms when quantitatively ex-
pressed; among them are increase, decrease, ordered, un-
ordered, pulsing and stepwise.

<u>Intensity</u>: Heirich observes that "the political surren-
der in war gathers its intensity from its <u>content</u>, and not
from <u>quantity</u> or <u>rate</u>" of time allocations, even though
sequential timing is relevant. Intensity <u>need not</u> therefore
depend on rate and quantity or duration of change but,
rather, on content; a sufficiently large change within a
small unit of time is nevertheless bound to generate
<u>intensity</u> independent of content. (The moment of political
surrender in war, for example, gathers its intensity from
its <u>content</u>, not from quantity or rate, even though sequen-
tial timing is somewhat relevant: the demobilisation of
soldiers upon surrender will generate an intensity markedly
reflected in time-budgets, but with less content importance.)
Remembering that the most likely data source which will be
used to measure change is the time budget and its irregu-
larities, we see that where <u>content</u> is dominant we need to

go beyond time-budget information for some insight into
the import of specific occurrences. Fortunately mention
has already been made of this information source: it is
the overlay of social meaning and sequence (and/or psycho-
logical meaning and sequence) to which Aspects (2) and (3)
were devoted. But it is to this source in, only, its
formulation of culturalia (expressions, attitudes, beliefs)
and not in the active expressions of particular social or
psychological time expenditures (i.e., social time use).
For if these types of expenditure were to be seen they would
be reflected as a change in the time-budgets, just as Horton
was able to express the low intensity of time use by Negro
street dudes as a social time use phenomenon relateable
directly to rate and not to content. This is important,
intensity derived from content can be explained by meaning
and sequence but will not show in the budgets.

There are two measures of intensity of change; one is
predominately the intensity of rate of change of time ex-
penditures (demobilisation) the other is related to content
(end of war) independent of rate.

(We noted that in the description of time-budgets,
How long, How much and How often might be summarised as a
measure of intensity (see page 12). This is not, obviously,
a measure of intensity of change, but a measure of inten-
sity of continued occurrence. However, it may be observed
that the same dual modes of intensity, as a function of

either content or rate, are pertinent to this measure also. The above comments can therefore be addressed both to intensity of occurrence and of change.)
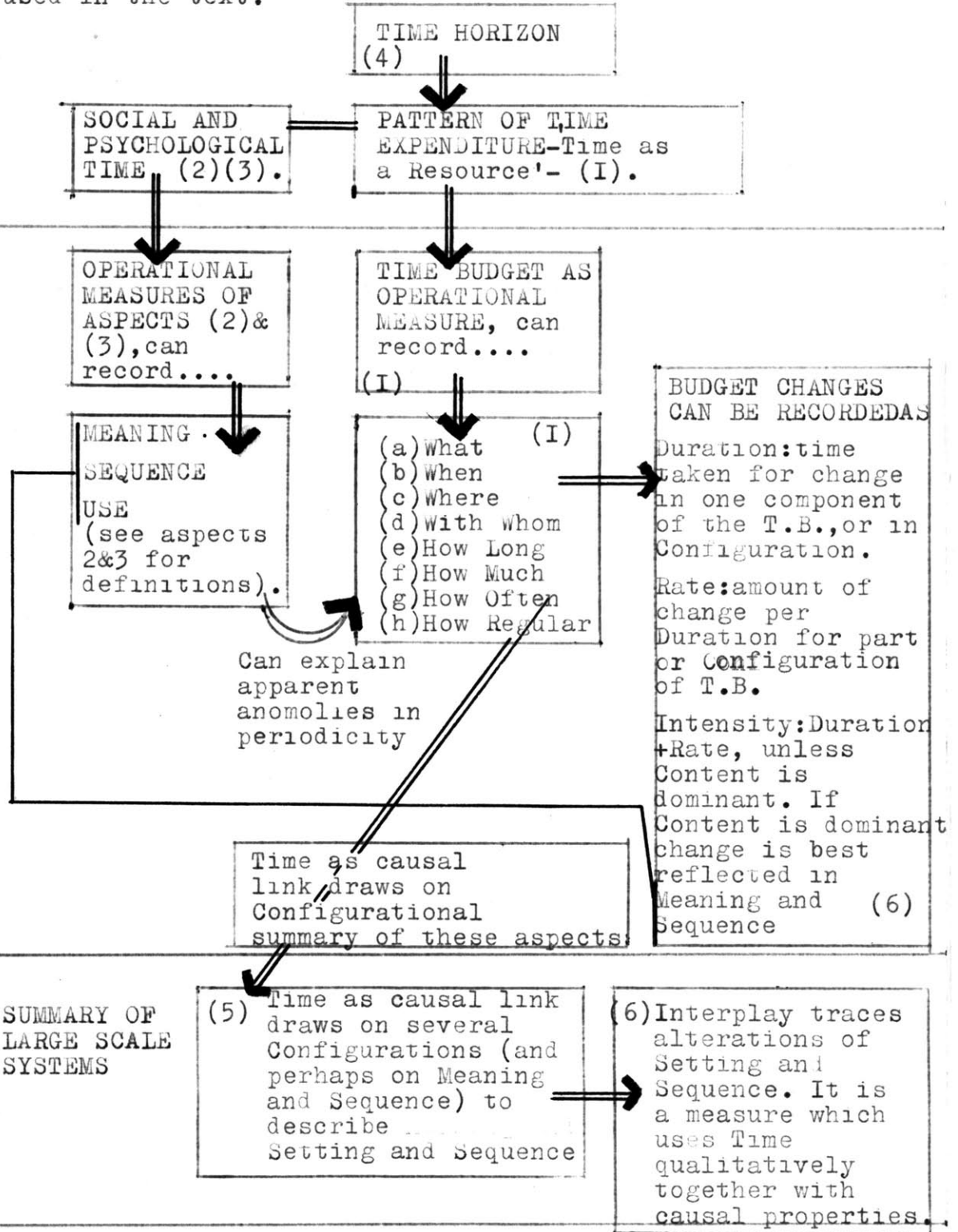
Interplay is closely related to the notions of setting and sequence which we explored under consideration of time as causal link. It is concerned with the length of time that a particular setting of interacting configurations (c.f. previous definition) remains undisturbed, with the sequence of change, and the qualitative differences from setting to new setting. It is thus a general term relevant to the description of qualitative change over time, in which time as causal link and as qualitative measure are used conjointly. By our previous definition of the appropriateness of setting it can be seen that interplay is confined to the change in large scale systems only.

Before giving an example of interplay, brief comment on qualitative time measure may be useful. In fact we have explained it. It is inherent in configuration and sequential rules and in social and psychological descriptions of time. It is the essence of setting and of, necessarily, change in sequence. It is the opportunity of time data, that by aggregation, analysis and comparison, it can be somewhat transformed from the quantitative to the qualitative realm. At least it quickly points to areas requiring qualitative elaboration.

The anthropological work of White can serve as example of interplay. He is a contemporary evolutionist, yet is clearly within the classic tradition. His work makes temporal setting in terms of an inter-related pattern of expected behaviors central to his examination of cultural complexity. Such patterns are seen to change by sequence and evolve as practical solutions to the inventions and innovation of technology. The assumptions of this interplay and of its data descriptions transform White's work from a collection of functional descriptions into the beginning of an explanation of change.

The following diagram illustrates and relates the aspects and terminologies of time which this Section has identified.

Numbers are the
Aspect numbers
used in the text.

TIME HORIZON
(4)

SOCIAL AND
PSYCHOLOGICAL
TIME   (2)(3).

PATTERN OF TIME
EXPENDITURE-Time as
a Resource'- (I).

OPERATIONAL
MEASURES OF
ASPECTS (2)&
(3),can
record....

TIME BUDGET AS
OPERATIONAL
MEASURE, can
record....
(I)

BUDGET CHANGES
CAN BE RECORDEDAS

MEANING.

SEQUENCE

USE
(see aspects
2&3 for
definitions).

(I)
(a)What
(b)When
(c)Where
(d)With Whom
(e)How Long
(f)How Much
(g)How Often
(h)How Regular

Duration:time
taken for change
in one component
of the T.B.,or in
Configuration.

Rate:amount of
change per
Duration for part
or Configuration
of T.B.

Intensity:Duration
+Rate, unless
Content is
dominant. If
Content is dominant
change is best
reflected in
Meaning and   (6)
Sequence

Can explain
apparent
anomolies in
periodicity

Time as causal
link draws on
Configurational
summary of these aspects

SUMMARY OF
LARGE SCALE
SYSTEMS

(5) Time as causal link
draws on several
Configurations (and
perhaps on Meaning
and Sequence) to
describe
Setting and Sequence

(6)Interplay traces
alterations of
Setting and
Sequence. It is
a measure which
uses Time
qualitatively
together with
causal properties.

NOTE:The three uses of Sequence
are Subscripted in order of
introduction in the text.

DIAGRAM RELATING
ASPECTS OF TIME.

DIAGRAM 2.

SECTION 2:

ASPECTS OF ACTIVITY

SECTION 2. Aspects of Activity

Frequent reference has been made to activities, generally without any attempt at definition. The following aims at definition and an ordered description of the structure of aspects of activity. Particular attention is given to terminologies and planning concepts about activities and their relation to spatial land uses and occupancy. By way of introduction it may be useful to start from these latter distinctions and, in a sense, first establish what activities are not. We shall do so in a rather circumspect manner, by offering five quotations or (borrowed) observations.

Consider the following conclusion drawn from time-budget data from several U. S. cities. Robinson (of the Survey Research Centre at Michigan), states that "noticeably more travel time was spent by auto-owners than non-owners in our 1965 survey" (compared with 1939, Sorokin), "but the differences are not substantial. This finding and other data on the trend of travel time over the years suggests that while it has been the automobile that has revolutionised life spatially, it has been the television that has reshaped life temporally."[1] Here is some evidence (or suggestion) of the potential error of an over-focus on spatial aspects of the environment, to the extent that temporal dimensions and overlaps are excluded.

Already (in anticipation!) we can note that how people allocate their time may be a fair indication of the pattern of their activities. This is not, as it might appear, a statement of the obvious--we have just seen that at least one dimension, the spatial, provides an unsatisfactory continuum.

Meier in similar but somewhat more lyrical vein, draws attention to the necessary omissions of our current thinking and research methods. He notes that we record the physical growth of cities, changes in population number and structure and general social and economic change, but that we fail to record and understand the "communications action (everyday interaction)" of living and of change. He sees Time as a dimension sensitive to the allocation of such actions, and proposes an investigation of the communications dynamics of urbanism. He concludes that "we intuitively feel that the degree of physical social and cultural organisation in cities is understated when we express them in terms of the present sets of accounts (land use maps, etc.). At least two dimensions, human time allocation and the communication of cultural images are missing from the available urban accounting system."[2]

Now, two examples from empirical investigation. One of the most important discoveries of students of Community early in this century was the close inter-relatedness of

the village or city centre and its trade area. "Here was
a social reality which appeared on no map, yet its reality
could not be denied. It could be revealed, however, by an
activity analysis" (Warren).[3] Within and between and be-
yond the spatial circumferences which typically focus
planning attention are continuing occurrences not often
revealed by space and form related records. Christaller
recognised this other explanatory dimension in his pio-
neering work on Central Places. He used, variously, the
number of long-distance telephone calls made from any
given location to one or another Central Place, newspaper
distributions and wholesale trade in various commodities,
as activity definitions of different 'watersheds' (His
understanding of communication dynamics in urbanism pre-
dates that of theorists such as Meier—perhaps it will be
re-evaluated.)

Finally, Webber's comments on the British New Towns,
record that while the towns are highly identified and
identifiable spatial units, there is no social or economic
constraint (or identity) imposed by any spatial factor—
"at this territorial scale, it is apparent that economic
and social propinquity is not dependent upon spatial
propinquity."[4] He contends that the essential quality of
urbanness is here cultural in character, not territorial,
and "that these qualities are not necessarily tied to the
conceptions that see the city as a spatial phenomenon."[5]

"Spatial separation or propinquity is no longer an accurate indicator of functional relations, and, hence, mere location pattern is no longer an adequate symbol of order."[6]

Carrying his remarks to a theoretical level, Webber comes close to the position of Meier: "one pattern of settlement and its internal land use form is superior to another only as it better serves to accommodate ongoing social processes and to further the nonspatial ends of the political community. This rejects the contention that there is an overriding universal spatial or physical aesthetic of urban form."[7]

Our concern with activities is not just to point out an extra dimension of the spatial order so that planners may investigate this new direction as simply another refinement or informational input to the typical land use conceptions. Rather, we point to a phenomenon with a particular and important life of its own--to activities occurring across and often independent of the spatial dimension. We will emphasise the fundamental significance of activities for theoretical planning orientations.

For further discussion of activities it is necessary to make the argument more technical and to include extra detail.

Land use as a term originated, possibly, in relation to agriculture. Farm land may be used for growing wheat or corn or for grazing cattle--the emphasis is on the use of the land, or its productive capacity. "What happens

on the land depends on what is taken from the land."[8] In
an urban environment emphasis shifts to <u>use on the land</u>
for human activities; land is a site rather than a factor
of production. Four criteria relevant to the classifica-
tion of uses on the land may be distinguished:

1. Buildings or other improvements on
    the land,   ─ Use but
                                                   not
2. Occupants or users of land,   Activity

3. Major purpose of occupancy of the
    land,

4. Kind of activities on the land.
    Note that we have observed that activities
    occur as a very special dimension of land
    use which need not be consonant with its
    spatial parameters.

The noted authorities on land use and its classifica-
tion--Mitchell and Rapkin, Rannells, and Guttenberg--adopt
the third criterion, <u>major purpose</u> as the most relevant one
and introduce the concept of establishment in order to
identify the major purpose. Establishments are defined as
individuals or groups occupying recognisable places of
residence, business etc., within or upon units of land, or,
alternatively, as units of land use, classified as to their
<u>major activities</u>.

So, the term Activity has been used to encompass both the sense of _general purpose_ and the _kinds of activities_ included within separate general purposes. Mitchell and Rapkin recognise, for example, that one establishment, while serving a single general purpose, may contain several activities. Each of these may be occupiers of a distinct portion of the parcel occupied by the establishment, and the size, spatial pattern, and _nature of the use_ of such portions may be significant factors in the understanding of land use. Guttenberg under the label of 'activity effects' deals with a variety of quantitative aspects. The label attempts to answer such questions as, how much of a given activity, how much traffic, smoke or noise does the activity generate, what is the service radius of the activity?

Both authors are ambiguous, however, as to where the density, coverage of lots and bulk of structure aspects of these land use activities should appear. Should they appear in criterion (4), the kind of activity--size and intensity of use, (Mitchell and Rapkin) and "how much of a given activity" (guttenberg)[9]--or in (1) and (2), the physical dimensions of the physical stock and the description of those who own and use it, in terms of type of occupancy, density etc.

We shall assume that the latter form of inclusion is the more satisfactory. That is, it is assumed that we

know major uses and degrees of use and the spatial division
into part uses (the portions of use per component of activ-
ity), ownerships, values etc., and that we wish to under-
stand their interaction in terms of activity within (fixed
and moving) and between major and constitutent uses. We
thus confine ourselves, in the main, to nonphysical dynamic
aspects of land use and activity which are likely to vary
and be of importance in time. The nature of this varia-
tion is the substance of further inquiry—some examples
may generally illustrate these conceptual notions. (The
third example will lead us to the topic of major changes
or disruption occurring within the general flux of activi-
ties and their importance for land use models.)

Examples: A parcel of land occupied by a large estab-
lishment of the electronics industry is likely to contain
distinct pieces of land devoted to different sub-uses.
Within sub-uses there will be activities associated with
a kind of physical structure: (Where appropriate these
activities can be linked to details of this structure
and its occupancy which are to be embraced by criteria
(1) and (2) of our land use classification system). There
will be activities such as processing of materials (in a
factory), storage of goods (in a warehouse), administration
(in an office) and recreation (on a green space) etc. Or,
in a residential area there will occur activities such as

recreation (on private or public ground), entertaining
and domestic chores (in dwelling units and gardens),
storage (in garages) and so forth, all in a complex and
subtle routine. Between sub-uses there will be activities
of both communication and movement; between main uses
there will be important flow activities often associated
with road and transportation land uses (though not neces-
sarily--witness the telephone). And there will be activi-
ties, such as pleasure driving, of limited relation to
physical structure and physical constraint but occurring
within an observable and recordable physical map boundary.
These are some of the dimensions which the typical concen-
tration on criteria (1) and (2) tend to omit.

Or more fundamentally, from the point of view of
planning, consider the activities of major physical change
or location of an establishment, aspects of land use
normally omitted from any classification system.* We
refer to the process of environmental change encompassing
both felt needs for change due to constraints on activity,
and adaptation to new activity routines upon change.
These are definitely activity aspects pertinent to the
urban scene.....As Chapin observes, "planning agencies
have jumped directly into land use studies, essentially
looking at the effects of activity systems rather than

---

*And difficult by comparison of maps of an area at
different points in time.

seeking to define and understand activities themselves as producers of land use patterns."[10] What might be thought of as the "behavioral antecedents"[11] of location are a range of variables influencing the behavior of users of land uses, which can not (and, therefore, have not been) adequately represented by constants or by proxies, the usual measures of land use.

Clearly, this example and Chapin's remark brings us from the consideration of what activities are and how they are related to land use, to the consideration of how they _act_ (with other aspects of land use) so as to condition decisions about environmental change and location, and how they are _acted_ upon by processes of (and as the result of) decisions about location and change in the Metropolitan structure. By this definition every activity has a resultant or outcome effect: an activity is entered, experienced and evaluated, and dissatisfaction results in attempted changes, the most noticeable of which we have discussed as example--that is, location. Activity routines, we can observe, have a place in land use models for they are dynamic not only in the sense of their volatile and changeable temporal flux but in influential long-term effects on environmental form.

So, in justifying an interest in activities we note that,

a)--they not only help in understanding, by adding
an extra dimension to the land use planning
task, but

b)--they serve a useful function in modelling and
prediction. Both justifications are obviously
influential of,

c)--the nature of design and

d)--more sensitive planning control through the
development of legislation which includes the
activity component. Further, as a component
of control, the activity variable is advanta-
geous in being of relevance (and directly
relateable) to other factors of land use. It
can be linked also to current refinements in
the procedures of measuring and controlling
these other factors--to the development of
performance criteria and the measurement of
externalities, for example.

In fine, this study takes the position that the use
of land in a metropolitan area is the sum total of man's
accommodation of and to activity routines and to his
felt needs concerning environmental qualities. It is
argued that causes of activity behavior are complexly
tied up with daily routines of land users and associated
value and policy bases concerning environmental qualities:

it is argued that environmental accommodation and the tipping point in location choices, particularly in advanced societies, is more and more to be found in how well behavior patterns are understood and how sensitive the environment is to the user of space. All this stresses the importance of "stratifying demand for space"[12] along lines sympathetic to activity systems and preference patterns for space users: the emphasis of such an approach goes into factors (such as amenity factors like gardening, access to one's private yacht, or the time neighbors go to bed) which many theorists normally treat as constants or convenient miscellaneous items in their analysis of (adaptation and location of) a firm, a household, or other entities within the city. An analysis of economic models of urban land use patterns proposed by Haig, by Wingo and by Rothenberg indicates that the first omits them, the second has a tentative proxy, and the last attempts, but frankly admits to, the difficulties of their measurement. (Some of those difficulties will hopefully be surmounted by this study.)

Further to this position we should suggest the connection of these behavioral activity antecedents of location and those subsequent to it, to a larger behavioral system and theory which defines the generalities of decisions about the range of activities upon which an individual may engage rather than the way, once generally

chosen, activities are routinsed. (In anticipation of
following sections we can note that the larger behavioral
system is seen as the cultural milieu of norms, skills,
environmental conditions, sense of efficacy and so forth,
which can perhaps be summarised by an index of time
horizon; and that dependent upon it is the specific and
more changeable activity routine measured, perhaps, by
the time-budget. As noted, our aim will be to investigate
the applicability of a time related measure to sequential
stages of decision in the behavioral/activity process.)

The stage set and generalities of intent over, let us
turn to the aspects of activity, their individual explana-
tion and structure. In order (from a conceptual viewpoint)
they are:

ACTIVITY DESCRIPTION (A)	(1) --Province	
	(2)a--Affinity (or Commonality)	Temporal Grain
	(2)b--Insularity (or Segregation)	
	(3) --Focality (or Nucleation)	Temporal Organi- sation
	(4) --Dispersion (or Concentration)	
	(5) --Type	
INPUTS (B)	(6)a--Partcipation	
	(6)b--Contact (or Association)	
	(7)a--Communication	
	(7)b--Movement	
	(8) --Volatility (short-run Variation)	
	(9) --Dynamism (long-run Alteration or Change)	
	(10) --Motivation and Value	

OUTPUTS (C)	(11)	--For the situation or-----Integration, occasion (situations Break-up occur within social etc. occasions)
	(12)	--For the Activity---------Disruption, Routines Volatility, etc.
	(13)	--For the Interactants-----Satisfaction, Affect, Control, Support, etc.
	(14)	--For the Establishment----Instruction, Integration etc.
	(15)	--For the culture----------Rumor, Myth, Mutual Support

| EVALUATION AND JUDGEMENT (D) | (16) | --Made by Planning agency with respect
to Goals and objectives (for various
scales of planning). |

Before explanation of each aspect, a word on (a) the general scheme of division--Description, Inputs, Outputs, and (b) its relationship to the choice of terminology.

(a)--In intent, Description is straightforward. We want to know something of the general nature of the actor and of the activity so that they may be generally classified. It will be shown that this classification can occur independent of consideration of inputs and outputs--just as we can partially classify uses without inclusion of occupancy or density measures.

The Input-output scheme has previously been hinted by our suggestion that activity routines are actively

appraised so as to implicate adaptation, change within uses and location. A comment by Heirich is pertinent to this point--"to be conceptually useful, allocation of time (an input)" or other resources, must "be linked to output from time use. An activity may not have diminished in importance, if less time (etc.) is spent on it but the same output is maintained."[13]

This conceptual distinction is very important to the remainder of the study, and essential, it is suggested, to the general study of activity routines. It enables us to think and argue clearly as to the difference between a person's contribution to activity (time, money, self, assets, energy), and his expected or explicit returns (in terms of satisfaction, contact, effect on future activities etc.). The concept dichotomises the variable activity and locates its aspects in such a way that the positional relevance of various pieces of research, now fragmentary, may be easily comprehended. (Clearly the nature of an activity and its input-output value might be measured, in part, along a time dimension: this is not to be decided here, it should not be inferred from the above quotation that it is the only or best measure. Cursory examination shows, for example, that time is only tangential to aspects 12, 14 and 15.)

(b)--The above distinctions have led to the use of certain terminologies and an overall typology of aspects

which are at variance somewhat with those of other
authors who, by comparison, tend to be specific in their
delineation of relevant aspects of activity. We shall
use activity and activity routines in a sense which, for
other authors, is equivalent to or subsumes,

1) Interaction (sometimes with particular
reference to Participation),

2) Transaction (or Interchange),

3) Communication, and

4) Activity system, Activity Pattern etc...

--Interaction, interpreted loosely, is any form of
involvement between actor and environment and actor and
actor. For our purposes it would seem to be an adequate
substitute for activity: semantic suggestiveness is its
only failing. Thus, at one extreme it might be a catch-
all including all our aspects (and more) of activity, at
the other it might be specifically related only to, say,
participation.

--Meier suggests that transaction is a completed
circuit of interaction.[14] How do we measure an inter-
action as complete and thereby distinguish transaction
from interaction? A man sitting in solitude (a recog-
nisable activity) completes his circuit of interaction
upon cessation of reflection, but what measure would
contain and reflect this activity as complete? Either

we recognise that philosophically all interaction is transaction or we confine counting and categorising of transactions to sociocultural interchange at the macro level. The latter limitation precludes sensitivity to many of the overlays of land use which are qualitatively and quantitatively important to it, and should, therefore, be included in both conceptual and operational schemes. We shall choose the former alternative--i.e., transaction = interaction (or a part of it) = activity.

(It is Meier's misfortune that he thus delimits his conceptual scheme, so concentrating on the properties of the transaction itself, to the exclusion of a satisfactory scheme for description and the understanding of output.)

Chapin refers to interaction patterns or behavior patterns (the "rational and overt forms of interaction") in a manner that is fairly comprehensive. He subdivides interaction, however, into activities (within place interaction) and communications (between place interaction).[15] This is a division deriving from a spatial notion based, possibly, on Lynch's adapted space/flow space typology. Consider, alternatively, the general measure of activities in Time, not in space--we might include both of the interaction types noted by Chapin along the one dimension, and we would not limit ourselves to the measurement (and notion) of communication as a between place activity when,

in fact, it can be an important component of within place occurrences. We expand the activity spectrum beyond spatial constraints or as overlays to them: thus we need not arbitrarily define what is within or what is between place, or what is (in some instances) place. We shall further examine classification of activities in Time and not in Space.

Communication, is here included as but one aspect of activity.

In the main, objection to system and pattern is emotional. Both words convey overtones of activity interdependency and resolution, tending toward the static.

Routine is designed to reflect a process which is stochastic save in its continuity of procedure. The term is unsatisfactory in its suggestion of repetition of the same process. Unpredictability of activity situations should be emphasised, but not without some notion of the daily round of life. (Activity Scenario would be an acceptable alternative.)

Aspects of Activity, an Explanation. (Obviously some of the aspects below are directly measurable by Time; again (!) we will leave the explicit statement of these relationships until Section 3)

Province (1--Descriptive Aspect): identifies the actor and some general information which will allow him to

be placed in a spectrum of importance and potential in-
fluence. Public-private, might be a primary division
followed by classification parallel and complementary
to any land use (criteria (1), (2) and (3)) system. The
areas of responsibility and authority of the actor as
well as that of beholdeness should be included. Some
general indication of activity effect relating to changes
in Province (from public to private, for example) will be
applicable: the individual's dominant modes of public/
private activity might, for example, be recorded by
indexes weighted as to total time spent on each.

Evidently, some indication of Province is included
in Land use criteria (1), (2) and (3), but it is not
likely to be directly related to activities. Thus, a
Land use classification system might identify 'a single
family detached dwelling unit residential area.' But
where and when do constituents of the family, children
say, choose to play, in public or private area. Then,
what is their activity like; the following describes.

Affinity ((2)a--Description): is the activity
isolated and unique or, alternatively, sympathetic and
common to its neighboring and associated activity milieu?
Isolation or commonality could be measured by a number of
criteria according as to how likeness of activities is
identified--by 1) type (work or play, for example),

2) occurrence in a spatial location, 3) by time taken,
4) by time of day, etc.

Number 3), time taken will be used as the most apt
criterion.

Separation by type, criterion (1), involves either a
superficial limited classification within which there
will necessarily be many unaccounted subtleties or, alter-
natively, a very detailed classification offering too many
inter-activity permutations. The International Time-Budget
study found, for example, that activities could only be
efficiently classified into 96 specific types and no fewer
than 27 general ones[16]--the permutations within even 27
categories are obviously prohibitive. In contrast, time-
taken can be categorised into various units depending on
the nature of the investigation and on the activities in
question--5 minute interval units for one situation, or
hourly divisions for another. The permutatious can be as
limited or comprehensive as desired, depending on the
length of interval chosen.

Also, when concerned with change (and volatility),
this criterion overcomes the potential error of functional
equivalence by which change in the nature of any function
(or type of activity) is shown to be of small magnitude
(or otherwise) without recognition that major change has
occurred in the nonfunctional equivalents. The fact that

television, for example, now uses up some of the time
formerly spent on equivalent media activities, such as
reading, cinema-going and radio listening may be less
significant than the fact that T.V. also uses up time
formerly spent at work, sleeping, or on family conversa-
tion.[17] (Further, it is a continuum offering a direct
comparability of the quantifiable importance of activities;
this is not offered by Affinity of Type.)

Number 2), separation by spatial location, introduces
variables which we have assumed to be included in other
land use criteria. Separation by time of day, number 4),
is increasingly an insensitive measure as activities become
more flexible as to occurrence.

Insularity ((2)b--Description): At what point does
the temporal commonality or affinity decompose. We can
develop categories of this aspect by time,--how long is
affinity maintained. The dimensions of the categories of
insularity and their cut off points are not here considered.
Activities are grouped by Affinity and surrounded by
boundaries defining Insularity. (The notions (2)a and
(2)b are integral, and make distinction only as to (a) how
to bring activities into groups and (b) define groups one
from another.)

((2)a and (2)b, may provide a measure of Temporal
Grain.)

Focality ((3) --Description): Irrespective of affinity or Insularity, what is the propensity of activities to occur in concert, both in Time and in Space? A given area may have many activities occurring at one point in time although they are not spatially focal, and vice versa. The following page of illustrations should further explain aspects 1, 2 and 3.

Dispersion ((4) --Description) of the activities of various actors, rather than the total of activities: Are the activities of any individual actor dispersed in space and, possibly, in time (e.g., a shop might be open only in the morning and evenings, a school bus would be utilised in the morning and afternoon only): Aspects 1, 2 and 3 examine activity routines across a given area as they change in time and space; this is the general design of the activity carpet. Aspect 4 seeks to pick out important and representative individual threads to see how they are woven across it--and how they bind it together. Obviously in the temporal measurement of personal activities dispersion is irrelevant because time must be continuously expended in the process of living. Some distinction by time of day when the most activity is undertaken might, however, be applicable.

The spatial focality of the total of activities of various actors will be a measure of degree of Localism, or Realm.

(2)a
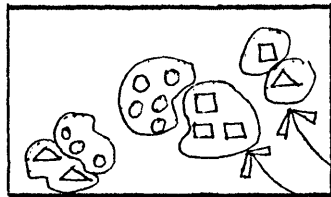
TIME MAP (ON A
SPATIAL BASE MAP)

AFFINITY

O SHORT
□ MEDIUM
△ LONG

TIME TAKEN FOR AN
ACTIVITY

AFFINITY BOUNDARIES
ESTABLISH GENERAL
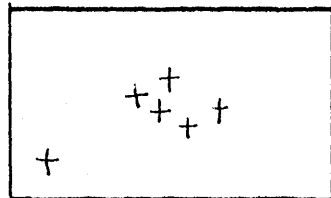INSULARITY

(2)b

TIME MAP (ON A
SPATIAL BASE MAP)

INSULARITY

▭ LONG
▭ MEDIUM
▭ SHORT

MAINTENANCE OF
INSULARITY, AS
ABOVE, THROUGHOUT
THE DAY

IF THE AFFINITY OR
INSULARITY BOUNDARY
VARIES GREATLY FROM
DAY TO DAY THE
ACTIVITY IS VOLATILE--
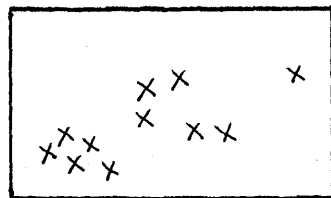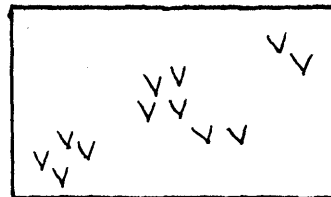SEE(8)

(3)

TIME + SPACE, MAP

FOCALITY

MORNING   +

A DIURNAL MEASURE
OF TIMES OF USE
(AS OPPOSED TO
THE CHARACTERIS-
TICS OF THE USE
OF TIME ABOVE,
(2)a AND (2)b.)

AFTERNOON   X

EVENING   V

D I A G R A M I
(ACTIVITIES)

Type ((5) --Description): A general classification
by type of activity taking place over the spatial area
considered. This is clearly an adjunct to any land use
classification and should be related to it. The classifi-
cation can be as detailed in the categories it contains as
the situation demands. There will be no permutations
between categories, the Affinity measure encompasses this.

Participation ((6)a--INPUT): How many people partici-
pate, defined by age, sex, class, ethnicity, rate or what-
ever. (Class subsumes some method of distinguishing
characteristics of occupation, income, education etc.)

Also, what are the realms of interaction in partici-
pation--the individual alone; individual to individual, to
group, or to group in a larger social milieu.

Contact ((6)b--INPUT): Complementary to (6)a is the
notion of contact among actors defined by the specific
inter-personal relationships between social actors. It is
a specific refinement omitted from the general measures of
universal (applicable to all situations) attributes of
Participation. Thus an individual may participate in a
small group acting in a larger social gathering, in a
cinema say, where communication (see 7) would be commonly
agreed to be the film presentation. But contact (being
with) a close friend or spouse during that communication
can not be neglected as an input to the activity. It is,

on one hand, a form of (in this case unspoken) communication, while on the other hand, it constitutes an essential element of event Participation.

Contact can be readily measured on a list, perhaps a scale, of relationship attributes of participants. Reference to authority, responsibility and control structures as they affect participants should also be made.

Communication and Movement ((7)a + (7)b--INPUT): What products or services (or emotions?) are transacted or modified? Also how much is transferred; can the quantity be described to include mass and energy components? How valuable is the activity measured in monentary units or in time spent (though this measure, as we noted, may be insensitive to functional equivalents), or How informative is the communication measured or estimated by the surprise value of the cultural images or symbols used in the course of transmission.

Meier warns that operationally it is better not to try to count private or secret exchanges between members in a household or in a group since the report to observers, if given, is privileged.[18] More realistically they are probably just too difficult to account; planning, as here defined is only peripherally concerned with such communication modes. None the less it must be alert to their importance (which is often marked); a useful indication of this

importance will be given by data on Motivation and Value.
Thus, if a private activity is highly valued its communication may be vital--this is only inference, but repeated
observation of the same characteristic in the data will
give some reassurance of its validity.

We shall return to the complexity of communication
measurement in later sections, with particular reference
to aspects of multi-party, multi-level interaction, and the
extent of communication as it is relevant to planning.

It is interesting that, logically, communication is
the link between Input and Output, without it there can be
no output. This perhaps is suggestive for later measurement studies. Also, as shown, communication is integrally
linked to Participation and Contact; cessation of one or
(necessarily) all of these aspects therefore represents
termination of activity, elimination of actor, or migration
(with or without replacement).

Volatility ((8) --INPUT): What is the propensity for
                                        certain
one or a set of activities to fluctuate (in characteristics)
noticeably over short periods, as distinct from long term or
major changes over time. Simple measures of volatility des--
scribed by variation in mapped Affinity could be readily
devised.

Dynamism ((9) --INPUT): This is the process of development or change from one state to another. It may be preceded by noticeable volatility or may be an erratic process

of alteration; some indication of the process of change is, therefore, applicable.

Volatility and Dynamism: We have seen in the consideration of measuring change in respect of time that several measures of change are valid, (rate, intensity, duration); these same measures can here apply to Aspects (8) and (9). Also observed was the variation in saliency of various aspects of Time according to the situation of interest--social meaning might, for example, be more explanatory than the bald description of time expenditure. So it is that a change in activities may be best or adequately described by a change in participation, or any one or a combination of aspects. In some instances a change in one aspect will necessarily involve change in a set of others, and we should be alert to checking the frequency and constancy of such changes with a view to developing summary indicators in the form of one aspect which will suggest changes in others, but without requiring their measurement.

Motivation (9) and Value (10). (INPUTS): We know that many activities are performed, in large part, without conscious motive, that individuals act without much thought or premeditation. Also we know that certain activities fulfill many obvious or direct motives, such as eating for the satisfaction of hunger, or selling to make money. Still other activities are not what they seem but are a cloak for the acting out of motives not endemic to them.

From a planning standpoint, not a psychological or sociological one (which would focus on the Why and mechanism of the Motive-Action process), flexibility will be introduced into design and control if it is known that certain activities commonly accommodate a range of motives or that a particular motive can find expression in any of a range of activities. Thus, if motives were predominately reported as personal but found expression in economic or societal activities only, we might infer that the activity routine lacked in variety and choice for a certain sector of participants.

Value, is confined specifically to the choices which people make in respect to the activities they would ideally pursue if granted more free time. This allows some input for forecasting and modelling and suggests, by indicating favored activities, which components in the existing routines are highly valued, or not valued, or open to devaluation. The question of how values influence the choice of one dominant mode of activity routine from among the many which exist as representatives of different life styles is not considered; the consideration of Life Pattern Time is, however, hint of the manner of its inclusion. We concentrate in Aspect (10) on the value attached to selected activities within the compass of the routine rather than how the total of the routine might attract value convictions.

OUTPUTS: will recieve cursory examination. The main purpose is here to reiterate the importance of the process of activity evaluation, and having done so to state that they will not here receive any further attention in detail form. It can be warned, however, that a planning focus on Output evaluation is a specifically oriented one, concentrating perhaps on general satisfaction, development of skills, improvement of self concept (?) etc., but not on any of the concerns necessary to a social/psychological perspective of activity, such as degree of involvement, resulting tightness-looseness of the situation, development of resources for sanctioning etc. The Outputs should ideally be relateable to other land use aspects and be a fairly 'hard' input to recording, design and modelling schemes.

JUDGEMENTS: the final stage in applying this scheme would be the assessment of gathered data as to its attributes and as to the way that it is in line with the goals and design of the Comprehensive Plan (and its Area and Neighborhood components). These obviously vary by situation but some of the most general goals against which to evaluate routines might be,

--Efficiency; does the spatial arrangement and its activity impose overload or disproportionate expenditures of time, money, energy etc. Accessibility and Convenience are pertinent parallels,

--Degree of Determinism; to what extent are (the
activities, though perhaps efficient, organised
so as to permit of individual expression in their
acceptance, modification and rejection,

--Degree of Pluralism; is a nondetermined indivi-
dualism to be accepted within the framework of a
few or a variety and choice of activity routine
opportunities and possibilities,

--Effectiveness; how do they act to maintain, for
example, Health, Safety, Welfare and Morals,

--(etc.).

The foregoing is a general and sometimes brief examina-
tion of salient features of activity. As yet no concise
argument has been forwarded as to why the Activity/Time fit
is to be recommended, though obvious hints, deduction and
intuition will have identified reasons and instances in its
favor.

The following two sections are addressed to the justi-
fication of this fit.

Section 3 turns to the details of relating the variables
at both a conceptual and an operational level: Section 4
reports a test case of part of the conceptual/operational
scheme which Section 3 evolves. Both sections make use of
the lesson (in terms of face Validity) of Appendix I which
looks at how previous research has combined Time and Activity
and how in doing so it has been able to draw in the various
aspects of both variables.

Before closing the section, it may be useful to
observe that the 'salient' features of activity which we
have identified and the structure with which we have
linked them will necessarily influence, if used in a
planning situation, the way in which aspects of 'community'
are conceptualised and measured. Though many aspects of
Urbanism and Community have been included in the scope of
the activity structure it does not give explicit attention
to, for example, the full range of:[19]

> --Community as Space (criteria (1), (2) and (3) of
> land use),
>
> --Community as People (kinds, and their life
> patterns),
>
> --Community as Shared Values and Institutions,
>
> --Community as a Distribution of Power,
>
> --Community as a Social System,
>
> --The Fashionable distinction of Community (vs.
> larger society) Action.

Clearly, some aspects of activity are related to these
alternative viewpoints--the aspect of communication and the
socialisation process which is usually included in a social
system description is an example. The hope is that the
selected activity aspects will provide contingent points
for the linking of a variety of conceptual and empirical
questions resulting from a range of differing viewpoints.
Our specific interests here relate to behavior and the

processual aspects of institutions and other urban enti-
ties; from a consideration of the omissions of land use
classification and design, we identified the activity
variable which was, in turn, seen to presume certain be-
havioral biases--motivation, participation, communication
and value being the most prominent. Albeit these biases
are limited to a very crude level of behavioral explana-
tion; our practical planning constraints demand this.

But the behavioral/activity bias suggests that we
might identify not only what and how activities take place
but also why, defined by class, a certain range and pattern
of activities is decided--very much in the way that we
moved from a factual time-budget description to a Time
Horizon (or prior determinant) affecting the actuality of
expenditures. It will be useful for planning to know of
constraints on behavior occurring by virtue of a prior
definition which decides which activities are permissible
or pertinent, rather than to know only how activities are,
in realisation, patterned and varied with respect to their
aspects. That is, to draw in some of the cultural deter-
minants of activity. (The following diagram explains this
conceptual step, though it offers no operational methods
for its quantification. Section 3 will include further
reference to it.)

SECTION 3:

TIME AND ACTIVITIES,
SOME THEORETICAL AND
OPERATIONAL CONSTRUCTS

SECTION 3:   <u>Time and Activities, Some Theoretical and</u>
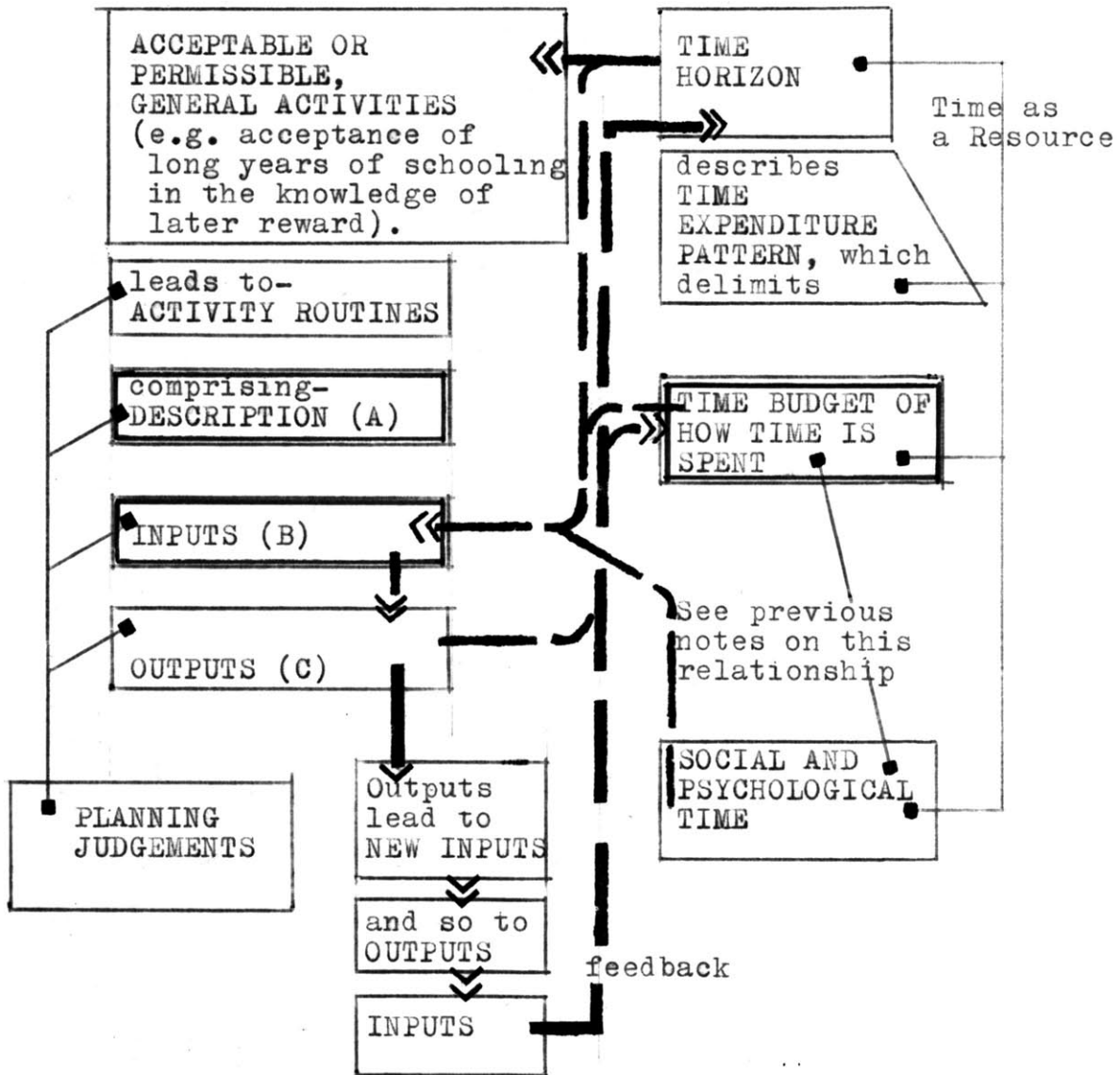<u>Operational Constructs</u>.

We are now in a position to bring together and relate
the various concerns of both Time and Activities. We shall
do so with the aid of two diagrams representing two states,

(1)   Conceptual Relationship

(2)   Operational Relationship.
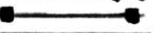
The questions related to each stage are:

(1)   (obviously), How can the aspects of Time be
integrated with those of Activity at a general
Theoretical level.

(2)   If an aspect of Activity is to be measured in
order to gain information pertinent to it (see
definitions), how effective will the Time
variable be in identifying salient information.

All the components in both diagrams should be familiar,
it is their positional characteristics which may be new and
unexplained. In cases where these characteristics are
thought to be difficult or contentious a brief explication
will be included. But generally it is intended that this
section be a <u>summary</u> or brief clarification of the hints
and images and distinctions (and nuances?) which have
packed the course of the text, especially Section 1. It
is thought of as the denouement rather than as a continuing
part of the exposition. (See Diagram 1).

ACCEPTABLE OR
PERMISSIBLE,
GENERAL ACTIVITIES
(e.g. acceptance of
long years of schooling
in the knowledge of
later reward).

TIME
HORIZON

Time as
a Resource

describes
TIME
EXPENDITURE
PATTERN, which
delimits

leads to-
ACTIVITY ROUTINES

comprising-
DESCRIPTION (A)

TIME BUDGET OF
HOW TIME IS
SPENT

INPUTS (B)

OUTPUTS (C)

See previous
notes on this
relationship

PLANNING
JUDGEMENTS

Outputs
lead to
NEW INPUTS

SOCIAL AND
PSYCHOLOGICAL
TIME

and so to
OUTPUTS

feedback

INPUTS

Note: Activity DESCRIPTION is an
operational rather than a
conceptual stage. It is
included for clarity.

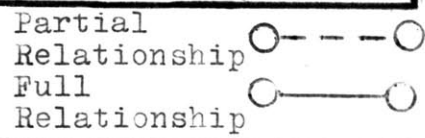| One Way Connection | |
| Two Way Connection | |
| Aspects considered in detail at the operational level, see Diagram 2. | |

THE TIME/ACTIVITY
SCHEME AT THE
CONCEPTUAL STAGE.
DIAGRAM I.

We can translate the theoretical scheme (Diagram 1) at the conceptual level into an operational scheme aimed at the measurement of aspects of Time and Activity--i.e., the measurement of components of the theoretical scheme (Diagram 2).

In so doing, we will translate only <u>part of the general scheme into operational terms: we include Description, Inputs (Activity) and Time Budgets, and exclude Time Horizon, Pattern, Social and Psychological Time, and Activity Outputs.</u> This pruning is necessary because of constraints of both time and expertise (related to knowledge and understanding of the Aspects omitted). We are foregoing, therefore, (1) an explanation of why the Time budgets of Activities representative of different groups and populations include unique routines, (2) a measure of Output and also of the degree to which the total activity satisfies or conforms to specifications made by the temporal pattern, thus precluding the development of a continuing inventory serving as "an advance warning system" (Chapin) for anticipating changes in the locus and nature of activity routines.

The diagram on the following page is at the operational level. It indicates that the apparent neatness of the theoretical formulation is somewhat overstated. For a precise statement of theory we would have to rewrite

ACTIVITY ASPECTS	Appropriate Measure	EQUIVALENCE	Appropriate Measure	TIME BUDGET
PROVINCE (I)	Census, full sample		Survey	WHAT (a)
			Unobtrusive Measure	
AFFINITY (2a)	as above		as above	WHEN (b)
			as above	
INSULARITY (2b)	as above		" "	WHERE (c)
			" "	
FOCALITY (3)	" "		" "	With WHOM (d)
			" "	
DISPERSION (4)	" "		" "	HOW LONG (e)
			" "	
TYPE (5)	" "		" "	HOW MUCH (f)
			" "	
PARTICIPATION (6a)	" " , or		" "	HOW OFTEN (g)
	Survey		" "	
	Unobtrusive Measure		" "	HOW REGULAR (h)
CONTACT (6b)	SURVEY		" "	
	UNOBTRUSIVE MEASURE		Analysis of (a) through (h)	CONFIGURATION
COMMUNICATION (7a)	as above		Survey	DURATION
	as above		Unobtrusive	
MOVEMENT (7b)	" "		" "	RATE
	" "		" "	
VOLATILITY (8)	" "		Analysis of Duration & Rate	INTENSITY
	" "			
DYNAMISM (9)	" "			
	" "			
MOTIVATION (I0a)	" "			
	(i.e. Survey)			
VALUE (I0b)	" "			
CONFIGURATION (summary of 6 through I0)	no measure			

Partial Relationship ○ - - - ○
Full Relationship ○——○

Note: Intensity Measure is independent of Content: see Section I.

DIAGRAM 2.

RELATIONSHIPS, DEFINED OPERATIONALLY, BETWEEN SOME VARIABLES OF THE TIME/ACTIVITY SCHEME.

Diagram I identifying the specific relationships in the boxes. Time does not explain every Activity; the explanation of Activities employs time in a useful and economical fashion but it also requires further measures for its full explanation.

It has been a long way to this simple summary. It is hoped that en route certain myths and commonly accepted notions have been laid, and that some structure and clarity has been revealed.

Comment on the Operational Scheme (See Diagram 2): at this point we are examining the specific extent of a relationship; we see that there are a number of useful and clear commonalities. But equivalence depends somewhat on the choice of measure, so we shall first explain the choice of the measures proposed.

It will be seen that the measures for Descriptive aspects of Activity are the exceptions to a general rule of survey techniques, they emphasise a comprehensive or total knowledge (of Affinity, Insularity, etc.) of activities over any planning area under consideration, within reason of time and cost. Their distinction results from the viewing of Descriptive aspects as the setting of a scene, later to be filled out by elaborative knowledge (Input and Output) in much the same way that a typical

Land Use classification identifies pattern generalities requiring qualification as to, say, Structural condition, aspects of design (color, texture, materials), taxable value, and activities. Description is, then, the comprehensive work of an Activity study: the reason that a partial relationship only is shown between the first five aspects of time-budgets and those of activity is that the time-budget approach is seen as a survey (limited to samples allowing for generalisation) approach providing only partial (by volume) information to a full area census. The five aspects of What, When, etc., are, however, none the less crucial to the study of activity, and are synonymous with activity Description; it is just that as part of a census survey of activities they can not also be part of the usual time-budget survey technique. We might rewrite the scheme as,

DIAGRAM 3

Aspect	Measure	Equivalence	Measure	Aspect
PROVINCE	Census		1 Census 2 Survey 3 Unobtrusive survey	What
AFFINITY	Census		1 2 3	When
INSULARITY	Census		1 2 3	Where
FOCALITY	Census		1 2 3	With Whom
etc.		etc.		etc.
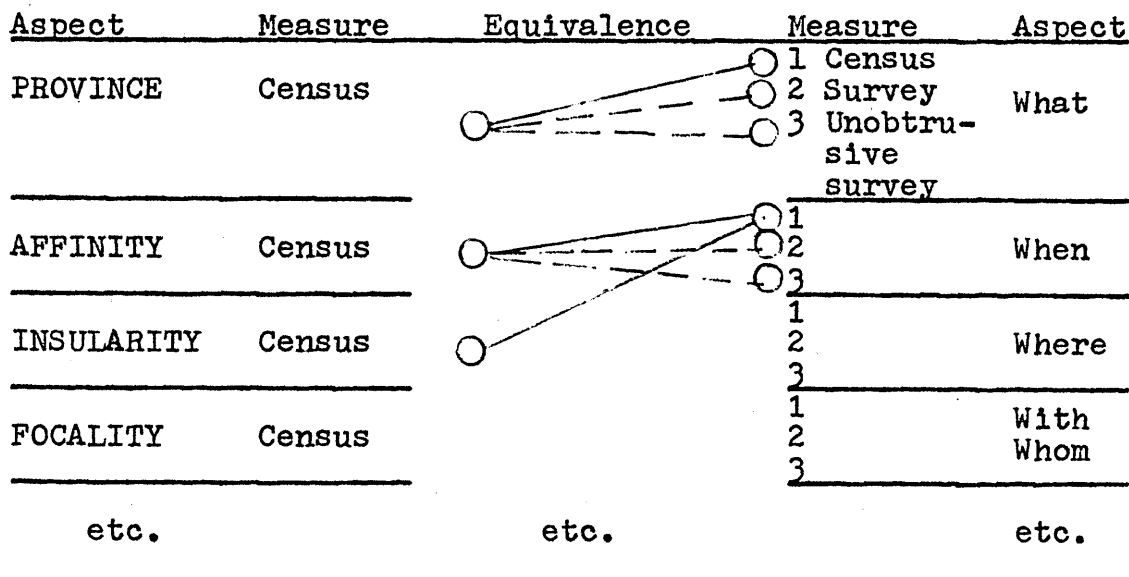
Obviously, if the Input aspects were also to be measured by census, the time-budget aspects would similarily require to be applied comprehensively (i.e., in all situations, not just in samples).

Many aspects of both variables are well linked. Two survey methods for measuring each aspect are suggested as indication that alternative approaches to the recording of the same phenomena (which might be correlated as a validity exercise) do not greatly affect the nature of the links to be drawn between aspects.

Some aspects are not strongly linked; i.e., Equivalence is poor, and a satisfactory explanation of the activity aspect would require additional information not offered by a time-budget record. Let us look at these poor links, identify missing information and ways that it might be obtained. This will be a sketchy review, to be given more substance in Section 4 and Appendix II.

Contact: it is unlikely that the simple notion and question 'With Whom', gives sufficient information about Contact, the activity aspect. Or, more properly, it does not sufficiently exploit this area of time enquiry as it relates to Contact. We might expand the question 'With Whom' so as to measure Contact in the following fashion:

| | (0) | Alone |

Primary Contacts (1-4)	(1)	Intimate Kinship, such as nuclear family members and extended kin members.
	(2)	Close Intimate friends, friends defined as 'very close', 'my best friend', etc.
	(3)	Close Associate or Client, a close friend deriving from a work context, whether or not actually seen at work.
	(4)	Good friend, a friend defined as 'close,' 'just a good friend,' etc.

Secondary Contacts (5-7)	(5)	Distant Associate or Casual acquaintance, either, a fellow worker who is not defined as a friend, or a person with whom one has a "speaking acquaintance."
	(6)	Cordial Recognition, defined as a person whom one recognises in address, or "just someone I say hello to."
	(7)	Pure Client, defined as a person whom one doesn't know personally, but one with whom interaction takes place in a client relationship.
	(8)	Strangers.

NOTE
(6), (7) and (8) are Impersonal Contacts:
((1)-(5) are personal Contacts.)

The above are <u>Individual</u> or <u>Group</u> Contact Categories. Other classifications would be necessary for Firms or Institution records; none are here included. Additional questions could determine authority exercised by or responsibility toward the reported contacts.

In a strict sense, asking respondents to allocate contact time (in the time-budget of activity) to persons with whom one has a particular qualitative relationship, will identify information supplementary to the numerical structure provided by participation. The quality and communication content of the activity are not usually known at this point.

<u>Communication and Movement</u>: This is not measured by Time-Budgets. Again, let us concentrate only on the individual (or household) or group as respondent to a survey on activities. We can then note the special interests and investigation which would require to be devoted to firms institutions and so forth, as exception to an 'Individual Respondent' survey.

We can divide Communication into four 'sub-aspects.'

1) <u>Direction</u>;
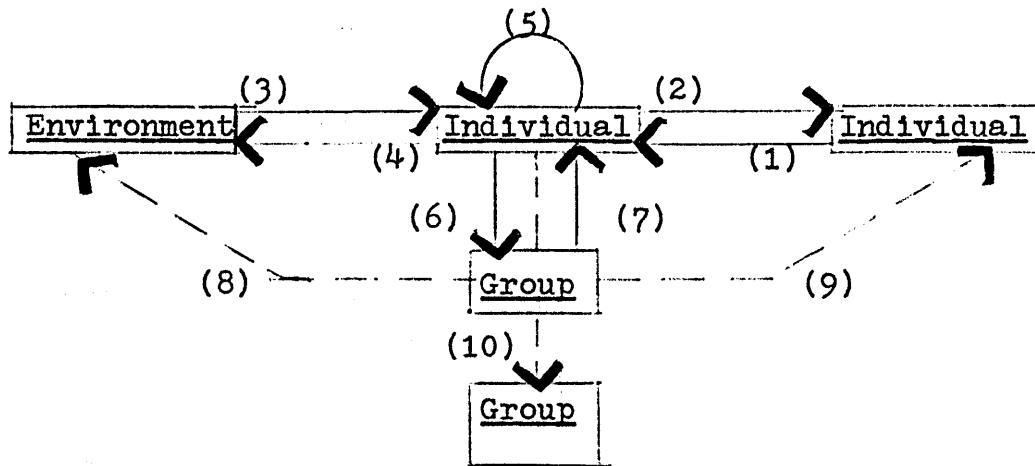
DIAGRAM 4

--The composition of any 'Group' is defined by

Participation and Contact,

--(8), (9) and (10) are Individual in or with Group

acting on Environment, Individual or another Group.

Individual with Environment communicating to another

Individual or Group is not included here because it

is included in Mode, (see below) in which the

environment is interpreted as an instrument.

--Individual with Individual, to Group or Environment

is not shown because two individuals are defined as

a Group,

--(5) is Individual to Self; contemplation, reading,

being alone, etc.,

2) <u>Mode</u>;

    (a) By word,

    (b) By action (demonstrative only),

    (c) By word and Action,

    (d) By sounds other than verbal,

    (e) By Action with Instrument or the Environment,

        Combinations of (a), (b), (d) and (e),

3) <u>Movement (and Exchange)</u>;

    (a) of Information,

    (b) of Goods,

    (c) of People,

    (d) Inconsequential exchange (pleasantries, etc.),
        unrelated to specific areas or disciplines of
        knowledge.

        Combinations of (a), (b), (c), (d),

4) <u>Main Contribution</u>;

    (a) to Economic Functions

    (b) To Social Exchange and Cohesion

    (c) to Psychological well-being (?)

    (d) (Perhaps an analytic judgement of the researcher).

    etc.

An operational measure for Communication would include
these sub-aspects. We will not look at the wording or
method of formulation.

The sub-aspects omit measures of value (of product
exchanged, for example) in economic terms, and notions of

mass and energy expenditure other than those contained in the allocation of time, participation and contact. These omissions are defended on the grounds of being more pertinent to firm and Institution activities.

Notions of (for instance) information content and social exchange, though included in the sub-aspects are easier to suggest than to operationalise. Crude (though sometimes exhaustive) measuring techniques are available, ranging from open-ended questions to semantic differential scales, to question sets (as a measure of construct validity) in questionnaire formulation, etc. It can be cautioned, without examining these techniques, that the sophistication of the measure need not exceed that of the problem.

Thus it will only be important to know (i.e., measure) the general nature of, say, social exchange; whether this is in fact meaningful exchange is not at issue, it is a question probably requiring research beyond the cost/ objective/benefit framework of our concerns. If, subsequent to research on the general nature of the subject, our goal became the fostering of all possible social communication and exchange, the sensitive design of an environment accommodating and responsive to these aspects would be a contribution "undoubtedly" to meaningfulness, but would not derive from an analysis of that meaningfulness. Our tasks are by nature indirect to certain issues.

<u>Motivation and Value</u>: these aspects are not measured by any aspect of time-budgets. They require additional techniques. Again, our concern at this point is to note the exception rather than supply the technique of measurement. We might suggest, however, as evidence of the possibility of measurement, Sorokin's work on Motivation, and Chapin's and Foote's study of Values.

Sorokin asked simply, "Why did you engage in this Activity?" He experienced a satisfactory degree of candour in responses, he listed motivations and matched them against activities to see how patterns of "Activities satisfying Motivations" (and vice versa) evolved.[1]

Chapin's study of values is a 'Trading Stamp' game simulation of "What would you do with X extra hours of Free Time?"[2]

Foote, in his study of household activity routines has used a notion of Preference which is approximate to our particular interpretation of Value.[3] His technique is a simple one, but even so it adds a dimensional characteristic to value which Chapin's complex scheme omits. Thus, an individual, faced with the prospect of doing a specific chore for the rest of his life, is loath to categorise this as unpleasant; with rare exceptions, these activities are described as routine or necessary. The preference rating in this study first asked the respondent if a certain activity was a routine one, then questioned whether

it was something that they liked or disliked: Chapin
offered his respondents several free hours to be filled
as they wished (within the constraint of certain rules)--
naturally, highly valued (preferred) activities were pro-
jected, but we cannot infer that the others were disliked,
or that the valued ones would remain constantly preferential
over time.

Foote's method, through recognising the difficulty of
categerisation by the individual, probably introduces some
bias. None the less, a comparison of the preference
rating of the different activities closely confirms the
expected. The usefulness of the Preference method is the
inclusion of other activities (mentioned in comparison)
where personal attitudes would not normally be well known.
(The International Time Budget Survey adopts a technique
similar to that developed by Foote.)

Both methods have the disadvantage of working with a
prescribed list of activities which might constrain
responses--the respondent might value highly an activity
excluded from the questionnaire schemes. Thus, Chapin
lists the possible activities upon which hypothetical
extra free hours (trading stamps) can be spent. Foote
enquires only about activities mentioned on the diary day.
which, though hopefully typical of the way time is
generally routinised, are unlikely to include all important
activities that gather value sentiments.

<u>Configuration</u>: a partial relationship between Configurations is shown because, simply, the Configuration resulting from time-budget analysis may not include the Contact, Communication, Motivation and Value aspects which we have just seen to require separate Measurement. A configuration of all Input aspects of activity would imply a more complete and sensitive analysis than one summarising activity on the basis of time-budget data only.

These, then, are the few exceptions apparent in an operational level comparison of selected aspects of time and activity.

In essence, the summary of the study thus far is that aspects of time in the behavioral sense advocated by Kant and Paget and the psychologists have an important association with activities and their analysis (which describes the behavioral and processual aspects of life but omits power relationships, shared values and so forth). The essence of time is change, and activities form, by definition, much of the dynamism of change.

At the conceptual level we found a complex but consistent relationship between the aspects of the time and activity variables. At the general operational level which considered but part of the Conceptual scheme there are some exceptions to the nicety of fit between variables. We suggested how these exceptions might be treated.

The following Section is an application of the Operational Scheme (see page 62a) in a Test Case.

SECTION 4:

TEST CASE

SECTION 4: <u>TEST CASE</u>

The Test Case is a practical (operationalised) application of the Time/Activity conceptual scheme developed in Section 3 and summarised in Diagram 2, of that section—this diagram comprises a list of Input aspects of Activity set against a Time Budget scheme. The links between Activity aspects and the Time Budget scheme were drawn, partly, according to relevant operational means; it is therefore imperative to offer this test of linkage, in a real situation, requiring well developed operational measures. We can test the efficacy of the links, evaluate their efficiency, and at the same time obtain data which may be suggestive of planning policy and action.

The test case can be explained as;

		Area of Consideration
(A)	the problems attendant upon translating conceptual Time/ Activity schemes into operational terms...............	General Methodology
(B)	the principles governing formulation of the operational measure, (this operational tool is reported in detail in Appendix II).....................	Sample, Reliability, Validity, Error

	Area of __Consideration
(C) the selected Respondents and	
general character of adminis-	Reliability
tration of the operational	and Validity
tool in the Test Case..........	in application

(D) Evaluation

(E) Summary and Implications for

Planning.

The Test Case is to be of limited extent; it is in effect a pre-test of the operational measures involved. As such there will be a need for caution in data interpretation as it implicates planning policy etc.; it will be suggestive but by no means conclusive.

(A) Problems_of_Operationalising_Time/Activity_Concepts:
Virtually all the previous studies have concentrated on the diary as the appropriate instrument for gathering data. Their example is not, obviously, a necessary assumption, but the success of the diary (in terms of richness of data, reliability etc.) is apparently more assured than alternative tools such as participant observation, essay writing, and investigation of public and private records, though these can be used as validity checks or for supplementary evidence to the diary reported data. Qualitative data (gathered by Holistic methods, for example) would be difficult to relate to hard data on use, occupancy, etc.

The diary data can be formulated as an individual would keep a personal diary (the popular diary) or as a structured record to be regularly completed according to instruction! The popular diary is criticised as but a reflection of activities according to their personal importance which catches only the problematic and dramatic episodes of the day, but not the full spectrum of activity characteristics, (important to this study). It is exclusive of time characteristics, such as how long, how often etc., which are here of concern; and recording can be very erratic and uneven over any length of time, or across individuals.

The research (structured) diary is the favored tool; it demands that the respondent co-ordinate the passage of activities with the full flow of time. It is thus more stringent and rigorous than the popular diary.

Variations in the <u>research diary</u> occur with

(1) the number of units into which the days are divided--this is determined by research objectives;

(2) the way in which the data is recorded by the respondent--either by a method in which the respondent reports his activity for each time unit in his own words, (these being later analysed and categorised by the researcher) or by one which requires the respondent to select, from a list of possible activity categories, a description which most closely fits his current activity;

(3) the number of co-ordinates or dimensions
of time and activity which are seen to be
relevant.

(1) The degree of time division varies widely:
Nelson Foote's study of the aged used 5 minute intervals
because of its interest in the way old people moved
within small scale institutional settings; the Interna-
tional Time Budget Survey used 15 minute intervals
because of a more general interest in activity and a more
active respondent group; Barker reduces his observation
to the minute and second! There is no requirement for
the time unit or interval to be constant throughout the
day (or week, or month); most authors use longer periods
(often of 1 hour) during late evening and nighttime
periods because of the generally decreased activity here.
But a study could start at a gross level of time division
and refine this differentially for further investigations
into small and large time unit periods, according as to
how the exploratory work suggested bunching or dispersion
of activities.

(2) The justifiable fear of the difficulty of
reliably classifying diary entries written out in the
words (and handwriting) of the respondents is no doubt
responsible for the extensive use of precategorised
response schedules. But it may very well be that one of
the most important questions for study is the appropriate

grouping of concrete data (activities reported without pre-categorisation), and their content analysis. If this question is foreclosed by pre-categorisation it may be that numerous corollary questions are, unintentionally, likewise foreclosed—most important is the preclusion that new kinds of activities and the changing importance of known activities (often reflected in their description) can be revealed by respondent comments. (Certainly our extended scheme which includes activity Outputs would reflect certain change functions independent of respondent diary reporting, but$_{\wedge}$the researcher is,none the less,
with pre-categorisation
cut off from a valuable source of concrete evidence rich in information relevant to the study of social change.) A useful compromise is to obtain concrete data and relate it to a pre-categorised set of activities not shown to the respondent.

(3) The number of aspects of activity and of characteristics of the Time Budget have already been specified. This study, because of its special planning slant, employs a range of aspects more extensive (or, rather, more comprehensive) than many previous Time Budget investigations; Appendix I offers an historical review and comparison of the extent of such studies.

There are, to be sure, many omissions here, such as a refined measure of "communication," or of questions such as "who initiated activity?" The point is, and bears

repetition, that an effort has been made to distinguish relevant physical planning variables which can yield useable information from variables which are <u>primarily</u> social, economic or psychological. Experimentation with various sets of variables and diary forms would doubtless be necessary to test just how pertinent are the selected variables.

In fine, this study will (1) employ two methods of diary structuring--1 hour time intervals, on one form, and ½ hour time intervals (1 hour at night) in the other; (2) each of the alternate forms will collect concrete data to be compared and classified against a pre-categorised list* of activities--in the 1 hour diary type respondents will be requested to fill out activities that can not be included in any interval on a separate sheet, (dense areas of the diary can be investigated further, by small time intervals); (3) an extensive range of Activity/Time variables is to be used. The two diary forms will be compared for ease and efficiency of gathering data.

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*The use of a pre-categorised comparative list of activities utilises the experience of other studies, Sorokin's and the International Time Budget study being the most comprehensive and applicable. Where activity descriptions do not fit these classifications a new and evolving activity form will likely be identified (and, hopefully, categorised). The process also provides for content analysis of activity descriptions so as to get at the social and psychological meaning of time expenditures.

One technique not mentioned so far, is that of asking the respondent in the presence of the interviewer to recall the activity of a previous day or days. Attendant to this approach are all the difficulties and fallibilities of memory distortion in recall. But it is a useful method for reducing the time and expense of interviewing, for the interviewer need not necessarily contact and visit the respondent before the diary day, nor put him to the trouble of keeping a diary. In large sample surveys it can be used by interviewers who knock on doors and request an interview, with only a minimum of prior introduction. For our purposes, time and money constraints preclude a large scale survey and data analysis, even though a "recall diary" could reduce efforts somewhat. Further, we can not accept the potential error of the recall diary, for our attempt is to get at certain specific and complete time-use conditions--the diary record will be applicable.

Very relevant to the recall diary technique is the question of how far back respondents can be expected to remember activities with any accuracy--and one day is experienced to be a practical limit; in regard to the structured diary record this question is cast as, "What is the length of time that people can be expected to keep up with such a painstaking and often embarassing task as recording activities every few hours." Without some inducement the limit is experienced to be one day at most,

if any accuracy is to be assured. And the problem of this data limitation raises problems of representativeness and generalisability to the weekly, monthly and yearly cycles.

The notion of behavior sampling can be used to suggest the way around such an apparent limitation: not only is it important to select individual respondents with reference to a desired population but also to choose a day as normal (or as atypical, depending on purposes) and as generalisable as possible--a weekday on a not too inclement winter's day, for example. Additional information is then gathered on activities not included on that day in an attempt to round off knowledge of what occurs, (how frequently etc.) to disturb or add to the normal routine of life. Strictly, one can generalise only to the variety of behaviors occurring on the normal sample day, but an attempt is made to expand generalisation by indicating at least what did not occur on that day and how unlikely or likely it is that it should not have occurred. Additional information by day of week (the week-end is obviously important) month and season is used in this rounding off process. Considerations of normalcy and changeability of time-use patterns is particularly relevant in studies of activities which may be especially pertinent to the rounding off process; leisure is an example.

The requirement to extend the span of time investigation by rounding off from only one diary day suggests the usefulness of techniques such as participant observation or other holistic research through free interviewing etc. They can be used to survey the whole range of activity in an integrated, processual fashion. Very briefly, the limitation of such approaches lies in their qualitative cast, their lack of a structure as rigorous as the survey/analytic approach, and the cursory manner in which they must necessarily compile data (to keep from total inundation). Such information would probably be more difficult to tie in to the quantitative factual approach with which our physical planning aims are linked: there has been very little research in this direction however and the above statements comparing techniques should by no means be regarded as conclusive.*

Further problems of operationalising Time/Activity Concepts lie in <u>respondent co-operation, sampling, reliability and validity</u>: we will deal with these briefly.

It appears that the objectives of maximum reliability, validity (and economy) which guide most methodological

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* The author is at present engaged on studies investigating time use and Activity routines by holistic research approaches. Papers are to be presented on the topic to Professor Robert Weiss in May, 1968.

decisions are overwhelmingly governed in the study of
time utilisation by the difficulty of obtaining respon-
dent cooperation.[2] Researchers report a high rate of
refusal to keep diaries, and a high rate of diary in-
completion after agreement to co-operate.

The rate of refusals requires that in a probability
sample in which subjects must meet certain requirements
(rather than be chosen haphazardly) one would likely have
to radically oversample potential respondents; if statis-
tical tests are to be applied to the data there will be a
trade-off between a large and expensive sample size
analysed by powerful techniques, and a smaller scale less-
vigorously analysed, sampling plan and data.

Other details of sampling decisions and procedural
research topics are well covered in reference texts, but
certain points are pertinent to time-use studies. Thus:
Sampling, by whatever procedure, will usually be chosen
with respect to some particular population of interest;
in time budget research there exists an opportunity to
sample across individuals, and or situations, and or
behaviors. Depending on interests and budget constraints,
there are many possible combinations of person or class
type together with particular behaviors (such as leisure
vs. work), in specific settings. This unique freedom

offered by a simple research tool has largely been
neglected: emphasis has been either, (1) on obtaining
voluminous information about a total of behaviors and
situations, for some particular population group--
constraint on population (the standard research limita-
tion) has been recognised without acceptance that there
could also be restraint on the behavior/setting realms
of that population, which, far from being restrictive,
could focus attention on limited and action relevant
studies); or on (2) larger sample groups used in combina-
tion with a focus on specific sets of behaviors or situa-
tions--the study of leisure is example. Planning concentra-
tion on neighborhoods and community units has much to
exploit in both these directions and in more specific,
finely tailored and sensitive studies examining limited
interactions of equal intensities of all three sets of
variables.

Validity measures are of limited importance, for
there is a fairly direct and logical connection between
the conceptual notions of what is relevant subject matter,
and the operational way in which one studies it. (There
will be reason to believe that the data gathered is in
fact measuring the conceptual notions of time.) Face
validity measures are however appropriate, especially in
light of any innovative research: we have employed this
technique in utilising the lessons of Appendix I, a

literature search. Predictive validity had not been in-corporated as a measure in any of the studies reviewed prior to the formulation of this study: it offers a useful tool easily applicable in repetitive or continuous planning situations, but it would best be applied at a fairly crude level of aggregation examining, say, only one major division of public/private time. The aggre-gation of activities should be chosen so as to reflect some salient feature of the group studied.

Some studies use alternative recording techniques (such as participant observation or consultation of records) as checks on the time-budgets. One asked hus-bands to check on wives (and vice versa). Generally they affirm the validity of the diary;(they are costly and not applicable here).

Reliability measures are of the most mundane kind. Alternate-form techniques and split samples are, for example, of little or no consequence, because the basic subject matter of the research is (a) so directly relate-able, and (b) so personal to each respondent--there is no right and wrong. Pre-tests of the diary instrument are, however, essential, especially if the activity routine is to be supplemented by additional questions (on Motivation and Value, for example). The different forms already suggested for this study are to be compared for efficiency not for reliability.

The reliability tests employed are measures such as uniformity of interview administration, and elimination of falsification by checking information in several different ways; these are well enough known and agreed not to require enumeration. One research aim is commonly to remove or control or measure the effect of a variable such as 'different personal situations' so that it will be known that the data obtained does not result from, say, happiness of some individuals and depression of others: in behavior or situation sampling as well as in individual sampling, of which the above is example, the same type of precautions must be taken. The possible unrepresentativeness of the diary day must be checked.

In this part (A) of the Test Case we can include some of the problems of interpreting Time Budget data. At first sight such problems are not obviously related to the subject matter of concern at this point, i.e. --translation from conceptual to operational levels; none the less, such problems of interpretation have been found (in previous research) to offer useful lessons for the manner of 'operationalising.'

Categorisation is paramount: "if," writes Foote, "all the activities were treated alike, the proportion of time devoted to activity would be exactly 100 percent in

all cases. When certain authors group all leisure activi-
ties into less than ten categories, the surprise they
express over the remarkable similarity and stability"[3]
of the data for all kinds of persons seems gratuitous.
All forms of categorisation (either prior to the diary or
following concrete data reporting), must include a range
of activities sufficient to embrace most types of overt
activity without "exclusion of any of their essential
qualities." (In the region of 30 major activities seem to
be required.)

Problems of categorisation of activities aside, it is
useful to bear in mind the limitations of the factual data
which is to be processed. First, activities are not neces-
sarily the most important aspects of life; beliefs, ideals,
ideas, prejudices and so forth transcend activities to
some extent; this comment is made as reminder only of the
boundedness of a behavioral approach (concentrating on
overt activities) to human phenomena, no matter how all in-
clusive it may appear. Second, the importance of activities
are not necessarily reflected by their time use: we try to
overcome this by the inclusion of Motivation and Value (or
preference) measures, and an Output (related to satisfac-
tion) measure. But still, this is at a fairly gross level;
it does not reflect how, for example, activities might be
satisfactory because they are scheduled in a particular
order, rather than because they include preferred modes of

action. (We can only invoke the criterion of planning relevance (or ability) as escape or excuse for not attending to these matters.)

In the measurement of change, direct revisions of the time budget between one time period and the next require some care in interpretation. We have already noted the functional equivalent case, whereby it may not be so important that time spent on, say, television now uses up time formerly spent on equivalent media (such as reading), as that it also uses up time formerly spent at work, sleeping or in family conversation. This is especially true in the extent to which the content of television replicates that of the substituted media; if it is equal in content and if the activity includes time taken from other nonequivalent activities, then total content would be increased. On the other hand there is undoubtedly justification for saying that the content of many activities has undergone profound change even though the time spent upon them remains unchanged. It is toward the understanding of such paradoxes[*] that the notions of Motivation, Value and Communication measurement, along with an Output measure

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[*]De Grazia makes much of the dupe of the longer week-end and more leisure time. He shows that leisure time given with one hand, is taken away by the other which invents gadgets and equipment etc., necessary to the enjoyment of that leisure, which in turn requires more work; a vicious circle. We end up sleeping less than before.

are directed. They would attempt to reflect <u>real</u>
measures of change.

(B) <u>Principles Governing Formulation of the Operational</u>

<u>Measure</u>: The operational measure is designed for
employed persons and students (see notes on sample below).
It is in 3 parts, a Pre-diary Interview, the Diary, and a
Post-diary Interview.

The Pre-diary Interview identifies the respondent and
seeks information about the general structure of his time
use. The aim is to obtain a picture of the 'normal' time
use of the respondent as a guide to the normality (or
otherwise) of the Diary day: the Diary day is a mid-week
day and should, by all counts, be a normal and reasonably
representative one. This general information on normal
temporal structure will help to delimit the permissible
boundaries of generalisation from the Diary data; i.e.,
just how representative is it, within weekly and monthly
and seasonal constraints.

Included in the Pre-diary interview is a series of
questions concerning (typically) irregular and/or infre-
quent activities, such as movie going or outdoor recrea-
tion; the activities are none the less important for their
singularity and rounding-off properties. Information
from these questions is also designed to amplify later
Diary data, in an attempt to define the broader cycles of

time use as supplement to the normality of activity and
time routines. It is included at this stage as both
introduction to the methodology of the Diary—for the
questions asked of each activity are similar to those in
the Diary—and as an important information report which
can again be questioned at the later interview if Diary
information suggests it to be either false, or incomplete.
(The diary of any one respondent might, for example, suggest
activities omitted from this previously gathered general
schedule.)

The Diary covers the 24 hours from 12 midnight to 12
midnight on a weekday. It is a matrix plotting activities
in specific time intervals (the rows) against, Place of
occurrence, Contact characteristics, Communication charac-
teristics, and activity Motivations. (Instructions are
included (with the diary) for its completion: data is
concrete as regards activity, place and Motivation descrip-
tion, but for ease of recording it is precategorised for
Contact and Communication.) Two forms using different
time intervals are compared for recording efficiency.

The Post-diary Interview is first designed to examine
the normalcy of the Diary day, in terms of weather, per-
sonal disposition of the respondent, and so forth. It
then attempts to suggest omissions to the Diary which the
respondent might have made, as a jog to memory and as a
prompt to any necessary or useful elaboration. These lines
of enquiry are followed by tests of activity Preference

and Value; more personal data, on car ownership for example, completes the interview.

All of the questionnaires and Diary follow fairly directly from the aims and interests outlined in the text. However, the measure of Value and activity Preference is one aspect which probably deserves brief comment and explanation.

The Value study is a compromise of Chapin's questionnaire which requires extension of the respondent's activity routine, in respect of the way in which he would use extra hours of free time, and an elaboration of Foote's notion of preference, in which reported daily activities were ranked in importance (see page 72). The Foote study is extended and modified by asking what activities during the diary day would be given up to accommodate an unexpected but important activity. By inference, the activities renounced will be those of lesser importance and value; we should recognise, however, that activities of high value may be renounced in the test situation simply because they are regular and can be foregone because of either desire for a change or because of the ability to 'make up' the time lost in further instances of that regular activity. The Value data is generalisable to the days of which the diary day is sample.

Chapin's study is pruned; respondents are asked, in an open ended fashion (concrete data), what they would do

with certain amounts of extra free-time, by day, week
and month. In line with previous comments on the restric-
tions of pre-categorisation, Chapin's pre-categorisation
of permissible activities is rejected. Data here is
generalisable to all time/activity because it is aimed at
general preferences for activity beyond the constraints of
any specific day or period.

(C)   The Selected Respondents and the General Character of
       Administration of the Operational Tool in the Test
       Case.

The respondents (or sample) all live in a large
apartment building in Cambridge. The spatial concentration
has no immediate value in the pre-test except perhaps, that
urban realms can be traced with respect to one point. But
if we are to draw conclusion from the pre-test data, as
well as judge the efficiency of its formulation, spatial
concentration can be useful as a constraint, making data
comparable to a planning situation with an 'area' of concen-
tration.

Spatial concentration is, in this case, concomitant
with homogeneity or concentration by type. A number of
representatives of the same 'class' provide much more
dense and informative and indicative data in this limited
situation, than would disparate data from a number of
class types. But the 'test' as such of the diary and

questionnaire form is restricted by this effort to draw
more telling conclusion--it was not tested on other
types (and situations).

The respondents are all single, male and female,
students and employed persons, all in their 20's.

The apartments are all similar, they are on four
floors.

The diary day was a Wednesday in April (1968).

(The population of generalisability is probably
student and employed persons of age 20-30, living in
apartment buildings in locations similar to that of the
Cambridge area. The diary data is probably representa-
tive of week days in the months of November through April
or May. In fact these constraints of generalisation are
not of much interest for concern is with how the test
worked rather than what it shows in the way of data.
But their stringency is evidence, somewhat, of the re-
strictiveness of the time-budget form--a restrictiveness
which has been the bain of sociologists aiming at general
theory but which need not hinder the planner focusing on
specific problems amenable to particularistic research
instruments.)

(D) Evaluation. Evaluation is here interpreted as an
appraisal of the efficiency with which the research
instrument can be applied: (the Summary and Implications
for Planning, see below, can be viewed as a study of

effectiveness of the instrument in terms of its data
contributions and the suggestion and pertinency of that
data to planning action).

In general, the instrument (diary + interviews)
appears to be none too onerous and time consuming, though
it should be cautioned that the Test Case employed only
the Input half of the Input/Output activity scheme
developed in Sections 2 and 3. Respondents were co-
operative, they said that they found it quite a simple
matter to keep the diary during the 24 hour period, and
that having learnt the structure of the diary they felt
that a longer period of 3 or 4 days could be recorded
without imposition on their time and assistance. They
also expressed interest in the time/activity description
of their day, often making remarks such as "I didn't
realize I did so many things," or, more usually, "It
looks dull doesn't it.": there was fascination with being,
in a sense, observer to one's own action and yet of being
objective in that role. The data, because it was one's
own and because it was at the same time recorded by one-
self as an independent agent, became instructive and spoke
of lessons in a 'theraputic' sense--such as, "You'd better
brighten up your day"--that was probably more forceful
than would have been an outside categorisation of one's
activities as 'dull and requiring planning action' to 'en-
rich and diversify' activity experiences. (We will take
up this point again.)

The co-operation and intelligence of comment on 'one's own data' can in large part be ascribed to the type of respondent in terms of education, skills and sensitivity to both the subject of enquiry and the worth of making such survey studies. Initial cooperation and the ability to draw conclusion from the exercise upon completion, would be much different if the instrument was applied in, say, the Model Cities area of Roxbury; but the experience of this test case suggests that once under-taken the completion of the diary can be expected to be a simple unimposing task. This simplicity and ease of com-pletion arises partly from the diary structure and partly from the division of time into generous intervals of 1 hour and $\frac{1}{2}$ hour to be summarized by entries at several times during the day; there arises the question that we might be substituting simplicity for superficiality of data.

It is argued that this is not so, that far from being but crude coarse-grained generalisations of activity routines, the data supplied is in fact at the level of aggregation and concentration that is specifically relevant to most general planning concerns; quite easily (see page 107) one can pick up the activity pattern of the 'normal' day in terms of the nature of the activity, its Place and Contact and Motivation aspects. Time interval divisions of say, $\frac{1}{4}$ hour or 10 minutes could certainly reflect more specific information such as that about small

scale location changes within the Home or Work place, and
might pick up nuances of Motivation and amplify Contact
characteristics. But it is questionable that this specific
additional information, though interesting, could really
be suggestive of intervention action unless it was
especially oriented toward single families and homes.
Diaries using $\frac{1}{4}$ hour intervals which were kept by the
author and a friend provided information of relevance to
architectural concerns and the study of behavior and the
sociology of small space use, but the data would be cumber-
some to broader concerns and to an interest in the comparison
of varieties of actors: the nature of the instrument is
such, however, that it finds applicability to all levels
of concern, and it could be readily used in its present
basic structure for both exploratory studies at a general
level and for more detailed concentration on areas which
exploration shows to be salient.

Practically, the 1 hour diary form and $\frac{1}{2}$ hour form
show little difference in terms of the volume and accuracy
of data supplied, (and there was no respondent complaint
or apparent inconvenience in terms of the more complicated
$\frac{1}{2}$ hour form). The experience with the $\frac{1}{4}$ hour form and
the Test Case forms indicates that the amount of activity
information (by time interval) decreases exponentially--
it is high (and differentiated) for shorter intervals but
becomes quickly reduced (and remains at approximately the

same level) for increasing time intervals. ½ hour inter-

vals could therefore be recommended for their slight
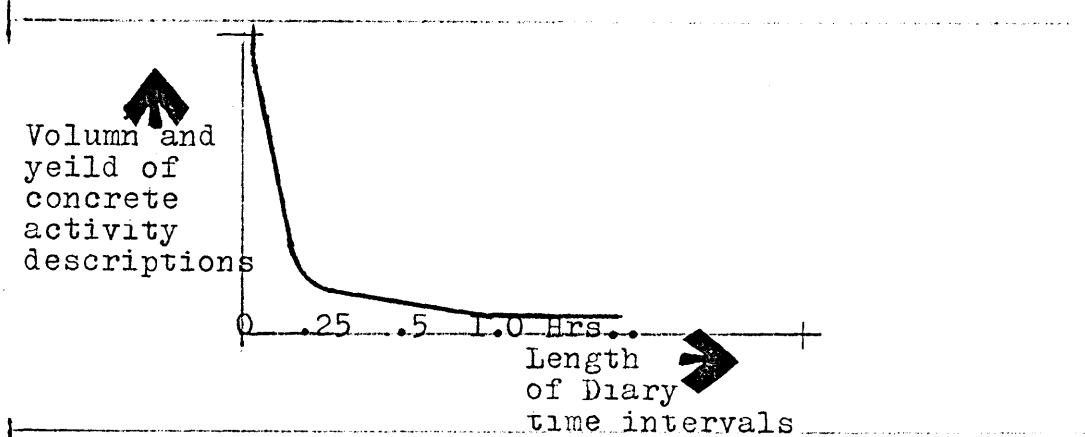
benefit in gathering extra information, (though they may

become repetitious if activities do not change in type

very often and though the 1 hour interval often includes

as much information as would be included in two ½ hour

intervals), and for their psychological impact in suggest-

ing to the respondent that the diary is not a slipshod

superficial one requiring only summary responses.

The time interval of the diary divisions appears to

interact with the manner in which data is reported, not

just in how much is reported. Thus the diary gathered

concrete data in the hope that the comments of respondents

would be useful insights into the kinds of activities that

are special to the group, but in fact the concrete de-

scription of activities in a ½ hour or 1 hour interval

is so general as to tally almost exactly with the pre-

classified categories to which, it was thought, they

would have to be carefully assigned. It is more likely

to be in the more detailed description of activities (over smaller intervals) that new and indicative emphases will be reflected. There will be many obvious and necessary exceptions to this rule, such as the emergence of a new sport that would be reported in both long interval and short interval diaries, but it is possible that pre-categorisation can be employed without much loss of information and content in instances using $\frac{1}{2}$ hour and 1 hour interval divisions and with little interest in major comparative study of different groups or the measurement of change over time, (in which cases concrete data are valuable indexes of difference). But it must be emphasised that (as noted) categorised data forecloses the possibility of immediately being sensitive to aspects of activity undergoing change in type and in value affections.

Again in terms of practicality, it would seem to be easier for a respondent to simply write down what he is doing rather than make reference to and select from a list of up to 30 (or more) code numbers set against pre-categorised activities: concrete data which is any case easy to categorise because of its being a general summary of $\frac{1}{2}$ hour activity intervals may also be the most efficient respondent recording method. (Over a period of several days this advantage would lessen in comparison to a respondent who became accustomed to code reference.)

The type of respondent used in the Test may well have biased the degree to which concrete data reports were found to be easily classifiable and therefore have unduly suggested the above conclusions about its use. Thus, the long time intervals used in the diary may only have suggested summary reports to the respondents because they were capable of formulating such reports. Rather than using skill and intelligence to amplify and enrich their activity descriptions they were used to condense them: and activity descriptions were condensed in ways that were very similar among all respondents. The above comments on the ease of concrete data use and of responses to differing time intervals would require to be checked over different respondent types.

With regard to the remainder of the diary form, there was agreement among respondents as to its clarity and directness. The use of code numbers for Contact (and Communication) was appreciated, and would be even more applicable over time periods of 3 or 4 days. One disadvantage of this coding is that there is no indication of any repeated number being in reference to the same person—does, for example, the respondent engage in different activities in different places with the same or different girl friends. Often this distinction will be obvious from the situational change or constancy which surrounds the activity, but if it is not and is felt to be of particular importance, changes in Contact with the same type of person

could be indicated by subscripts to the repeated code numbers. (This technique can also be applied to Communication and to the general questions about activities administered in the Pre-diary interview--see pageI63)

The Pre-diary and Post-diary interviews providing supplementary information to the diary sample, was much quicker and easier to administer than its length suggested-- it could be expanded--which is indication that the full Input/Output scheme may not be too adventuresome.

Some difficulties of methodology of these interviews were: (1) that in formulating the interview for students an attempt had been made at a typology of general ways in which time might be spent--regularly, irregularly but with predictable periodicities, irregular but unpredictable--so that each type could be questioned specifically and with relevance to his particular activity routine. It proved difficult to categorise respondents in line with this typology, there were protests that "I change between all three types depending on my work;"yet respondents could not say just how they moved between types so that they might be allotted to a fourth category of 'regular change between types.' Further questioning, not recorded on the diaries, attempted to typify by establishing the dominant mode of activity expenditure but this somewhat distorts the rich-ness of reality. The lesson to be drawn is the need for a more open ended, non categorised question form: increasingly, flexible job situations will probably make this freer

interview approach necessary for many respondents other than students and those who we typically think of as living unstructured existences.

(2) The same difficulty arose in asking all respondents for information about activities which are not usually reflected in a single day's diary--activities which occur on a less frequent basis than a day to day routine but are yet very necessary to making that daily routine acceptable. A list of probable activities (see page 163) had been prepared under general categories; but respondents so often said that, for example, "Oh! I don't do anything like that but I do do this," (and 'this' turned out to be an activity related to the category but interestingly additive to it), that the question was administered as "do you do anything like this." Additional activities (not listed on the questionnaire) mentioned by the respondent were then noted on the form.

Finally, (3) the administration of the study of Value in the Post-diary interview required some explication of the questions on the interview form. Essentially these questions are (a) if you had to do something unexpected on the diary day what activity would you forego, and (b) if you had extra free time what would you do? In most cases it was necessary to add (in answer to queries by the respondent) that in (a) the unexpected event is just very important but non-remunerative in terms of valuable

experience or monetary gain, and that in (b) the extra free time would be used in circumstances (of job and money constraints) not too dissimilar to those of the present.

In organising large scale application of the research instrument attention must be paid to further research issues specifically pertinent to the larger aggregate situation. Test of the instrument across different respondent types and classes, in different situations will be necessary: we have already observed how conclusions about diary reformulation may be biased in this Test Case by respondent aptitude. Fundamental to the research of certain groups will be the need for increased measures and checks of validity: reliability measures, with particular reference to uniformity of administration of (as suggested) an open-ended interview form, will be relevant.

(E)   Summary and Implications for Planning.

This part of Section 4 attempts to summarise the data of the Test Case, and then to draw conclusions (from the summary) which have planning implications and usefulness. In both summary and conclusion the intent is not to use Test Case data as comprehensive reliable information which will, on the one hand, require extensive explanation of summary methodology or which will, on the other hand, generate or prove hypotheses and concepts. The data, which is obviously scanty, is to be used only to suggest modes of analysis and notions for planning. The point is not that

remarks be perfectly correct, proved and validated by data,
but that they derive from it (and prior knowledge) as ideas
which can be useful to further study that can undertake
more rigorous tests and more thorough analysis. These
ideas will be treated in general terms, in the belief that
presentation of a range of possibilities rather than the
specific elaboration of a few (which would in any case
have little data background) is most appropriate at this
stage.

Summary: The way in which data is summarised is dif-
ficult to dissociate from the purpose of its collection and
the action to which it is felt to be appropriate. Physical
planning concerns will thus be interested by aspects of the
data which might be seen as less relevant to social plan-
ning concepts and interests: that is, there will be dif-
ferent emphasis on some of the aspects of activity which
are embraced by the comprehensive Input/Output scheme de-
fined in Section 2. Nevertheless, there would appear to be
certain common summary requirements irrespective of particu-
lar emphasis. The following are suggested.

(1) A simple reference to the kinds of activities occur-
     ring by <u>time during</u> the day (or time spent)--a
     summary of the activity description column (which
     extends over 4 pages) of the diary.

(2) A method for structuring this listing of <u>time</u>
     <u>against activity</u> so as to reflect and emphasise the
     changing Inputs to Activities, by time of day;--a

hierarchy or weighted or ranked graph of activities
by time of day so as to describe a diurnal 'configura-
tion.'

(3) A simple reference to the kinds of <u>Place, Contact,
Communication and Motivation</u> occurring by <u>time of
day</u>; leading to sub-heirarchies (i.e., secondary to
the Activity/Time hierarchies) in which these
activity aspects are weighted or ranked so as to
emphasise their diurnal change.

(4) Cross reference of <u>activity</u> (or time of day or time
spent) <u>against Place, Contact, Communication and
Motivation</u>, in as much detail (and profusion of
cross tabulation) as is required by any special inter-
ests. In making such cross references, the supple-
mentary information about less frequent activities
gathered in the Pre-diary interview can be utilised
so as to show changes in activity <u>rate (and perhaps
intensity)</u> with respect to, Place Contact etc. Thus,
the mapping of a respondents urban realm of interaction
(all the <u>Places</u> he goes in the metropolis) could be
differentiated by varying degrees of frequency of
interaction in different urban areas.

(5) Cross tabulation of time (amount of time and time of
day) spent on grossly aggregated (5 or 6) categories
of Activity or (2 or 3 categories) of Contact, Com-
munication, and Motivation. This would be for ease
of reference and examination: we have already

cautioned against the increasing tendency for all
persons and groups to appear as similar in their
time expenditure as the number of categories of
expenditure is reduced.

(6) In this Test Case, a near saturation sample was
taken of one apartment building. We are in a posi-
tion to fulfill the requirements of the Descriptive
Aspects ((1) through (5)) of activity Inputs, which
require a total census of actors or setting rather
than a sample survey of either. See page 63.)

Requirement (1) can be met by the process of cate-
gorisation of concretely reported activities. The list of
categories--see below--of activities used for this study
comprises 23 divisions; 5 fewer than the International
Time Budget Study, and only half the number used by
Sorokin. The fewer categories can be attributed to the
unelaborate summary nature of respondent reports in the
large diary intervals of time division, and to a respondent
type which appears (a) to have interests very similar to
every one else in that class and (b) to be constrained in
or excluded from many of the various activities reported
in other studies, by virtue of his work situation or home
setting (with, for example, no wife and children and with
no access to a garden).

Requirement (2) can be met by ordering the activity
category list and plotting the activities, by time of day

against it. The diagram on the following page shows how
this plot can be graphically represented so as to show
configuration: the ordering of activity categories is
achieved by a simple weighting system which emphasises
requirements for concentration or concerted action and
Contact characteristics of the activity. (The weighting is
in no way an absolute--the system can be made according to
any set of specific criteria as long as they are consis-
tent.)

The weighted list of 23 activity categories is:

1) Sleep

2) Resting

3) Reading

4) Personal Care

5) Eating (at Home) or in a quiet place. (If not
   either, then Eating is 14 or 15.)

6) Listening to Radio, Records, etc.

7) Television Watching

8) Food Preparation (other than quick preparation
   of light meals).

9) Laundry, Mending, etc.

10) Other upkeep and leisure and Work around House

11) House Cleaning

12) Child Care

13) Education (classes, seminars, browsing, but not
    serious study).

DIAGRAM I. page I07A

ORDERED
LIST OF
ACTIVITIES
(post-categorised)

HOURS OF THE DAY

12MID-NIGHT   NOON   MID NIGHT

12MID-NIGHT   NOON   MID-NIGHT

BURGLARY= ⊙ ○○○
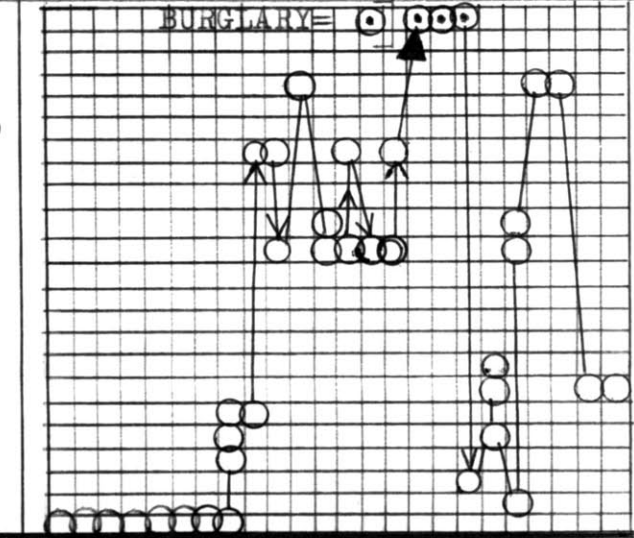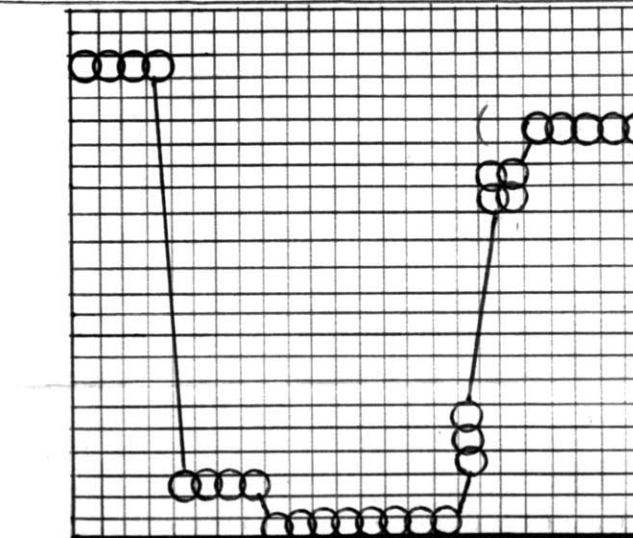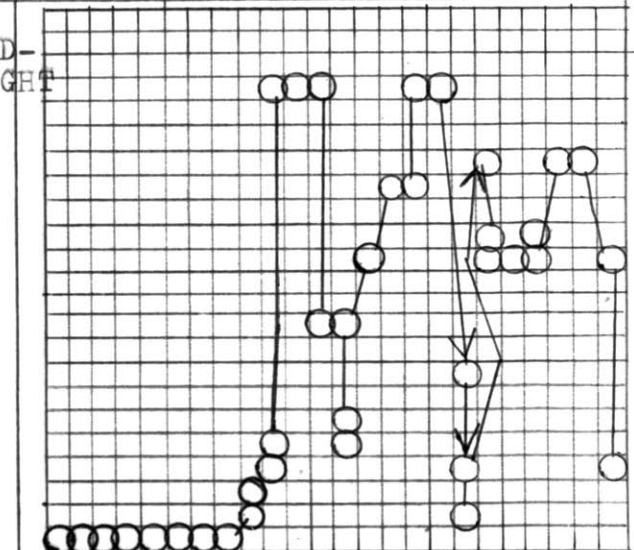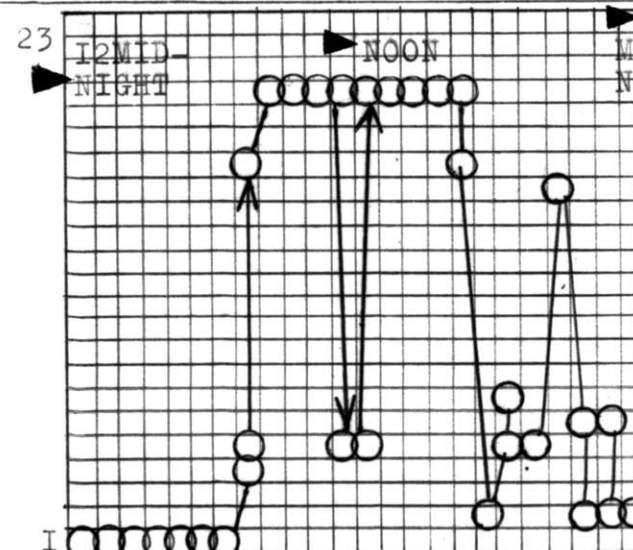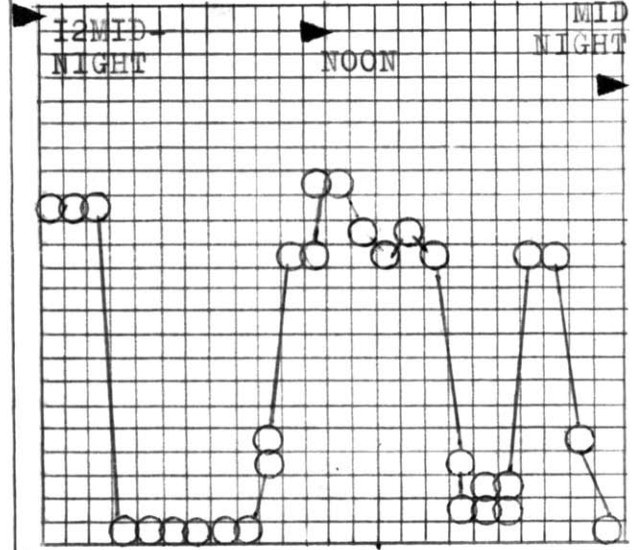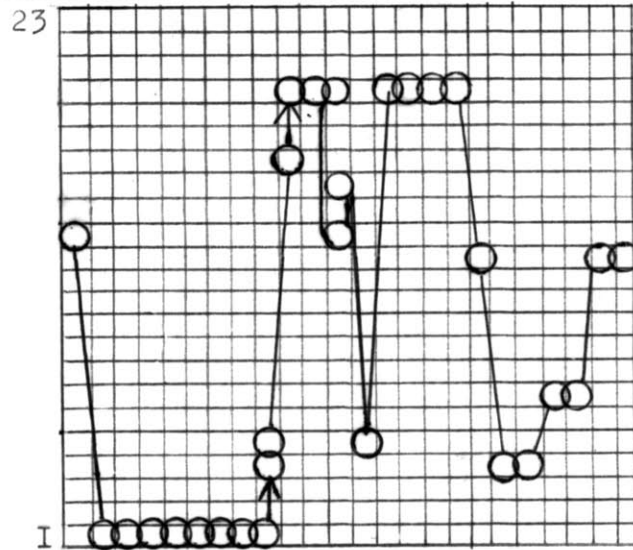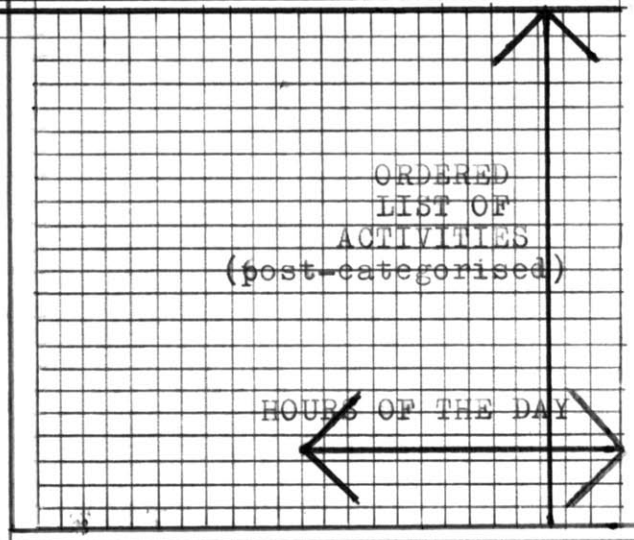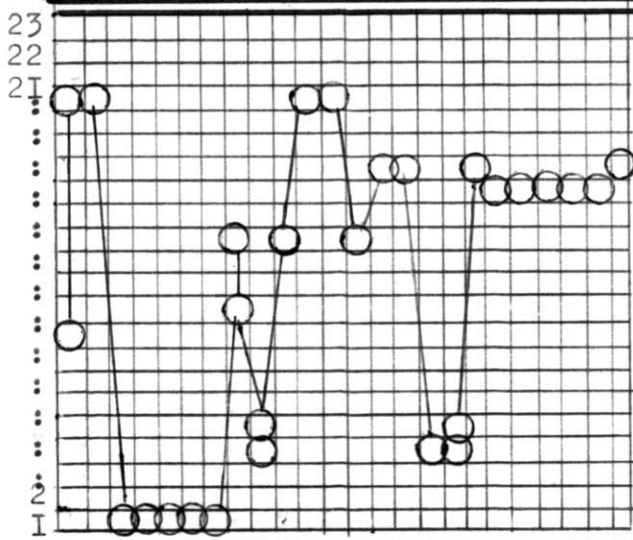
[Arrow connections apply where activities could not occur with-out the contribution of the previous activity.

[DIARY DAY TIME/ACTIVITY DISTRIBUTIONS . (for each respondent).

14) Social Conversation (telephone and face to face).

15) More Structured Social Events (such as interviews).

16) Shopping and Non-work Trips

17) Trip to and from work

18) Visiting Night Clubs, Bars, Parties, Concerts, etc.

19) Other Leisures and amusements requiring active commitment

20) Regular Work,(study periods for students and job, for employed persons).

21) Activity in Organisations and Clubs

22) Sports events, trips, etc.

23) Exceptional Events.

(Some of the activities on the list were not recorded in the diaries. They were, however, mentioned by the respondents and are included so as to make this a complete list for this respondent type.)

Requirement (3) (separate activity aspects by time of day), can be easily tabulated. Using the numbered lists of Contact and Communication, for example, sub-hierarchies could readily be described (see below).

```
               Contact
Time of day    0   1   2   3   4   5   6   7
    12                   ⊙           ○
     1                    ⊙
     2          ○
     3          ○
     4          ○
  etc.
```
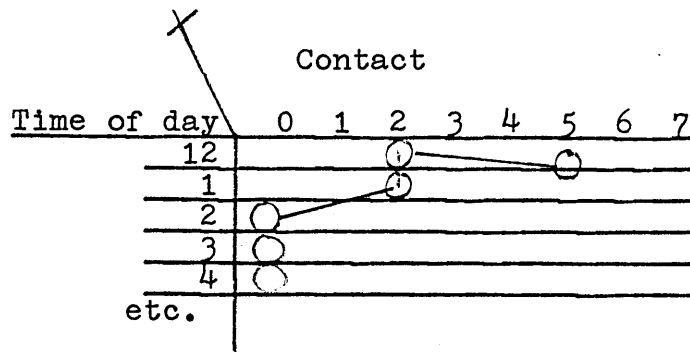
Requirement (4) is straightforward. An example--
diagram 2--is given of generalised activity type plotted,
on a map, against place. In this example the added infor-
mation of the interviews is used to record activity rate
as an extra integral dimension.

Requirement (5) is again a simple matter of cross
tabulation. (The large categories of activity in this
gross aggregation might simply be, Societal, Economic,
Personal etc., or might be constituted so as to suggest
other attributes such as, Pleasurable Activities, Force of
Circumstances, Distasteful Activities, etc.)

Diagram 3 suggests how the Descriptive aspects of
activity (Requirement 6) can be graphically recorded.
(The methodology was introduced in Section 2, page 47 .)

These are some general possibilities for summary.
Emphasis has been given to visual methods of summary and to
configuration and tabulation by time or day rather than by
time spent. There is equal possibility in mathematical and
statistical representation and in the abstraction of the
data from the chronological structure of the diary record.

F. Implications for Planning: it is by no means ob-
vious just how research should contribute to and determine
action. It is to some extent an open question as to how this
research, guided by theoretical notions of activity relevance

DIAGRAM 2. PAGE IO9A.

(Respondent:Sherman)

Cambridge
home base

boston

NORTH

sea

(Respondent:Gerstien)

boundary
of major
areas of
city interaction

boston

(Respondent:Tanner)

Townships

boston

NORTH

▲ HOME
BASE

MOST FREQUENTLY
USED AREAS

NEXT MOST FREQUENTLY
USED

LEAST USED

BOUNDARY OF MAJOR
AREAS OF CITY
INTERACTION

Levels
of
Dispersion
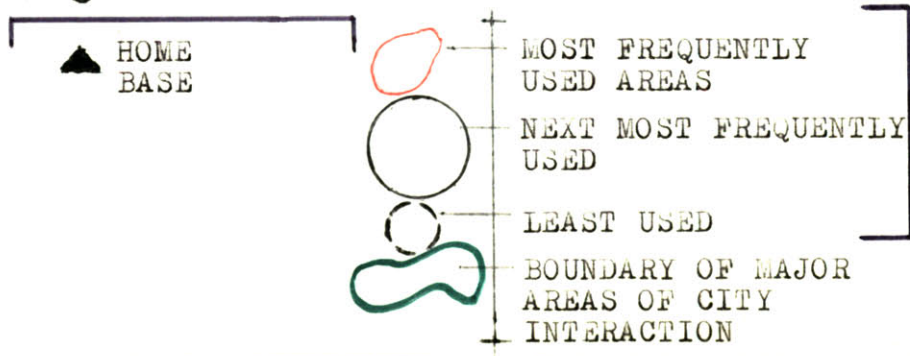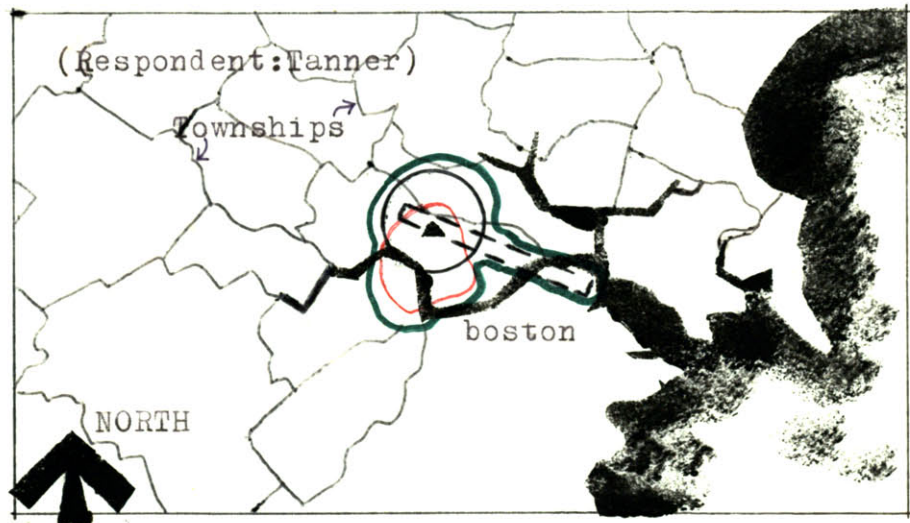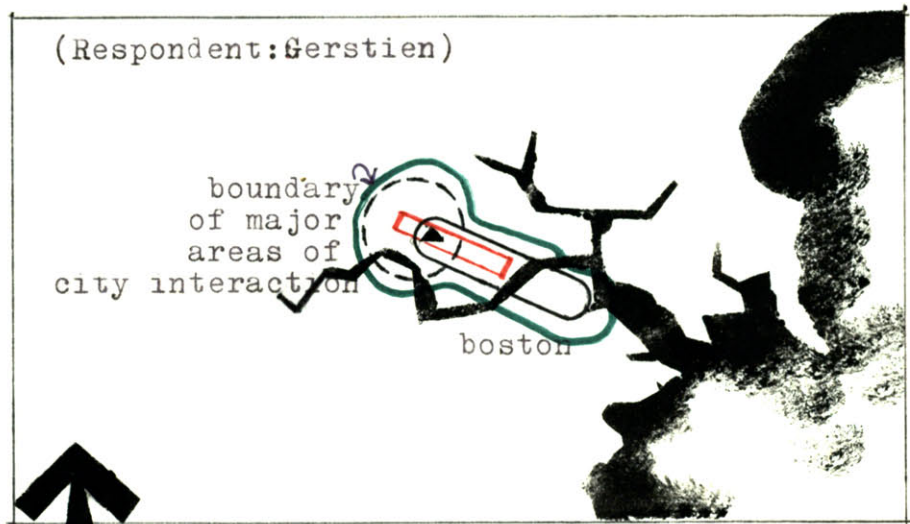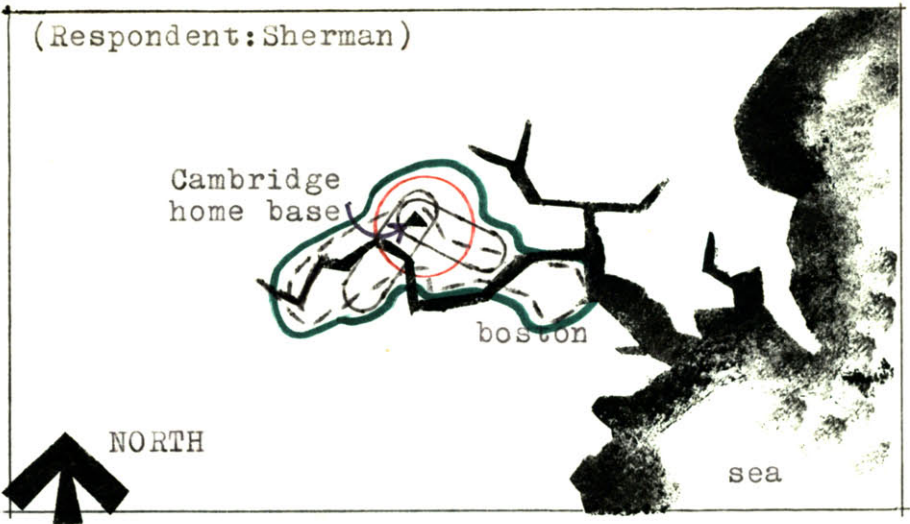
MEASURES OF DISPERSION
FOR SOME
TYPICAL RESPONDENTS

DIAGRAM 3   PAGE 109B.

A BOUNDARY,
BASED ON
AFFINITY,
WHICH
DENOTES
INSULARITY

EACH DIAGRAM IS
A VERTICAL
CROSS-SECTION
THROUGH THE 4
STOREY APT.
BUILDING.

I2MID.-4A.M.   4A.M.-8A.M.

APT.8   7 8   8

6   5 6   6 —not
            sampled
APTS.
4   3 4   3

2   I I   I

8A.M.-IOA.M.   IOA.M.-NOON
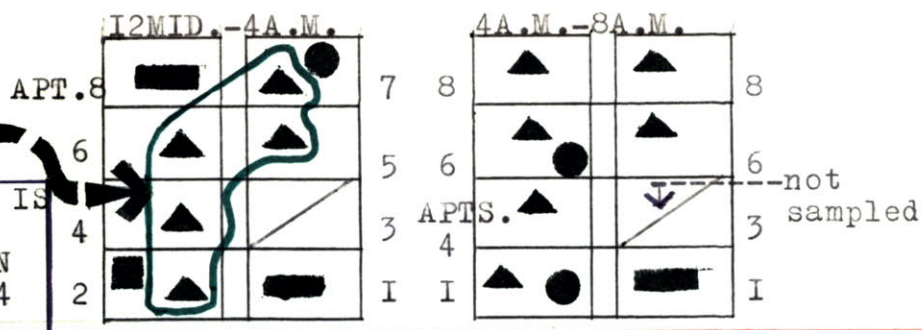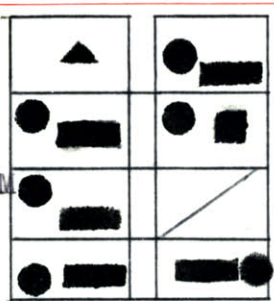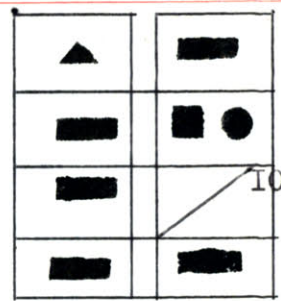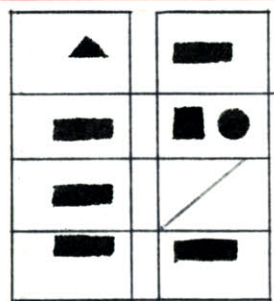
I2-2P.M.   2P.M.-4P.M.
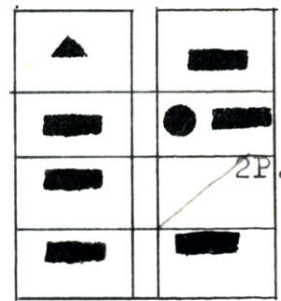
4P.M.-6P.M.   6P.M.-8P.M.
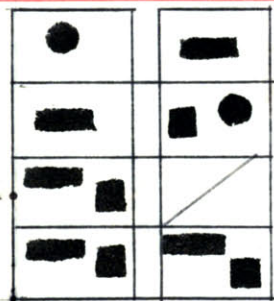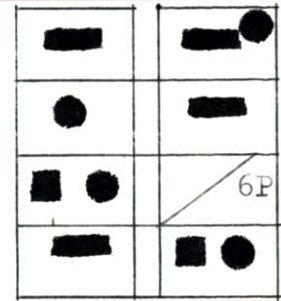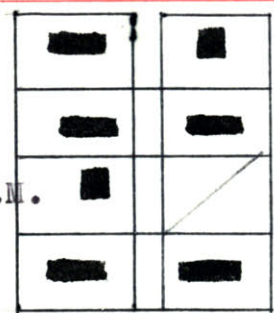
8P.M.-IOP.M.   IOP.M.-Midnight
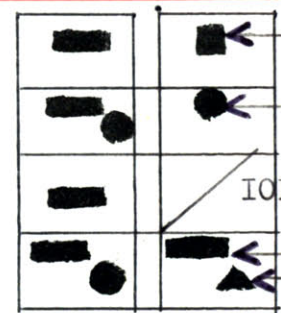
FOCALITY IS SHOWN IN 2 HOUR INTERVALS

FOCALITY IS
THE DAILY TIME OF
ACTIVITY OCCURENCE:
AFFINITY IS
SIMILARITY BETWEEN
THESE KINDS OF ACTIVITIES:
INSULARITY IS THE MAINTENANCE
OF AFFINITY

Short term activities ●
Medium length activities ■
Long term activities ▲
Absent, no activity ▬

PATTERNS OF AFFINITY AND
INSULARITY (common kinds of
activity) and of FOCALITY (or
common daily times of activity).

and tested as a detail investigation of a comprehensive

spectrum of activity aspects, would be used as evidence

of the need for certain specific interventions. This is

so because there exist various modes; of research,

(variety being maintained even though researches are

carried out with similar theoretical intent and opera-

tional methodology); of ways of presenting research; of

planning bureaucracies and organizations within which

research is transformed to action; and of planning proces-

ses (and terms of references) by which action is applied.

These groups of modes interact in intricate fashion, but

it is useful to elaborate and characterise each separately

and to draw only the main connections between them.

Of the group of research modes, the counterposing of

the Holistic and Analytic modes provides the main (and

most direct) opportunity for consistent demarcation. The

Holistic mode is concerned with relationships within

systems of variables acting as 'wholes' or constellations

or unique configurations, or with functional models descrip-

tive of the working of a totally described situation. The

Analytic style describes numbers of variables in terms of

their lawful and processual connections, and thus concen-

trates on intersections of variables in which one concerns

the next without immediately effecting all others--it does

so only processually. Thus the systematic conceptualisa-

tion will emphasise interdependency in which a variable is

not an analytic link in a chain that can be isolated, thereby causing the chain to loose only part of its length, but in which any variable is somehow linked to every other so that the removal of one variable disintegrates the concept and existence of the whole.

An Holistic description, being complex and closely interwoven, tends to seek manageable system boundaries which delimit variable interaction: by definition, a system requires boundaries. An Analytic style allows for eclecticism in the selection of variables--they may be taken from a number of systems. Research aims to explain (1) how a system maintains itself by acting so as to fulfill its goals, (which in turn help to define its existence as a system), or (2) how Analytically defined variables act mechanistically to produce a known result to a given stimulus, in a given environment, (which is somewhat analogous to the boundary notion of the system approach).

Related to these research modes are two parallel approaches to concept or theory generation and verification. Again in describing these approaches we must, for simplicity, deal with a pure statement of their extreme positions; as with the research modes described there are many commonalities.

The first approach is the Logico-Deductive one in which theory and hypotheses (derived by logic and prior knowledge) are stated as clearly as possible and are tested as

stringently as is tolerable. The alternative, substantive
or grounded theory, is to collect data with only a general
area of investigation in mind, and to examine data concern-
ing this area to 'see what it shows.' This approach is
advocated as necessary because there exists insufficient
theory of any fundamental importance which can be tested
by the Logico-Deductive analytic methodology, and because,
being divorced from natural data sources that method is a
poor generator of new theory and concept.

The formulation of precisely deduced statements pre-
cisely tested, favors the Analytic approach in which the
problem can be expressly stated, and in which complexities
of interacting effects tend to be minimised--though multi-
variate techniques and tree models are clearly coming close
to full system capability. The substantive approach will
require data that is as rich as possible; it is preferable
to gather data that is suggestive and illuminating though
perhaps not gathered with respect to strict measures of,
say, validity--such aspects are better left to the later
test processes to which the theorising process is prior.
And this rich data is best developed by dense Holistic
study methods, such as the use of free interviews and
participant observation. However, as Glaser and Strauss make
clear, there are no limits to the techniques of data collec-
tion, emphasis is primarily on its accumulation and not its
methodology; but the more analytic data (from surveys, for
example) is used in the substantive approach the more the

resulting theory or construct of typologies will be limited to descriptions of simple variable intersections and correlations that are much less vivid than the 'picture' or constellation effect of the total statements that might be available Holistically. (The Analytic approach might show for example, that children from low income families and with low education level tended to become delinquent, whereas the Holistic one will easily--and cheaply--explain the full picture of interaction of these variables and describe each in complete and real terms.)

The point of this digression is that the data resulting from application of the Operational scheme and associated research instruments which have been the subject of this study, is applicable to both research modes. The notions and operational tools presented here are at once general in nature, having been formulated only with a view as to what variables are relevant and not how they interact. It cuts across research boundaries: thus Reiss used the Time Budget instrument analytically in order to refute the notion of depersonalisation of individual contact in urban life; and the International Time Budget study used it (almost) Holistically to compare cross-national 'pictures' of the conditions of urban industrial cities. We can expect the use of our proposed methodology to be relevant to situations suggesting the use of either the Analytic or Holistic mode.

be one of feeling out the planning situation by initial
probes (small scale actions), and of observing how these
actions are accepted or rejected, so that sensitive areas
of the system can be established and more effectively
handled in later action. This approach is somewhat unfa-
miliar to that which sees problem solving (in 'urban
crisis' situations) as the expenditure of massive effort
in short run programs.

We have discussed how the methodology here presented
could be useful Holistically, and how it could also be
developed gradually so as to concentrate on increasingly
detailed or focused aspects of behavior and activity. In
fact the potentially complete and graphic nature of its
data would seem to encourage the understanding of given
situations at various levels of interest, in a sequence of
effort.

Unfortunately the Holistic method of data presentation
and the kind of data which it includes (i.e., the second
group of modes identified above) can tend toward the im-
pressionistic. In theory or typology generation its
method is to concentrate on only a few representatives of
certain features or properties in the population rather
than on a strictly selected sample which guarantees genera-
lisability. It examines these representatives with any
technique that is available and formulates loose, though
sensitive and insightful, statements about them, which are
much different from the factual proven statements of the

Analytic process. The Holistic depends on impact and on
the presentation of a picture not previously observed or
comprehended by Analytic research, or indeed by public and
academic interest--Michael Harrington's, The Other America
is such a statement. The Holistic therefore has uses for
advocacy and persuasion that is of a type very different
from hard but sometimes uningratiating percentages and
statistical significances: we can expect planning offices
to increasingly use this mode as planning problems come
more to require local initiative (as in Model Cities) rather
than full Federal direction, but still require some local
justification for Federally granted resource expenditures.

Again, the methodology presented here is pertinent to
this form of derivation of planning action. It has advan-
tage in providing rich datta, useful to advocacy, which is
yet well structured and open to few criticisms of impres-
sionism or of superficiality.

The third group of modes which we introduced--the
nature of organisations and bureaucracies which transform
research into actions--can be divided into two modes;to be
characterised as those which work and plan with people, and
those which plan for people. Practically it is difficult to
dissociate these modes from the fourth group of modes--the
processes through which action is applied--by which we
refer to the nature of goals, their time horizon, their
sequence of realisation and so forth. At risk of over-
simplification we can surmise that as the time horizon of

goals and/or the complexity of directions towards their realisation increases, so the active participation and interaction of the people for whom planning is intended, will tend to lessen. Their political assention will no less be necessary--it is just that for certain areas their interaction must be reduced for reasons of practicality and efficiency. Where issues center around behavior or the need for immediate resolution of problems, with less respect to things and properties and efficiency of resource allocations, interaction between planner, planning and the 'public interest' will be marked. Taking the instances of Model Cities planning and of Land Use model building as extremes of, on the one hand, immediate associative (people and planners) action, and on the other hand, of predictive future oriented dissociative action (which none the less relies on sensitive data inputs), we can trace the applicability of the Time/Activity methodology, to these widely differing situations.

Of the Model Cities issue, we can suggest the Time/ Activity methodology to be useful in a survey approach to environmental behavior, focusing on particular groups, behaviors or situations (as required). One of the program's objectives is to co-ordinate the numerous organisations in a demonstration area into some effectively functioning unit; examining organisational activity along an Input/Output measure would be most illuminating, especially

in comparison to Input/Output activity data on individuals making use of organisation services. Attempt would be made to sort out areas of hardship and abnormality and inconvenience (and perhaps pathology) by the application of some set of acceptable normative standards to the data, or more preferably by comparison across sample groups in which one or more can be taken as a control group of reasonable standard.

In the rapport with the community it will be possible to build up a repetoire of the most vehemently voiced needs and malfunctions, that can be compared to and understood with reference to their respective activity routines, which will express unsatisfactory Output conditions. This would begin to match the behavior to the complaint.

If we take the Test Case data as example, and apply normative criteria, there would be reason to comment on, the insularity of the respondents--they are all geographically 'ghettoised' within the Downtown Boston, M.I.T., Harvard and Charles River areas; or on the lack of association between respondents living in the same apartment--no one apparently visits with anyone else in the building; or on the type of their leisure pursuits--though varied they are all of much the same nature and tend, simply, to reinforce the respondent's educational focus; or on their reliance on one or a few contact forms, with few pure client relationships with the general public and a high

repetition of each mode(s) of contact with the same person(s).
The instructive and inclusive data can point to both the in-
dividual as unit of concern, or to his interaction with
others, or to his environmental interactions and use of
services.

One point that should be emphasised in the process of
working with individuals is the potentially 'theraputic'
value of much of the proposed methodology, especially the
keeping of the time-budget. Going on the theory of therapy,
it may be as much the lesson learnt from the process of
supplying data (in terms of the personalised diary keeping
record) as it is that of hearing answers given by the
authorities to whom data (and other representation) is
supplied. In this direction the Time/Activity concentration
would appear to be particularly applicable, and adaptable,
especially in more loosely structured forms of the proposed
scheme: there might be attempts at 'instantaneous therapy'
whereby the interviewer is also a social worker, and is
able to confront respondents with the immediate experience
and lesson of diary formulation. At present all this is
notional!

In the longer scale of planning which tends to concern
itself with broader problem areas, the inclusion of activity
information can best be justified on the theoretical and
conceptual grounds which Section 2 discussed. That is, that
location choices are increasingly governed by the ability
of a location to satisfy certain activity demands which

are both known, in terms of past experience, and felt, in
terms of hoped for new experiences. Model theories of
location motivation require to add some index of this re-
vision which cuts across so many of the proxies and con-
stants now employed; they must deal with items much more
comprehensive than, say, time/cost of travel to work, and
must deal with them in detail manner--not just as a
lumped miscellaneous item.

As people begin to revise the conditions of their
location choice, there would seem to be forces, in the form
of increased informational supply about a burgeoning number
of location possibilities, which make it somewhat more
difficult for the individual to make a choice. Marginal
differentiation amongst this increasing range of choices
would seem to be more and more determined by their sensi-
tivity to activity routines, if, as is likely, the choices
offered are more and more difficult to distinguish as to, say,
accessibility to jobs and shopping, or to status. Thus,
not only will models be inaccurate if they omit the activity
variable, but their inaccuracies will appear to be capricious
and unreasonable ones. (The nature of any metropolitan area
in terms of hetergeneity and homogeneity of location/
enviornmental conditions will of course interact with the
need for detail in activity study; we would assume that in
distinctly different areas decisions would be made along

distinctly different and observable lines of activity
priority.)

Having presented the case for the inclusion of rou-
tines in models, the author must admit to only a limited
understanding of just how it may be done. With Chapin as
guide, it would seem that so far there has been little
success in applying the data to predictive model situations.
We can record that Hemmens has suggested a model using a
transitional probability approach and involving the use of
a semi-Markov model in the simulation of choice and spatial
distribution of activities, and that Hightower has proposed
an adaptation of the population potential model to get at
choice of activity and its location. But these represent
only some first thoughts and we can reasonably expect more
sophisticated studies to be developed, especially under
Chapin's direction at North Carolina.

Some general problems which initial studies have
pointed up are, what levels of aggregation should be used
in respect of activity classification, in time, and in
selected populations. A routine may emerge or be wiped out
as a measureable phenomenon simply by virtue of the level
of aggregation chosen in each way of aggregating data.
The question arises of there being a priori bases for
making decisions on aggregation that would be appropriate
to these problems. Or, an even more elusive issue is the
problem of operationalising the attitudinal nature of the
Output investigation which our methodology proposes: at

the back of this problem is the implicit assumption that
to some extent value systems should and can be taken into
account in modeling systems. But how are they to be
brought into unidimensional space and what forms of
output from these behavioral systems are required to in-
sure compatability with land use modeling systems. The
overall problem is an extremely complex one; if solved it
is argued that results will be extremely rewarding ones.
The attempt that has been made here is to point to and
organise some of its many facets.

One final application of the Time/Activity scheme and
methodology which should be mentioned is its potential
usefulness in experimental forms of research. It is
easily reproduced, with only a limited possibility of
sensitising the respondent to its form and required con-
tent. To take a natural experiment situation as example,
the activity routines of residents before and after relo-
cation from an urban renewal area, could be directly
studied with the direct application of the research instru-
ment to both situations, with very good assurance that the
after conditions could only have resulted from the experi-
mental variable--though the after condition of routines
will alter over time as the variable effects are accom-
modated. The point is that unless some process such as
therapy, as previously suggested, has been applied, the
respondents ability to report his day's activities on a

diary day will remain much the same; only if he has been oversensitised,(by therapy for example), will there be a tendency to eliminate or falsely report data. The possibility of following the _full_ effects of changes in activity routines may be one answer to the evaluation of programs which when judged by their _own_ goals of, say, using urban renewal to increase the flexibility and productivity of urban land uses, would appear to be all too eminently successful.(in a biased fashion).

This is a review of some of the most effective points of application of the ideas and techniques which this study has suggested. In identifying these points there has been an implicit assumption and understanding of certain interdisciplinary interactions resulting from both a common interest in urban planning situations, and from an increasing mutuality in respect to just which aspects of the environment and its behaviors are to be held as relevant, essential issues. So, with regard to the latter of these two stimuli to interaction, psychiatry and therapy can, for example, be included as contributary planning disciplines precisely because they are moving as disciplines from the study of, say, the unconscious and the influence of past personal history on present behavior, to a realisation that the individual is not necessarily honored by emphasising

his separation from the surrounding world, and its overt

activities. There exists an encouraging confluence of

theoretical and operational concentrations which is quite

separate from the common ground established by the need to

counteract commonly felt urban crises. It is suggested

that the concerns--theoretical and operational--of this

study are, at once, made to seem realistic by this con-

fluence, while being formulated so as to complement and

encourage it.

HISTORY OF (A) THE USE OF
TIME-BUDGETS, AND OF (B)
OTHER ASPECTS OF TIME IN
THE EXPLANATION OF ACTIVITY

APPENDIX I: History of (A) the Use of Time-Budgets, and of

(B) Other Aspects of Time in the Explanation

of Activity.

Part A: Time Budgets and Activity.

In previously identifying the analogous relationship
between money and time expenditure, and the way in which its
perception influenced the type of data which became relevant
to research we defined, implicitly, a major stage or step
in the study of human behavior and activity.....

Leplay's famous 19th century study used family finan-
cial budgets as a basis for the comparative study of the
working classes in Europe. Engel and his critics soon
developed a dynamic (configuration and interplay) approach
to such budgets and in so doing made the necessary (but by
no means obvious) connection of money expenditures with the
time balance sheet of activities. In earlier work the pro-
cess of budgeting was a method for behavior research. In
the new interpretation the family budget no longer repre-
sented an economic situation but, in a certain sense, a
report of economic activities from which conclusions could
be drawn regarding the behavior pattern and (partly) motiva-
tion behind the activity.[1]

The following traces the development of the dynamic
approach, which by the early 20th century was well estab-
lished as an analytic technique. It then focuses on the
time-related studies of the past fifty years as they are

expanded (or, rather, used with other research instruments) to elicit qualifying data.

We are to look, in this specific focus, at how successful has been the marriage of the time and activity variable. We will not be interested in the technicalities of the procedures by which the variables are related but only in <u>the number of aspects of activity</u> which can be <u>explained by time</u>. (We might have selected an alternative series of studies to historically examine the aspects of time explained by the study of activity.)

Throughout the history four developing traits will be identified.

1) An interest in dynamic interpretation leading to analysis of configuration, rules and processes of change, see above.

2) A progressive inclusion of aspects of activity, or, in more structural terms,

3) A changing emphasis on the importance and relevance of activity aspects, beginning with inputs, then description and outputs.

4) An increasing use of the time dimension as an explanation of these activity aspects.

The most important studies are chronologically set out below. They are generally the studies which made most progress toward the inclusion and study of activity aspects.

--(1): Late 19th Century, Frederick Taylor's <u>Time and</u>
<u>Motion Studies</u>. These were psycho-physical and
experimental-psychological laboratory research
studies, using the first consistently set up Time-
Budgets extending over the period of the day spent
at work. They provide an early instance of dynamic
analysis not well enough observed by many contem-
porary and later researchers into time, but de-
veloped most expansively by market researchers and
management.

This brings us up to <u>1900</u>: Studies 2 to 7 inclusive cover
the period up to <u>1932</u>.

--(2): 1913, Bevans, <u>How Working Men Spend their Time</u>.
A comparative-descriptive account significant for
the inclusion of the total daily spectrum of activi-
ties, but lacking any thorough configurational
analysis of, for example, free time vs. work time.

--(3): 1914-26, <u>Economic and Social Studies by Planners in</u>
<u>Russia</u>. Early in the communist regime surveys of
family money, and later, time-budgets were carried
out as gross configurational studies to identify
areas of activity and behavior which might be sub-
ject to policy and planning manipulation, but also
as a measure for time series and longitudinal
comparative analysis of the state's process of
development.

This is probably the first example of recogni-
tion of the potential of a continuing time use in-
ventory. However, judgements were (and are, see
below) made as to the adequacy of the use of time
on the basis of efficiency alone--this tended to
concentrate research upon certain descriptive
aspects of activity and some inputs such as parti-
cipation. Communication, Contact and Motivation
as well as any notion of output are necessarily
obscured or omitted.

Russian planners have continued their Time-
Budget investigations on a more massive scale than
any other country: one Siberian study center alone
has collected 30,000 man-days of information since
1953.[2] Certainly this is useful data in view of a
purpose of opening up new sources of labor and the
better exploitation of labor reserves in industrial
and agricultural production, but its narrowness
imposes restrictions on the investigation and sen-
sitive analysis of fundamental activity routines
and behavior. For our purposes, information such
as that which shows "that roughly 100 billion man-
hours were spent yearly on primitive household
work that could be done as well if not better by
machines or with the aid of mechanised central
services,"[3] is of little value. For any cross-
national study of culture and change it is also

probably too scanty--we shall leave the Russians at

this ill-tuned pitch.

In W. European and American sociology the Time dimension

found most extensive application in the studies of free

time and Leisure time. With the economic boom, and hoped

for affluence, the problem and sociology of leisure was very

much in vogue.

--(4): 1927, Crawford, The Use of Time by Farm Women (Idaho),

--(5): 1928, Frayser, Use of Time in Rural South Carolina,

--(6): 1929, Wilson, Use of Time by Oregon Farm Homemakers.

These are three of a set of five major rural studies

producing fairly mundane descriptive and partially

comparative studies interested in the sociological

aspects of time expenditure. They include, however,

notions of contact and communication (implicitly

rather than explicitly) along with the participatory

aspect of activity. The notion of outcome is not in-

vestigated--everybody, we presume is happy down on

the farm.

Wilson's study is interesting in its inclusion

of observations on the physical design of homes as it

relates to activity efficiency and convenience, an

early example of environmental effects on activity

structured by time.

Fortunately the data from all studies was well

categorised, at a gross level, and has been used in

a comparative time series study at the Survey

Research Centre at Michigan. Obviously, the results are of value only in as much as the validity of the comparisons is assured and agreed, but fascinating changes and constancies have been observed.

--(7): 1934, Lundberg, Komarovsky and McInerny, <u>Leisure a Suburban Study</u>. Here is a monument to the 1900-1930's era. It is based on extensive and methodically digested data collected in Westchester county from 1930-32. (With regard to the topic of the study, we can only presume that the country was marginally affected by the depression and that leisure was of fundamental (time) importance.) Basically sociological, the study attempts to arrive at a schedule of time expenditure for different groups in the community. But an additional questionnaire develops this (stereotypical) approach to include investigation of 'good time' activity patterns by place, companionship and activity satisfaction. It also includes some basic forecasting techniques for preference of activity given certain open opportunities about money, time and accessibility.

The period <u>1932-1950</u> is another defineable bloc in the development of studies within our interests. Despite a certain change of emphasis in the general stream of sociological work, leisure activities and facilities still seemed

to fascinate the Time researcher. This period therefore
marks not a change of subject or concentration on activity
type, but is characterised rather by a development of new
sources of information and interest in more aspects of the
activity routine.

--(8): 1937, Thorndike, <u>How We Spend our Time and What We
Spend it For</u>.

--(9): 1938, Riley, <u>Dynamics of Non-family Group Leisure</u>.

--(10): 1940, Zawadski, <u>The Psychological Consequences of
Unemployment</u>. Study (10) is a different and, we
suspect a more pertinent viewpoint on Leisure--
enforced leisure. Study was based on the analysis
of diaries kept by the unemployed male respondents.
Common to these three (and other) studies is a con-
tinuing concern for participation and the complex
of communication, and for satisfaction related to
sequential rules underlying Activity. Both Riley,
who used the town newspaper as a record of time use
over a 75 year period, and Zawadski tap new informa-
tion sources. Riley gives an overview which
approaches a planning oriented description more than
a sociological one, and this in a simple direct
manner.

--(11): 1944, Liepmann, <u>The Journey to Work</u>, and

--(12): 1944, Blum and Candee, <u>Family Behavior, Attitudes
and Possessions</u>, are both studies which at once en-
rich the fund of sources of information and the prob-
lems potentially amenable to a time study. Also,

they make adequate reference to description and the more obvious inputs of activity (neglecting much of communication motivation and contact). The configurational approach is well illustrated.

--(13): 1939, Sorokin's, <u>Time Budgets of Human Behavior</u>, probably did more than any other book at that time to popularise the Time-Budget technique as a sociological method of research. Its emphasis is totally on configuration and sequential rules--after this point the technique of analysis is so institutionalised that it does not require further comment.

Participation (some communication) and motivational aspects are considered, as are satisfaction (but no other outputs) and place (in a sense corresponding to descriptive aspects of activity). The latter are examined in theoretical rather than data based fashion.

A census method of time-budgets of activities as they change over time is suggested in some detail; it provides further instance of the consonance, (theoretical at least), of a time measure related to activities, in the particular sense in which Sorokin conceptualises them. Surprisingly, there is no caution as to the periodicities of change to be elicited by inclusion in the census of the social time (meaning, sequence and use) variable, which we

noted to be one of Sorokin's major interests.
(Sorokin's data has also been used in comparison
with 1965 data, at Michigan University, Survey
Research Center.)

The years from 1950 to the present have seen the
greatest spread in the field of investigation by time-
budgets, and have allowed for consolidation of the
theoretical and practical interests of researchers to
encompass most of the aspects of activity relevant to
environmental concerns. The studies are many and we will
require to be selective. Some division by country is
applicable.

--North America: 1950-67, saw greatest application of the
time-budget technique in continuing research into free
time. The studies generally show little advance upon
those already noted. We need mention only;

--(14): 1959, Larrabee and Meyerson (Eds.) Mass Leisure,

--(15): 1959, Ward, Nationwide Study of Living Habits.

As isolated studies following important directions of in-
vestigation we should note,

--(16): 1957, Bell and Boat, Urban Neighbors and Informal
           Social Relations,

--(17): 1959, Reiss, Rural-Urban and Status Differences in
           Interpersonal Contact.

Both are sociological in bias and make little
reference to descriptive activity aspects. They

develop, however, interesting measures of both input and output, with particular emphasis on the communicative, participatory and contact aspects; output has a tendency to be theoretically embraced rather than measured.

Reiss' study is especially noteworthy for its simple adaptation of the time-budget questions--with whom, how often, etc. By classifying, for example, the with whom question as to primary and secondary contacts (with sub-classifications) and as to impersonal and personal contact, he easily obtained an amount of quantitative data with rich qualitative overtones. It is such simple adaptations of the technique in a way that permits the range of enquiry to come closer to a description of the total of urban activity which suggests that the marriage of a time-related structure and an activity structure comprising a complex of aspects may be reasonably appropriate.

At a _theoretical_ level both studies effectively used time structured data gathering methods in a questioning of the extent to which we can _causally_ relate metropolitan or urban life to a depersonalisation of human contact and association. (Work by the following author picks up this direction.)

--(18): 1959, Meier, _Human Time Allocation: A Basis for Social Accounts_,

--(19): 1959, Meier, <u>Measuring Social and Cultural Change</u>
<u>in Urban Regions</u>,

--(20): 1962, Meier, <u>A Communications Theory of Urban Growth</u>,

--(21): 1967, Meier, <u>The Metropolis must become a Transactions</u>
<u>Maximising System</u>.

For some 10 years Meier has been emphasising the
importance of measuring the activity variable.
Primarily, his interest is in the participatory, com-
municative and participant output aspects; measure-
ment of these aspects cross-sectionally and longi-
tudinally is highlighted. The time-budget of What,
When, Where etc., through How regular, is the only
advocated measure.

Our criticisms, by now, fall easily into line--
1) omission of the other aspects of activity and
limited reference to an overall structure for these
aspects, and 2) limitation to but a few aspects of
the time variable at both the theoretical and opera-
tional levels. Certainly we can agree with the
general statement of intent which asserts that
(1967), "no longer will the relative mortality rates,
or the wealth of the locally-owned mercantile and
manufacturing groups, or the jobs opened up in ex-
port industries be, primary determinants of
success"[4]--(we have already argued that environ-
mental accommodation to and of activity routines

and the tipping point in location choices, particu-
larly in advanced societies, is more and more to be
found in how well behavior patterns are understood).
But when confronted with the new "concept of
efficiency as applied to cities" as nothing but "an
emphasis placed upon the freedom to participate, and
transact,"[5] we may question Meier's ability to
(1959), "prepare well founded indexes that confirm
or deny" that "one city is more civilised than
another."[6] As Chapin observes, it is not clear
"how the analysis would proceed from sampling in-
formation flows, to identifying transactions, to
constructing activity patterns,"[7] (to defining
space use patterns).

The above comments apply equally to the work of
Chapin (see writings referenced below) save that
Chapin, curiously, is capable of acknowledging
(instead of omitting) many of the concomitants of
the time-activity debate while stolidly refusing to
include them in his schemes. Of note therefore in
respect to the theoretical concerns of Chapin, and
of Meier, is a lack of connection between the actu-
ality of activities in time and any larger behavioral
system or process which would suggest the potential
activity range and interests of various groups, as
a general delineation prior to more exact theoretical

and operational investigation. This larger be-
havioral system would as we have seen be indepen-
dent of, and of greater instructive imperative than,
the continuing process (already noted) of activity
evaluation and reformulation: it would answer why
an individual chooses or is forced into a certain
general activity sphere, rather than how satisfactory
or unsatisfactory he feels it to be. It would be
suggestive of ways in which routine reformulation
might occur, especially location.

As previous writing suggested, Section 3 will
examine this theoretical link and will suggest the
Time Horizon (TH) and Time patterns of expenditure
(TPE) as guide to an individual's general activity
sphere, prior to the actualities and exactness of
routine. (The TH and TPE will be presented as
aspects not necessarily synonomous with activity.)

--(22): 1965, Chapin, Urban Land Use Planning,

--(23): 1967, Chapin, Activity Systems as a Source of
    Inputs for Land Use Models,

--(24): 1968, Chapin, Activity Systems and Urban Structure:
    A Working Schema.

One of the latest time-budget studies seems, fittingly,
to be congnizant of many of the concerns of the above
criticism and to develop a comprehensive and sensitively
formulated research. It is, however, little concerned

with theory; it bears upon a particular and well defined situation. It attends, in part, to a behavioral system (which is measured by a TH), outwith activity aspects embraced by the time-budget.

--(25): 1967, and onward, Tilly and Michelson, <u>The Physical Environment as Attraction and Determinant: Social Effects of Housing</u>. The study is interested in the revisions of a) time-budgets and other time aspects, and b) of activity routines, as experienced by re-located families. It is a six-year longitudinal study, and will question:

--the reasons for a family's decision to move--i.e., what are the felt constraints of their present location (in respect to <u>Time Horizon</u> and the particu-larities of <u>activity routines and time expenditure</u>);

--felt needs about time expenditure and activity routines which influence selection of new location;

--factors affecting execution of preconceived plans after moving;

--to what extent, and how satisfactorily, does the physical setting influence what people do, with whom they do it, where they do it, etc.

In fine, consideration is given to TH which influ-ences the expenditure of time on a particular activity routine, which is subject in turn to modi-fication by major change in the TH (which may be

class related) or by specific evaluation of the
routine, or both.

We are able to utilise lessons of the above study
in the formulation of our test case.

France: probably has produced the most extensive and
methodologically interesting applications of the time-
budget process since 1945. Beginning with the first time-
budget study by Jean Stoetzel into phenomena of Urbanisa-
tion, one of the tendencies of the French research has been
the analysis of the global mode of life of certain popula-
tion strata in connection with their employment and their
adaptation to urban environments and industrialisation. A
limiting of interest to cultural-sociological facts as is
noticeable in most cases in American (and also West German
leisure sociology--see below) is absent in this trend of
research, as is the accompanying, often artificial, limita-
tion of the period under observation (in the time-budget)
to a work-free fragment of the day. This leads, logically,
to drawing into the field of observation of the time-budget
record, the immediate micro-sociological and physical en-
virons of the individual, above all the family, and beyond
that the neighborhood and job group. Interesting complex
time-budget analyses have resulted. (TH and larger
behavioral/activity system is not investigated.) A most
important study is,

--(26): 1956, de Lauwe, <u>La Vie Quotidienne des Familes</u>
<u>Ouvrieres</u>, in which the connection and the recip-
rocal effect of time division and time budget of
married workers is especially studied. A partial
attempt is made to draw in financial budgets,
toward a refined analysis of economic conduct and
perhaps of more general ways of behavior.

Another interesting research trend is the investigation
of the impact of technical advances and the new demands of
industrial activity in them. Research on free time as an
independent 'sociology of leisure' is also strongly repre-
sented.

<u>Other European Countries</u>: the following is a quick
round-up included for reference more than in pursual of the
main arguments of the text. In <u>West Germany</u>, leisure-time
has been a favorite study area, coupled with rigorous
examination of (and fair progress in) the methodology of
time-related research.

<u>Poland</u>, similarly, is concerned with methodology; some
recent research into the sociological and environmental
conditions of working women come encouragingly close
(judging from report) to the spectrum of our concerns.
But, as in most communist countries, much of the data
gathered is related to identifying areas of potential
policy intervention in the efficient use of time and
activities.

Bulgaria follows this course and has for several years produced systematic reports on the living conditions of the working class. Hungary, instituted, in 1963, what is probably the first time-budget (a one-day budget of each fourth family of a national micro-census) forming part of an official census. Leisure is also studied—perhaps it too can be efficiently handled by policy decision.

Szalai reports that in East Germany, and Czechoslovakia, "time-budgeting" has "come very much in vogue as a tool for planning all sorts of communal services, traffic, shift schedules etc." A liberal interpretation of this general statement would suggest that the activity variable as overlay to the spatial seems to be well recognised and, encouragingly, accommodated by a time measure.

Finally, a word on the International Multi-Nation Time-Budget Project: for a single 24 hour period random time-budget samples were obtained from approximately 2000 of the urban employed and their families in 13 survey sites (small industrial cities) from 12 participating nations; 96 activity categories were used. Analysis has substantiated that societies have characteristic and identifiable patterns of time allocation, and that there are trade-off phenomena in social activities which on many occasions take the form of functional equivalents. In view of its major intentions, the study has been very successful; it has proved the instrumentality of time-budgets for getting at the social organisation of time itself.

But, during the development of the project, re-
searchers saw further possibilities, possibilities which
make it pertinent to this investigation. Thus Robinson,
the American representative, reports that, "although
analysis has dealt only with <u>types of activities</u>, analysts
of social change may feel that types of <u>inter-personal</u>
<u>contact</u> and the <u>location of activities</u> may be as interesting
and as important as the activities themselves."[8] When the
interest and resources of such a massive undertaking are
thus directed and evaluated we may be sure that

a) time-budgets and associated time measures will be
   quickly institutionalised as effective research
   tools,

b) that the research distinction as to what are accept-
   able sociological and environmental (perhaps anthro-
   pological) concerns will be progressively eroded,

c) that the Time/Activity debate and the conjunction
   of these two variables for purposes of theory and
   research, are valid and useful operations.

What the above Section and Conclusion (c) have shown is
that <u>there is much empirical evidence offered by a literature</u>
<u>search which confirms the validity of the main direction of</u>
<u>this study.</u> We have a measure of face validity, to borrow
a term, confirming that time-budgets are likely to be good
measures of many of the aspects of activity--of Description,
Input and Output. We separated Time from Activity on the

premise that activities might be more (in planning terms)
than just What occurs When. Other authors have been
similarly concerned, though without making specific list
of aspects of the two variables and of ways in which they
match (or otherwise). That they have been able to effectively
match the variables is reflected in the above comments on
selected studies.

Part B: Other Time Aspects and Activity.

Examples of the use of other aspects of Time as expla-
nation of activity are less numerous than for Part A. They
fall into 2 categories:

1) Anthropological and Sociological writings observing
    Time Horizon and Social Time in their relationship
    to activities as a class or group phenomenon; we
    have already noted that Banfield and Martineau dis-
    tinguish class TH's--both also relate these TH's to
    activity distinctions,

2) Experimental psychological studies of TH in illness
    and certain social pathologies, and the use of
    behavioral experiments to affect class or group
    induced TH's.

Category 1): implicitly anthropologists and socio-
logists have long recognised the influence of TH and Social
Time on behavior and activity. (Psychology and psycho-
analysis is similar in its concerns.)

We will not investigate the many available sources except to mention that the work of Levi-Strauss has, of recent, been emphasising the time variable; (Mead, White, Leach, Bridgman, Sorokin and Lewin offer equally interesting directions for study).

The racial situation and the Poverty Syndrome have lately focused interest in 'time deviance' as it affects behavior. Minorities, none the less important for their size, are found to differ appreciably in their conception of time/behavior goals (and ways of acting them out) from the middle class dominant conception which emphasises future orientation, deferment of gratification and consonant activity routines: Henry's and Horton's studies of 'Colored Peoples Time,' and Banfield's forthcoming treatise on class, TH, and activity are instances of research in this direction. Indeed Banfield maintains the key and understanding of nearly all behavior to be available in the TH, even to the point where in riots the propensity of the Negro Lower Classes (with short TH's) to steal liquor, TV sets, radios and food is explained by the ability of these goods to bring immediate undeferred gratification; jewelry and fur stores, for example, offering articles of high value were not looted because the disposal of articles from them requires planning of action, transaction and concealment of reward until a later time when police suspicion has abated.[9]

The important theoretical distinction of the above works is that they see variations (by class etc.) to be explained by time and its use: in contrast, many theories have viewed time as unequivocally _constant_, at least in respect to TH. To explain, the Lower Class Status Frustration and Social Disorganisation School, represented by influential sociologists such as Parsons, Mills and Zetterberg, state that

a) lower class persons, _motivated_ to attain success values in a manner similar to the middle class (i.e.,a long range picture of achievement), are blocked in their ambitions by socially structured barriers which thwart ambition and suggest injustice, resulting in deviant adaptation. The linking of this _motivational_ theorem to the _status frustration hypothesis_ is that,

b) concern about the evaluation of oneself by others is the basis of status concerns, such that if the avenues of the enhancement of one's self esteem are blocked then status frustration follows; status frustration leads to deviant behavior "if one is aware of the external sources of frustration."[10]

All this supposes that (Roach) "the lower class boy (and his parents!) absorbs dominant middle class values which set goals for him that are in keeping with the long range picture of American life."[11] By adolescence, then,

he has developed conceptions of <u>himself</u>, in the <u>social</u> <u>structure</u> with appropriate <u>roles and statuses</u>. Frustration of these conceptions occurs.

Recent research shows, to the contrary, that low aspirations, short TH, little concern with status, and cognitive restrictions on the comprehension of the implications or possible alternatives in critical life choices (e.g., the job), are all characteristics of the lower class. Behavior cannot be explained as a frustrated realisation of a middle class norm. Rather, the culture of the class and especially the TH variable dictates behavior and activity at variance in its goals with that of the middle class. Activities are confined to those areas which are reflective and supportive of lower expectation, to those which more closely match the reality of possibilities. Attention is given to an inter-related holistic assessment of a Group or Class (see Oscar Lewis and Rainwater) in a specific Time and Space milieu, not in a subverted milieu vainly attempting to mimick its middle class counterpart. (Besher's <u>Urban Social Structure</u>, chapters 1 and 2 provides a thorough, if somewhat scathing review of the Social Disorganisation viewpoint.) Patently, there is extreme in both these positions--in an Analytic processual statement of class behavior, opposed to an Holistic system statement emphasising the inter-relatedness of class phenomena. Our argument and review of the two

schools of thought would suggest that the Holistic approach
will give an overview with a richness of explanation not
offered by the logico-deductive process of the Analytic
school (which in any case failed to provide data supportive
of many of its hypotheses).

Banfield claims that our society is becoming increas-
ingly present oriented! Paradoxically, he maintains that
we are also approaching near total middle-classification, a
state normally associated with long TH's. Perhaps the
status frustration concept can be re-invoked to explain
this condition for its suppositions are more closely
related to it--frustration, in full knowledge and awareness,
of goals which society sets but refuses to realise: perhaps,
as we inculcate the lower class and absorb some of their
values we will reckon the price of societal goal fulfillment,
(if this is possible), as too high for the benefits received.

The theoretical relevance of TH to behavior and activity
fits well to the purpose of this study.

Category 2): experimental and social psychology offer
research confirmation of some of the theoretical tenets of
a time explanation of class (see above). Notable is Leshan's
investigation of social class with respect to a collective-
ego of space-time, as defined by Erickson, which "concerns
the perceived relationship of the individual and his goals
in time." The use of a story telling technique showed lower
class children to prefer short stories with quick sequences

of tension and relief, little frustration for long periods, and no plan of action toward future goals. Stories length- ened upward with class. (Fink used similar techniques in observing shortened time perspectives with age, and insti- tutionalisation. Davids and Parenti showed TH to be very short in young children.)

Barndt and Johnson used Leshan's technique in a cor- relational study of delinquency and story telling, which could, in turn, be related to class. Wallace found, by different methods, that Schizophrenia can be correlated with short TH. Leshan found low achievers to be charac- terised by short TH's, and high achievers to be optimistic with longer TH's. There are many similar studies.

The danger with these latter correlational studies is their normative suggestiveness. Quickly one makes the relationship between TH and class--perhaps the way to make the lower class into higher achievers is to increase their TH (or would the aim be to make the middle class lower achievers)?

The facts are that TH in correlational studies is not often defined with respect to any length or type by which it can be located as Lower or Middle or upper class. Re- searchers just use loose definitions such as 'longer' or 'shorter'--short in comparison to the middle class or long in comparison to the lower class? Also, no causality is suggested by the findings of these studies; thus a short TH

does not cause delinquency or deviancy. Rather, the middle class may impose negative sanctions on activity which is necessary to a short time perspective and thus brand it as deviant, whereas it is, in fact, essential to the life pattern from which it derives: we return to the need for a holistic functional evaluation which explains activity by class models. (Undoubtedly an individual with a short TH which does not allow him to weigh the costs of imprisonment, say, in a future-oriented fashion may be more prone to the immediacy and reward of certain delinquency, theft, for example.)

In this Appendix we have (1) identified a potential time/activity relationship, and have (2) examined the utility of that same relationship in a number of ways in a number of studies. It would appear to be useful in both theoretical and practical operational conditions.

From our literature search in this Appendix there are some indications of the way in which the two variables should be conjoined. Section 3 suggests this study's solution at both a theoretical and operational level. Section 4 tests some of the proposals offered in Section 3.

APPENDIX II:

THE QUESTIONNAIRE SCHEDULES
OF TIME BUDGET INFORMATION
GATHERING

APPENDIX II: The Questionnaire Schedules of Time Budget

Information Gathering

The following presents the three part Questionnaire

Schedule used in the Test Case (Section 4). The parts are

--Pre-diary Interview (and explanation of project),

--The Time/Activity Diary (with Instructions),

--The Post-diary Interview.

The principles governing formulation of the Schedule

are recorded in part (B) of Section 4: Test Case.

The Diary, and Instructions for its completion are

presented first, prior to the Pre-Diary and Post-Diary

Interviews.

How To Complete the Diary (see sample Diary page on page 159).

The diary is designed to record what you do during the day, at all times. In columns 3-8 it will also record some information about each activity which is additional to its time and length of occurrence. The way to record this additional information is indicated below, but first a word on the activity descriptions you will make in the first and second columns (i.e. Activity and Place).

In the first column (Activity) you should describe the activity in each row. Use your own words: we have given some examples of the kinds of things you may be doing.

The rows are, for the most part, divided into ½ hour (or 1 hour) intervals. If during that time you change from one activity to another, describe both (or more) activities in the row, and fill in the following rows for both activities. At the end of the description of each activity make a note, in brackets, of the time that you stopped--e.g., (12:30). If you find that you have 3 or more activities in any row, you should save yourself extra work of description by omitting minor activities or by summarising them under one heading--e.g., work around the house.

It may happen that you are doing a major activity and still doing a number of other things at the same time--e.g., watching television while playing cards. This is different, obviously, from doing several things one after another. In

this case note the main activity and fill in all other

columns for <u>this activity only</u>; but do make a note in the

first column of other things that you are doing at the same

time.

Column 2, <u>Where</u>, is self-explanatory. If the name of

the place is not likely to be known to the interviewer

make a note to the effect that the place is near, say,

Boston Common, or North Station.

How to Complete the Contact and Communication Columns (3, 4, 5, 6 and 7).

<u>Contact (Columns 3 and 4)</u>: These columns are to be

completed by numbers representing different types of Contact

which you have with people while engaging in activities.

Column 3, <u>With Whom</u>, refers to the person or person's

status, defined by his or their relationship to you. You

should fill one of the following numbers in Column 3 beside

each activity:--

(0) <u>Alone</u>

(1) <u>Intimate Kinship</u>, such as nuclear family members

     and extended kin members.

(2) <u>Close Intimate friends</u>, friends defined as 'very

     close,' 'my best friend,' etc.

(3) <u>Close Associate or Client</u>, a close friend deriving

     from a work context, whether or not actually seen

     at work.

(4) <u>Good friend</u>, a friend defined as 'close,' 'just
a good friend,' etc.

(5) <u>Distant Associate or Casual acquaintance</u>, either,
a fellow worker who is not defined as a friend or
a person with whom one has a "speaking acquaintance."

(6) <u>Cordial Recognition</u>, defined as a person whom one
recognises in address, or "just someone I say
hello to."

(7) <u>Pure Client</u>, defined as a person whom one doesn't
know personally, but one with whom contact is made
or with whom interaction takes place in a client
relationship.

(8) Stranger(s).

Where there is more than one type of person engaged with you
on the activity place their respective numbers in the
column, as instructed above.

Column <u>4</u> is, obviously, to be completed by noting the
total number of persons engaged in the activity. If there
are large numbers of people, simply make a rough guess—we
will appreciate your difficulty. If there is more than
one type of person recorded in Column 3, then Column 4
should contain a number for each type.

<u>Communication (Columns 5, 6 and 7)</u>: These columns are
to be completed by numbers and letters. The method is the
same as above.

Column 5. Direction--this records the primary direction of Communication between you and people or things that you are in Contact with. We use Communication to refer to the kind of messages, information, or affection and comfort that you receive from persons and situations. So, for each activity, indicate the main Communication source--is it;

(1)   Communication which comes from another single individual to you

(2)   From you to another individual

(3)   From the environment to you. (By environment we mean anything that is non-human, such as a TV, or a stage show.)

(4)   From you to the environment. (This means that you are acting on anything in the environment other than yourself or other people--e.g., painting a wall, gardening.)

(5)   Communication with yourself, day dreaming, meditation, personal care

(6)   You, as individual, communicating to a group

(7)   Group communicating to you--e.g., watching a play

(8)   You, with a group, communicating to the environment

(9)   You, with a group, communicating to another individual

(10) You, with a group, communicating to another group

--(8), (9) and (10) refer only to situations in which you feel that communication from you <u>as a member of a group</u> is more important than your own individual communication. If you were in a play, for example, your part would be bound up with that of the group and would rely on them; at a party, however, you might be in a group talking to someone (or persons) and in this case your communication would not be of type (9) or (10). It would be you, independently communicating to another person--type (2).

The following diagram may help you to remember and locate the types of direction of communication.

<u>Direction</u>;
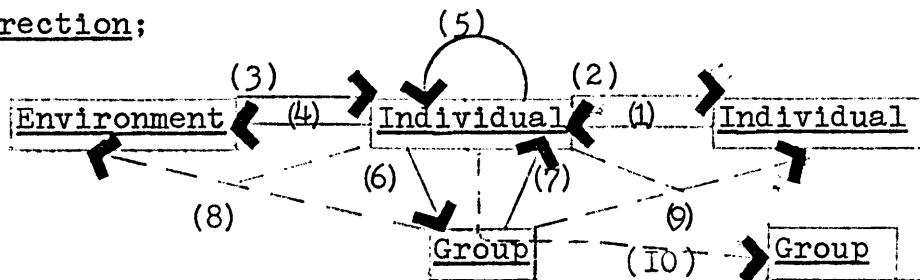
<u>Column 6, Mode</u>, simply asks how the Communication reported in Column 5 took place, was it by

(a)   Word,

(b)   Action (demonstrative only),

(c)   Word and action,

(d)   Sounds other than verbal (such as music),

(e)   Action with an Instrument or part of the
       Environment (writing, painting the house),

(f) Silence, thought communication (e.g., walking in the country),

(g) or by combinations of some of the above Modes. If there is more than one mode, put the appropriate letter(s) in the space provided.

Column 7, Exchange, seeks to determine what exchange, if any, took place during each activity. Did it entail

(a) Communication of Information (such as studying),

(b) or of goods or material objects (such as shopping),

(c) or of Inconsequential talk, argument, and pleasantries? (Things which pass the time and are necessary to everyday living--you can include light entertainment in this category. But concentrate mainly on social acts which we all engage in, and not on the personal ones included in (d)).

(d) Refers to communication that is personal, including day dreaming, personal care, and affection etc.

(e) Combinations of (a), (b), (c) and (d) should be recorded by placing all relevant letter(s) in the space provided.

Column 8. Motivation, is designed to find out why you engaged in certain activities. Against each activity try to describe the reasons or desires or impetus which prompted you to engage in the activity.

You may feel that this is very obvious, that your activity record is sufficient information. On occasion it will be, but mostly it will not give adequate information; if, for example, you make a phone call, is it a formal call to get information, or a social chat with a friend; if you play some game or sport, is it primarily for recreation and exercise, or out of a social interest to be with friends. We will appreciate condour in filling out this information--at the same time we will respect the difficulties (of both embarrassment and of honestly knowing oneself why one does something), which may prevent you from complementing every activity with a comment on Motivation.

HERE ARE SOME EXAMPLES OF THE KIND OF

ACTIVITIES WHICH YOU MAY DO DURING THE DAY

(BUT PLEASE USE YOUR OWN WORDS TO DESCRIBE WHAT YOU ARE DOING)

TRAVEL: ALL THE TRIPS YOU MAKE, BOTH AT HOME AND AT WORK.

WORK: ACTUAL WORK; WORK BREAKS; DELAYS OR SITTING AROUND AT WORK; WORK MEETINGS OR INSTRUCTION PERIODS; MEALS AT WORK; OVERTIME; WORK BROUGHT HOME.

HOUSEWORK: PREPARING MEALS AND SNACKS; DOING DISHES; ARRANGING AND STRAIGHTENING THINGS; LAUNDRY AND MENDING; CLEANING HOUSE (INSIDE AND OUTSIDE); CARE OF YARD AND ANIMALS; REPAIRS.

CHILD CARE: BABY CARE; DRESSING; HELPING WITH HOMEWORK; READING TO; PLAYING WITH; SUPERVISING; MEDICAL CARE.

SHOPPING: GROCERIES, CLOTHES, APPLIANCES, OR HOME FURNISHINGS; REPAIR SHOPS; OTHER SERVICES (FOR EXAMPLE: BARBER, HAIRDRESSER, DOCTOR, POST OFFICE).

PERSONAL LIFE: EATING MEALS AND SNACKS; DRESSING; CARE OF HEALTH OR APPEARANCE; HELPING NEIGHBORS OR FRIENDS; SLEEP OR NAPS.

EDUCATION: ATTENDING CLASSES OR LECTURES; TRAINING AND CORRESPONDENCE COURSES; HOMEWORK; READING FOR THE JOB.

ORGANIZATIONS: CLUB MEETINGS OR ACTIVITY; VOLUNTEER WORK; GOING TO CHURCH SERVICES; OTHER CHURCH WORK.

GOING OUT: VISITING (OR DINNER WITH) FRIENDS, NEIGHBORS OR RELATIVES; PARTIES, DANCES, NIGHTCLUBS OR BARS; SPORTS EVENTS AND FAIRS; CONCERTS, MOVIES, PLAYS, OR MUSEUMS.

ACTIVE LEISURE: SPORTS OR EXERCISE; PLAYING CARDS OR OTHER GAMES; PLEASURE TRIPS AND WALKING; HOBBIES, KNITTING, PAINTING, OR PLAYING MUSIC.

PASSIVE LEISURE: CONVERSATIONS; RADIO, TV, RECORDS; READING BOOKS, MAGAZINES OR NEWSPAPERS; WRITING LETTERS; PLANNING, THINKING OR RELAXING.

THIS PAGE WAS GIVEN TO
RESPONDENTS ALONG WITH
THE DIARY SHEETS
(It was stressed that these
Activity categories be
taken as example and
suggestion only).

1 ACTIVITY	2 PLACE	3 CONTACT	4	5	6	7	8 MOTIVATION
What did you do? Describe your activity in each Time Interval.	Where	With Whom	How Many	Direction	Mode	Exchange	Explain briefly why you engaged in the activities
I HOUR OR ½ HOUR INTERVALS: **Diary**, BEGINS AT MIDNIGHT.							

Note: columns 5, 6, 7 are grouped under COMMUNICATION.

SAMPLE DIARY SHEET
AS USED IN TEST
CASE

DIAGRAM I

159

PRE-DIARY INTERVIEW

We are trying to find out the kind of activities upon which
people spend their time. That is, we want to know how
people divide up their time and spend it on certain activi-
ties.

We'd be interested first in the kinds of things that you do
during the day.

(1) What is your occupation:_____.

(2) What are the main things that you do on that job or

     (for students) in that course:_____

     _____

     _____.

(3) We'd also like to know about the way your time gets
     divided up when you are on the job; or (for students)
     when you are in school (i.e. during the academic year).

  * (Interviewer: Change to first person singular for all
     further questions).

** FOR EMPLOYED PERSONS (Regular job of more than 14 hours
   per week):

    (a) How long do you spend in a normal work day on
        paperwork; typing, keeping records, working on
        reports, charts etc.;
        _____.

    (b) How long is usually spent working with tools,
        machines or other equipment;
        _____.

    (c) How long is spent dealing with people; talking to
        fellow workers or customers about things related
        to your work;
        _____.

    (d) About how much of your time are you able to spend
        talking to people about things not related to
        your work;
        _____.

    (e) Is there part of your work day when you regularly
        just don't have any work to do:
                       No_____ Yes_____,
        over a week how long would this be;
        _____.

----

  * Bracketed remarks are instructions to the interviewer.

** Capitalised remarks are both instructions and markers
    of change in the content and interests of the questionnaire.

FOR STUDENT GROUP

(a)   How regular is your system and schedule of
      working: (3 groups),
      fairly Regular and predictable,
      Irregular but subject to periodic (i.e. predic-
            table) fluctuations,
      Very irregular, random, and unpredictable.

If REGULAR ask,

(b)   How many hours of your typical day are spent on
      Classes, Seminars and Lectures;
                                                    .

(c)   How many on library work, reading and preparation
      of papers;
                                                    .

(d)   How many credit units do you have;
                                                    .

(e)   How long do you usually spend in informal discus-
      sion and socialising which is, in the main,
      related to your course of study;
                                                    .

(f)   Do you have any special teaching or research work
      which takes up part of your day;
                                                    .

(g)   How many hours do you have free each day;
                                                    .

(h)   How do your week-ends compare with weekdays, are
      they free or similar to weekdays;

                                                    .

(i)   Over a week you have, therefore, about

      _____ free time.

If IRREGULAR, but PERIODIC ask,

(j)   I understand that it is difficult for you to say
      how you typically spend a day, because of the
      variation which occurs in your schedule, but could
      you give an indication of the length of this
      period. Does the significant change in the way
      you spend your time occur over the period of;

      a week; a fortnight, a month, a longer period.

(k)   Can you tell me about the extremes of the period
      which you have identified by answering the
      following;(return to questions (a) through (i)
      asking for the extremes in each case, i.e. little
      work vs. much work). /(h) and (i) may not be
      applicable/.

If IRREGULAR and UNPREDICTABLE ask,

(1) Could you formulate some kind of average day for me; (return to and complete questions (a) through (i); if answer is yes; No, circle,cross out (a)-(i)).

ASK ALL EMPLOYED RESPONDENTS (R's)

(4) On your main job do you have fixed daytime work hours, do you work special shifts or what:
Fixed daytime hours, Own choice of hours;
Hours obligatory but not really fixed as a shift;
Work special shift(s), (EXPLAIN),

hours worked _____,

(if varied) what are the other shifts_____,

How long do you stay on any shift_____.

(5) Are you doing any other kind of work for pay besides this main job right now: Yes, what kind of work

_____,

how many hours a week _____,

how long have you been doing this _____,

how long will you continue _____;

No.

(6) Have you taken on any extra work beside your main job in the past twelve months (ask if answer to (6) is No):

No;
Yes, what kind of work_____,

how many weeks did you do this_____,

how long did you work each week_____.

ASK ALL STUDENT RESPONDENTS (R's)

(7) Just how flexible can you be as to when you work or take your free time. Though you work regularly (or irregularly--as the case may be) I can't tell if the periods of work must always occur in the morning, say. How would you describe your schedule:
Inflexible, I have to work at certain times,
Flexible but I like to work at certain regular times
        (note that an R may be irregular in the amount of work performed each day, but very regular as to the general times at which this /variable amount of/ work occurs),
Flexible, I like to work at all sorts of times.

(8) (If general times can be fixed ask),
What are these times when you work on studies:

_____.

(9) (If general times fluctuate but can be reasonably
recorded as 2 or 3 separate periods ask),
Can you summarize these different periods for me:

_____.

ASK ALL RESPONDENTS

We're also interested in things people do in their
spare time, when they aren't working.

(10) I have a list of free-time activities, and I
would like you to tell me about how often you have
been doing these things during the past year.
For example, "Going to the movies." Would you
say that you've generally been going to the
movies once a week or more, every two or three
weeks, half-dozen to a dozen times all year,
one to five times a year, or not at all this
year?

(CHECK APPROPRIATE COLUMNS)

COLUMN:	1	2	3	4	5	6	7	8	9	10
	NOT AT ALL	1 - 5 PER YEAR	6 - 12 PER YEAR	EVERY 2 - 3 WEEKS	EVERY WEEK	CONTACT: (SEE NOTES)	WHERE--MOST OFTEN	WHERE--NEXT MOST OFTEN	WHERE--NEXT MOST OFTEN	WHY--(MOTIVATION)

A. GOING TO THE MOVIES.............................

B. GOING TO CLUB MEETINGS, ACTIVITIES
(PTA, UNION, ETC.)............................

C. GOING TO CHURCH (OR RELIGIOUS ACTIVITIES)......

D. GOING TO CLASSES OR LECTURES...................

E. GOING TO WATCH SPORTS EVENTS...................

F. FISHING, HUNTING, CAMPING, HIKING..............

G. BOATING, SWIMMING, PICNICS,
PLEASURE-DRIVES..............................

COLUMNS: 1 2 3 4   5 6 7 8 9 10

H. PLAYING ACTIVE SPORTS
(BOWLING, SOFTBALL, ETC.)...................

I. GOING TO NIGHTCLUBS, BARS, ETC..............

J. GOING TO CONCERTS, PLAYS, ETC...............

K. GOING TO FAIRS, MUSEUMS, EXHIBITS, ETC......

L. GARDENING AND WORKING AROUND YARD...........

M. MAKING AND FIXING THINGS AROUND HOUSE.......

N. SHOPPING, EXCEPT FOR GROCERIES..............

O. HELPING RELATIVES, NEIGHBORS, FRIENDS.......

P. VISITS WITH RELATIVES, NEIGHBORS, FRIENDS...

Q. PLAYING CARDS, OTHER INDOOR GAMES...........

R. WORKING ON HOBBIES, PAINTING, READING
FOR 2 HOURS OR MORE, OR MUSIC...............

(SEE DIAGRAM 2, SECTION 3).

General Notes: The rows record "what" activities.
on Question (10) The columns record "where", "how often" and "why" and
"how regular". "With whom" is accommodated
under the heading Contact which is to be
categorized as follows; put appropriate
number in column,
(1) Intimate kinship
(2) Close intimate friends
(3) Close associate or client
(4) Good friend
(5) Distant associate or casual acquaintance
(6) Cordial recognition
(7) Pure client, (further definitions are not repeated
--See p. 84).
(8) Combinations of (1)--(7)
The "How many" people aspect which is closely associated
with Contact, is to be infered from the general situa-
tional qualities implicit in the activity descriptions.
Remember that these activities are additional to the
"normal" round of life which the diary seeks to elicit;

they are likely to be less frequent than other activity
forms, and though they may have an importance disproportionate to their frequency it should be reflected first
in a Value Study (See below). That is, if the activities are indicated as having a very dominant role, we
would study this by further investigation rather than
by this present crude measure which relies on recall
for its answers. In such a further study aspects of
Contact as well as of Communication, which is omitted
from the Columns would be included.

"Where," how frequently (in 3 categories), can be
recorded by the following code numbers

(1)   Local Neighborhood - within a few blocks of home;
                                    take 5 blocks as limit.
(2)   Within same City as Home
(3)   Downtown
(4)   Within Metropolitan Area
(5)   Another city (or state).

"Why," is a direct question seeking the respondent's
Motivation for engaging in activities. Try to suggest,
by example, that visiting friends, say, may be a social
duty rather than a pleasurable activity. Try not to
prompt reply. Categorize responses by single words if
possible, such as

Duty,
S.C. (Social Contact, Socialising),
Reward (Economic Gain etc.).

Make a note of abbreviations at the head of the page.
Where Motivation corresponds to the nature of the Activity, tick the space ( ). Activity in each category
may be variously motivated at different times; try to
elicit a generalised summary.

_____

Finally, explain the diary and arrange your next
meeting with R to collect and check the diary.

POST DIARY INTERVIEW SCHEDULE

I would like to check over the diary in which you recorded your activities for the day of

_____.

But first I require some general information.

(1) On the diary day, was it a;
beautiful day,
fairly good,
average,
fairly poor,
very poor,
mixed and difficult to describe

R EMPLOYED

(2) Was (diary day) a day of the week that you usually work:
Yes; Did you work on that day,
Yes, No; why not

_____;

No; Did you work on that day,
No, Yes; why was that

_____.

(3) Did you work the normal number of hours on that day: Yes; No, less or more

_____.

(4) Did you work the day before:
Yes; No, explain

_____.

(5) Did you work two days before:
Yes; No, explain

_____.

(6) Did you work first day after:
Yes; No, explain

_____.

(7) Did you work two days after:
Yes; No, explain

_____.

(8) (If work day is isolated between before and after non-work days, and this information has not been previously reported as usual routine make enquiries as to reasons for not attending work on previous or following days)

_____

_____.

(9)   Was the diary day an unusual one for you in any other way. By unusual I am thinking of something that might have been on your mind, or something special you might have been doing which would have affected the usual order or method of your activities on that day:
No; Yes, explain

_____

_____

_____.

(get at the possibility that although activities might not be especially different, they might have been approached and structured in some special way).

(10) Not counting regular weekends and days off, how many paid vacation days have you had from your main job in the last year _____.

(11) Did you use any of those days to catch up on other things or to earn extra money:
No; Yes, how many _____.

(12) Where did you spend your last vacation _____.

R STUDENT

IF R HAS INDICATED (IN PRE-INTERVIEW) LITTLE DAY TO DAY VARIATION, ASK:

(13) Was the diary day a typical day in terms of the way your time was divided up for activities:
Yes;
No, explain_____

_____.

(14) Was the day before much the same (as the diary day) in the way time was used for activities:
Yes; No, explain

_____.

(15) Was the day, two days before the diary day, similar to the diary day:
Yes; No, explain

_____.

(16) Same as for (14) and (15) for day after and
      2 days after:
      Yes; No, explain_____.

(17) Yes; No, explain_____.

IF R HAS INDICATED PERIODIC FLUCTUATIONS IN TIME USE,
ASK:

(18) Was the diary day typical of this point in the
      week (or month). I mean typical in the way your
      time was divided up for activities:
      Yes; No, explain

      _____

      _____.

(19) If NO to (18), ask--Do you think that the irregu-
      larity which occurred on the diary day suggests
      the possibility of a new periodic fluctuation:
      New fluctuation, explain what

      _____

      _____;
      No, variation occurred by chance.

IF R INDICATED COMPLETELY RANDOM PERIODS AND
STRUCTURES (ROUTINES) OF TIME USE, ASK:

(20) You have indicated that your time is spent on an
      activity in a way that changes randomly from day
      to day. Even so, is there anything which makes
      the diary day outstanding and different:
      No; Yes,

      _____

      _____.

ASK ALL R's

(21) Was the diary day unusual for you in any other
      way. By usual I am thinking of something that
      might have been on your mind, or something of
      special importance or interest which you might
      have been doing, which would have affected the
      usual order or method of your activities on
      that day:
      No; Yes, explain_____

      _____.

(22) Do you usually take vacation time off:
Yes; No.

(23) Do you take a regular paid job during vacations:
Yes; No.

(24) Is the way you spend your time during vacations
very different from the way it is spent during
term:
Yes; No.

CHECKS ON DIARY REPORTING (AND POSSIBLE OMISSIONS):
ADMINISTER ONLY IF R HAS NOT REPORTED ACTIVITIES BELOW

("With whom" and "Who was present" refers to Contact,
and should be categorised as such. If question does
not include number of people, ask the next question,
"How many people").

(25) Did you listen to the radio on (the diary day),
possibly while you were doing something else:
No; Yes, when _____,

how long_____,

what kind of program_____,

with whom_____,

how many people_____,

(where_____).

(26) Did you watch any television on (the diary day):
No; Yes, when _____,

how long_____,

what kind of program_____,

with whom_____,

how many people_____,

(where_____).

(27) Did you rean any newspapers on (diary day):
No, Yes, when _____,

how long_____,

who was present_____,

how many people_____,

(where_____).

(28) Did you read anything else, such as a magazine,
book, report or pamphlet:
No; Yes, when

_____,

how long_____,

who was present_____,

how many people_____,

(where_____).

(29) I'd like also to know of any conversations or
meetings with friends, that you might have
omitted:
None; Addition, when_____,

how long_____,

with whom_____,

how many people_____,

(where_____).

(30) (same for), any time spent shopping, or having
a coffee, or other personal activities; things
that just take up time without us realising it:
No; Yes, when

_____,

how long_____,

with whom_____,

how many people_____,

where_____.

(Where is not included in (25) through (29) on
the supposition that the Diary will record some
main activity and location to which these are

adjunct. If this is not so, go back to each
question and ask "Where" as an extra enquiry, but
do so only after administering question (30).
The idea here is to go back over these questions
again as a final jog to remembering other acti-
vities which may have been omitted--the assump-
tion is that if R has failed to report an acti-
vity whose "Where" is not suggested (When he
finally reports it in (25) -- (29)) by another
activity in its time location on the diary, then
he is likely to have made other gross generalisa-
tions or omissions. Be alert to this aspect of
the interview design which can allow you to go
back and press a previous point in more detail:
Thus if, after question (30), you want to go back
to the preceeding questions because the newly
remembered activity does not fit with the one
reported as occurring at that time on the diary,
you might say--"Am I correct in assuming that the
(activity newly reported) occurred when you were
(activity reported on diary)?" (Note the "Where"
in the space provided if necessary, if there is
no note we will assume your satisfaction with the
congruency of the diary activity and the newly
reported one).

PERSONAL DATA_____

For each R

(1) Sex: Male, Female.

(2) Race: White, Negro, Other_____.

(3) Marital status: Married, Single, Divorced, Separated,
Widowed.

(4) Do you have any children 18 years or under living in
this household:
Yes; How many_____; How old_____; Do any work_____;
If so, at what (give ages, and length of work day
with each child

_____.
No.
(5) Do you, Own your home, Rent, Other_____.

(6) How long have you lived here_____.

(7) Do you have a telephone; Yes, No.

(8) Do you have a Radio; Yes, No.

(9) Do you have a T.V.; Yes, No.

(10) Do you usually wear a watch, or have one with you;
Yes, No.

(11) Do you have a clock here in the house which is
usually visible; Yes, No.

(12) Do you have a car (in working, useable condition);
Yes, No.

(13) Do you own any other kind of vehicle, bicycle, or a
motorscooter, that you use;
Yes, can you describe it_____.
No.

(14) Do you have your own books;
Yes, a few, reasonable amount, many;
No (i.e. very few).

(15) Do you ever hire any paid household help;
Yes, full time, part time, now and then when you need it.
No.

(16) Do you have a yard or other open space connected with
the house (or apartment) which you can use;
Yes, description (size, and general character)_____

_____,
No.

(17) Do you own or have special access to any open areas
(any size) near here;
Yes, No.

(18) Do you have any other home or dwelling which you
regularly visit;
Yes, how far away it is_____,

brief description_____,
No.

(19) How far is this house from the place where you work
or study

_____.

(20) How long is a normal trip from here to work_____.

(21) (If R works or studies at several places note changes in distance and time by day, week or month)

_____,

_____.

(22) How do you usually get to work (note combinations)

_____.

(23) (How does mode change as work place changes)

_____.

(24) Education, (unless obvious)_____.

(25) Are you taking any other special courses or training, or do you have any other interests that take up your time, which we have not covered;

Yes_____,

No.

(26) Were you brought up, on a farm, in a small city, or in a large city?

(27) When you left the farm/or small city, what were the main reasons for moving

_____

_____.

(28) Starting from age 20, what other places have you lived in for 6 months or over, (not counting changes of suburbs in same metropolitan area).

PLACE	STATE	LENGTH OF STAY
a)		
b)		
c)		
d)		
etc.		

VALUE (AND PREFERENCE)

for all R's

(29) Suppose that early on (DIARY DAY) you discovered that something had come up suddenly. You could tend to it any part of the day or night, but somehow you simply had to find one hour to take care of it before you went to bed again. In a day like the one you had on (DIARY DAY), what things would you have given up to make room for that hour?

Activities replaced_____ Time gained_____

_____ _____

_____ _____

(30) Suppose the thing that came up unexpectedly would take 3 hours, but not necessarily all in one piece. What other two hours would you give up to make room?

Activities replaced_____ New time _____
gained:

_____ _____

(31) Suppose that in your day you found you had an extra hour of free time, to do with whatever you wish, what kind of activities would you engage in during this time

_____

_____.

(32) If you found yourself with up to 6 hours of extra completely free time over the period of a week, what would you do with this time

_____

_____.

(33) (Reread (32) replacing '6 hours' by '12 hours').

_____

_____.

(34) If over a month you found yourself with 3 or 4 free days what would you do with this time

_____

_____.

FINAL OBSERVATIONS

(1) Type of Dwelling Unit_____.

(2) Occupancy Type and Number and Density; (i.e. Families/
Single Persons, in 14 units (apartments) of small size
in a neighborhood of similar buildings)

_____

_____

(3) General observation on the demographic characteristics
of surrounding houses (or apartments) and neighborhood

_____

_____

(4) General observations on relation of house (or apartment)
to proximate facilities such as shops, cinemas,
libraries. (See also attached map);

(5) Distance of house (or apartment) from Central City;

_____,

geographical location_____.

(6) Distance of house (or apartment) from other Regional
or Sub Regional Centers of major importance

_____

_____.

(7) Which is more used by the respondent
Central City,
(Sub) Regional Center,
Both the Same,
Neither (relies on local services).

(8) Are there any special facts about R (eg. very tired, under pressure) that should be recorded;

_____.

(supplementary information only, that would influence the way in which he responds to the diary and inter-view situation)

(9) Comments on the Interviews and Diary Record in regard to;

Ease of Interviewing R (Co-operative, etc)_____.

Interruptions to Interviewing_____.

Others present_____.

How careful was R in making Diary;
Very, Moderate, Sloppy.

How many times (a guess) did R make entries in the diary during the diary day;
Four or more, less, one.

FOOTNOTES

Introduction
1-Fraisse, The Psychology of Time, p. 5.
2-Heidegger, Being in Time, p. 43.
3-op. cit., #1, p. 5.
4-op. cit., #1, p. 9.
5-Blumenfeld, lecture.

Section I
1-Szalai, Trends in Comparative Time-Budget Research, p. 3.
2-Chapin, personal communication.
3-Sorokin, Time Budgets of Human Behavior, pp. 77-80.
4-Simon, Harvard Business Review, Quotes, Feb. 65, p. 176.
5-Robinson, Social Change as Measured by Time-Budgets, p. 2.
6-Heirich, The Use of Time in the Study of Social Change, p. 388.
7-Horton, Time and Cool People, p. 8.
8-Banfield, Notes toward a General Theory using the Concept Time Horizon, pp. 1, 2.
9-ibid., p. 2.
10-Martineau, Social Classes and Spending Behavior, p. 129.
11-ibid., p. 129.
12-op. cit., #7, p. 9.
13-op. cit., #6, pp. 388-389.
14-op. cit., #6, p. 390.

Section 2
1-op. cit., Section I, #5, p. 25.
2-Meier, A Communications Theory of Urban Growth, p. 303.
3-Warren, The Community in America, p. 90.
4-Webber, Order in Diversity, p. 36.
5-ibid., p. 30.
6-op. cit., Section 2, #4, p. 49.
7-op. cit., Section 2, #4, p. 52.
8-Blumenfeld, The Modern Metropolis, p. 293.
9-ibid., p. 297.
10-Chapin, Urban Land Use Planning, p. 221.
11-Chapin, Activity Systems as Inputs to Land Use Models, p. 1.
12-ibid., p. 2.
13-op. cit., Section I, #6, p. 387.
14-Meier, The City Must Become a Transactions Maximising System, p. 15.
15-op. cit., Section 2, #10, p. 223 (see also p. 225, p. 227).
16-op. cit., Section 1, #5, p. 5.
17-op. cit., Section 1, #5, p. 3.

18-op. cit., Section 2, #14, p. 16.
19-op. cit., Section 2, #3, pp. 90-130.

Section 3
1-Sorokin, Time Budgets of Human Behavior, pp. 89-125.
2-op. cit., Section 2, #10, pp. 250-253.
3-Kranz, Product Innovation Through Research in the Use
    of Time, p. 10.

Section 4
1-Kleemeier, Aging and Leisure, pp. 158-159.
2-ibid., p. 163.
3-op. cit., Section 4, #1, p. 176.

Appendix I
1-op. cit., Section I, #1, p. 1.
2-op. cit., Section I, #1, p. 7.
3-op. cit., Section I, #1, p. 7.
4-op. cit., Section 2, #14, p. 1.
5-op. cit., Section 2, #14, pp. 1-6.
6-Meier, Measuring Social and Cultural Change in Urban
    Regions, p. 180.
7-op. cit., Section 2, #10, p. 78.
8-op. cit., Section I, #5, p. 10.
9-Banfield, lecture.
10-Roach, The Lower Class, Status Frustration, and Social
    Disorganization, p. 503.
11-ibid., p. 504.

(no footnotes, Appendix II)

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Abbreviations:

'Amer Soc Review' -- American Sociological Review,

'Journal of Ab and Soc Psych' -- Journal of Abnormal

and Social Psychology,

'Journal of Soc Psych' -- Journal of Social Psychology,

'American Journal of Psych' -- American Journal of

Psychology,

'Journal of Exp Psych' -- Journal of Experimental

Psychology,

'Journal of Gen. Psych' -- Journal of General

Psychology,

'AIP' Journal' -- American Institute of Planners

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