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Office Evaluation and its Organisational Context:
A Facet Study

Ian John Donald
Doctor of Philosophy

The University of Aston in Birmingham

September 1987

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Abstract

A multivariate, descriptive model of office workers' evaluations and conceptualisations of their environment is proposed and empirically supported. The model is developed from, and expands upon, Canter's (1983) purposive model of place evaluation, and Donald's (1983) model of office evaluation. The research is conducted within the meta theoretical framework of facet theory. The model itself consists of four facets; Referent, Level, Focus and Organisational Unit of Evaluation.

A similar facet model of office workers' perceptions of their organisations is also developed and supported. This model consists of three facets; Organisational Unit, Mode, and Area of Organisational Life. Measures of workers' perceptions of departmental cohesion, and orientation are also developed.

Once the internal structure of the models has been established and the validity of the facets shown using Smallest Space Analysis, the elements of the office evaluation and organisational perception models are subjected to Partial Order Scalogram Analysis with Base Coordinates. The items revealed to be most important in structuring the POSAC are then analysed using Chi Squares.

The Chi Squares are performed on the environmental evaluation elements and two element profiles, in relation to the elements of the other areas. The results generally show that Joint (quantitative) POSAC scores are related to organisational perceptions, and the Lateral (qualitative) scores to worker orientation.

The results are discussed in relation to their implications for environmental psychology and evaluation, organisational psychology and office design.

Key Words: Facet Theory Office Evaluation
Organisational Perception
Environmental Psychology

Dedication

To my Parents

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CONTENTS

Title	1
Thesis Summary	2
Dedication	3
Acknowledgements	4
List of Contents	5
List of Tables	12
List of Figures	15
 CHAPTER 1. Introduction	 21
1. Introduction	21
2. The Model of Evaluations	22
3. Evaluations and External Domains	28
4. A Methodological Contribution	32
5. The Structure of the Thesis	33
6. Summary of Research Aims	35
 CHAPTER 2. Office Research	 37
1. Introduction	37
2. The Antecedents of Office Research	38
3. The Development of Research into Offices	49
4. The Lack of a Conceptual framework	52
5. The Need for a Descriptive Model	54
6. Dimensions and Underlying Factors of the Office	56
7. Summary	61
 CHAPTER 3. Place Evaluation	 62
1. Introduction	62
2. Advantages and Use of Systematic and Scientific Evaluation	62
3. The Role of Place Evaluation	63
4. The Need for a Theory of Place Evaluation	70
5. Models of Place Evaluation	76
6. Summary	95

CHAPTER 4.	Purposive Model of Place Evaluation	97
1.	Introduction	97
2.	Action Oriented Perspective of Human Functioning	97
3.	Basic form and Aim of the Model	106
4.	Facets of the Purposive Model	109
5.	The General Mapping Sentence for Place Evaluation	119
6.	Cylindrex: The Empirical Structure of Evaluation	121
7.	Published Studies Using the GMS	124
8.	Summary	131
CHAPTER 5.	Applying the Purposive Model to the Office Context	132
1.	Introduction	132
2.	The Function of the Office	132
3.	Organisational Theory and The Environment	135
4.	Facets of Office Evaluation	149
5.	A Mapping Sentence for Office Evaluation	161
6.	Summary	163
CHAPTER 6.	Pilot Study Part 1: Environmental Evaluation	164
1.	Introduction	164
2.	The Questionnaire	164
3.	Data Collection Site	165
4.	Questionnaire Distribution	166
5.	Data Analysis and Results	167
6.	Conclusions	180
7.	An Additional Facet	182
8.	Revised Mapping Sentence for Office Evaluation	194
9.	Summary	196

CHAPTER 7.	Pilot Study Part 2: External Domains	198
1.	Introduction	198
2.	Evaluations and Systems/Contingency Theory of Organisations	199
3.	Organisational Perception	204
4.	Pilot questionnaire to Measure Organisational Perception	208
5.	Results	208
6.	Further Facets of Organisational Perception	211
7.	Departmental Cohesion	215
8.	Work Orientation	222
9.	Additional Questions	230
10.	Summary	230
CHAPTER 8.	Participating Organisations and Data Collection	232
1.	Introduction	232
2.	Contacting Organisations	232
3.	Data Collection	237
4.	Sample Sizes	239
CHAPTER 9.	Results 1: Multivariate Model of Office Evaluations	240
1.	Introduction	240
2.	The Questionnaire and the Domain of Evaluation	241
3.	Full structure of Office Evaluations	245
4.	Reduced Model of Office Evaluations	256
5.	Structure of Evaluations for Individual Sites	264
6.	Summary	283

CHAPTER 10.	Results 2: Individual Evaluation Profiles	285
1.	Introduction	285
2.	Qualitative and Quantitative Differences Between Evaluations	285
3.	Partial Order Scalogram Analysis	286
4.	Composition of Facet Element Scores	288
5.	Internal Consistency of Element Scores	291
6.	POSAC of Element Scores	292
7.	POSAC of the Full Data Set	294
8.	POSAC of the Evaluations of Each Site	301
9.	Standardisation of Evaluation Scores	317
10.	POSAC of Standardised Items	319
11.	Summary	322
CHAPTER 11.	Results 3: Organisational Perception, Work Orientation, & Cohesion	323
1.	Introduction	323
2.	Organisational Perception	323
3.	Work Orientation	333
4.	Cohesion	337
5.	Summary and Conclusion	338
CHAPTER 12.	Results 4: Evaluations and Organisational Perception, Cohesion, and Work Orientation	339
1.	Introduction	339
2.	Aims of the Analysis	340
3.	Crosstabulation of Environmental Elements with External Elements	342
4.	Description of Analysis to be Performed	351
5.	Chi Square of Two Environmental Element Profiles with External Elements	355
6.	Summary	369

CHAPTER 13.	Discussion	371
1.	Introduction	371
2.	Model of Office Evaluation	371
3.	Model of Organisational Perception	400
4.	Work Orientation	411
5.	Office Evaluations and Organisational Perception, Cohesion, and Work Orientation	413
6.	POSAC and Chi Square	427
CHAPTER 14.	Conclusion	428
1.	Introduction	428
2.	Model of Office Evaluation	428
3.	Organisational Perception	436
4.	Worker Orientation	439
5.	Office Evaluations and the External Domains	440
6.	Facet Theory and Descriptive Models	441
7.	Summary: General Aims of the Thesis Revisited	443
APPENDIX 1.	Facet Theory	445
1.	Introduction	445
2.	Development and Growth of Facet Theory	446
3.	Facet Theory and Theory Construction	448
4.	Components of Domain Definition	450
4.1	Facets	450
4.2	Elements	453
4.4	Mapping Sentences	455
4.5	Structuples and Multipleclassification	458
5.	Principle of Contiguity	460
6.	Summary	461
APPENDIX 2.	Analysis Methods	463
1.	Introduction	463
2.	Smallest Space Analysis	463
3.	Partial Order Scalogram Analysis	469

APPENDIX 3.	Evaluation Mapping Sentences Using the GMS	476
1.	Mapping Sentence for Hospital Ward Evaluation	476
2.	Mapping Sentence for Housing Evaluation	477
3.	Mapping Sentence for Office Evaluation	477
APPENDIX 4.	Environmental Evaluation Pilot Questionnaire	478
APPENDIX 5.	Organisational Perception Pilot Questionnaire	479
APPENDIX 6.	Final Environmental Evaluation Questionnaire	480
APPENDIX 7.	Final Organisational Perception Questionnaire	481
APPENDIX 8.	Work Orientation Questionnaire	482
APPENDIX 9.	Complete Final Questionnaire	483
APPENDIX 10.	Sample of the Letter Sent to Organisations Inviting them to Participate in the Study	484
APPENDIX 11.	Descriptions of the Data Collection Sites	485
1.	Collection Site 1	485
2.	Collection Site 2	486
3.	Collection Site 3	487
4.	Collection Site 4	488
APPENDIX 12.	Inter-Item Correlation Matrix of the 41 Environmental Evaluation Items (Full Data Set)	489
APPENDIX 13.	Alpha Coefficients of the Environmental Evaluation Items Following the Deletion of Each Item	491

APPENDIX 14.	One-Way Analysis of Variance: Site by Environmental Evaluation	492
APPENDIX 15.	One-Way Analysis of Variance: Site by External Domains	496
REFERENCES		501

List of Tables

List of Tables	Page
3.1 Possible Mapping sentence for the Affective Assessment of Offices Developed from Russell and Pratt's Theory	94
3.2 A Second Mapping sentence for the Affective Assessment of Offices from Russell and Pratt's Theory	95
4.1 General Mapping Sentence for the Purposive Evaluation of Places	120
5.1 Mapping Sentence for Office Evaluation	162
6.1 Revised Mapping Sentence for the Evaluation of Offices	195
7.1 Mapping Sentence for Organisational Perception	214
10.1 Alpha Coefficients for Each Element Scale	291
11.1 Alpha Coefficients for Each Organisational Perception Element Scale	330
11.2 Alpha Coefficients for Each Work Orientation Element	336
12.1 Chi Squares of Environmental Element Scores and External Variables	343
12.2 Frequencies of the Organisation Element of Organisational Perception and the Organisation Element of Environmental Evaluation	344
12.3 Frequencies of Organisation the Element of Organisational Perception and the Department Element of Environmental Evaluation	345

12.4	Frequencies of Involved Work Orientation and the Organisation Element of Environmental Evaluations	346
12.5	Frequencies of Involved Work Orientation and the Department Element of Environmental Evaluation	347
12.6	Frequencies of Flexible Work Orientation and Department Element of Environmental Evaluation	348
12.7	Frequencies of Cohesion and the Self Element of Environmental Evaluation	350
12.8	Chi Squares of External Variables by Organisation/Self Environmental Evaluation Profiles	357
12.9	Frequencies of Involvement Work Orientation and the Lateral Score on the Self/Organisation Element Profile of the Environment	358
12.10	Frequencies of the Joint Score on the Organisation/Self Element Profile and the Organisational Perception Perception Element of Organisation	359
12.11	Frequencies of the Joint Score on Organisation/Self Profile and Flexible Work Orientation	360
12.12	Chi Squares of the External Variables by the Environmental Evaluation Profile of Department/Self	363
12.13	Frequencies of Involved Work Orientation and the Lateral Profile on the Department/Self Elements of the Environment	364
12.14	Frequencies of the Organisation Element of Organisational Perception and the Joint Score on the Environmental Evaluation Profile of Department/Self	365
12.15	Frequencies of the Involvement Element of Organisational Perception and the Joint Score of the Environmental Evaluation Profile of Department/Self	368
A3.1	Kenny and Canter's (1981) Mapping Sentence for Nurses' Evaluations of Wards	376

A3.2	Canter and Rees' (1982) Mapping Sentence for Housing Evaluation	477
A3.3	Donald's (1983) Mapping sentence for Office Evaluation	477
A12.1	Lower Triangular Inter-Item Matrix of Correlations Between Environmental Evaluation Items	490
A13.2	Alpha Coefficients for the Environmental Evaluation Questionnaire if Individual Items are Deleted.	491
A14.1	ANOVA of Site by Organisational Element of Evaluation	493
A14.2	ANOVA of Site by Department Element of Evaluation	493
A14.3	ANOVA of Site by Self Element of Evaluation	494
A14.4	ANOVA of Site by Building Element of Evaluation	494
A14.5	ANOVA of Site by Office Element of Evaluation	495
A14.6	ANOVA of Site by Desk Element of Evaluation	495
A15.1	ANOVA of Site by Organisational Perception Element of Organisation	497
A15.2	ANOVA of Site by Organisational Perception Element of Department	497
A15.3	ANOVA of Site by Organisational Perception Element of Involvement	498
A15.4	ANOVA of Site by Organisational Perception Element of Flexibility	498
A15.5	ANOVA of Site by Cohesion	499
A15.6	ANOVA of Site by Work Orientation Element of Involvement	499
A15.7	ANOVA of Site by Work Orientation Element of Flexibility	500

List of Figures

List of Figures	Page
3.1 Karans and Spreckelmeyer's (1982) Conceptual Model of Office Evaluation	87
4.1 Schematic Representation of the Cylindrex of Place evaluation	125
6.1a Projection of the SSA of the Environmental Pilot Questionnaire Showing Partitioning of the Space for the Level Facet	168
6.1b Projection of the SSA of the Environmental Pilot Questionnaire Showing Partitioning of the Space for the Referent Facet.	172
7.1 Projection of the SSA of the Organisational Perception Pilot Questionnaire	209
9.1a Projection of the SSA of the Full Set of Environmental Evaluation Items Showing Partitioning of the Space for the Level Facet	247
9.1b Projection of the SSA of the Full Set of Environmental Evaluation Items Showing Partitioning of the Space for the Referent Facet	249
9.2a Projection of the SSA of the Socio-Spatial Items of the Environmental Evaluation Showing Partitioning of the Space for the Level Facet	257
9.2b Projection of the SSA of the Socio-Spatial Items of the Environmental Evaluation Showing Partitioning of the Space for the Organisational Organisational Unit Facet	261
9.3a Projection of the SSA of the Socio-Spatial Items of the Environmental Evaluation Showing Partitioning of the Space for the Level Facet (Site 1)	266
9.3b Projection of the SSA of the Socio-Spatial Items of the Environmental Evaluation Showing Partitioning of the Space for the Organisational Unit Facet (Site 1)	268

9.4a	Projection of the SSA of the Socio-Spatial Items of the Environmental Evaluation Showing Partitioning of the Space for the Level Facet (Site 2)	270
9.4b	Projection of the SSA of the Socio-Spatial Items of the Environmental Evaluation Showing Partitioning of the Space for the Organisational Unit Facet (Site 2)	273
9.5a	Projection of the SSA of the Socio-Spatial Items of the Environmental Evaluation Showing Partitioning of the Space for the Level Facet (Site 3)	276
9.5b	Projection of the SSA of the Socio-Spatial Items of the Environmental Evaluation Showing Partitioning of the Space for the Organisational Unit Facet (Site 3)	278
9.6a	Projection of the SSA of the Socio-Spatial Items of the Environmental Evaluation Showing Partitioning of the Space for the Level Facet (Site 4)	280
9.6b	Projection of the SSA of the Socio-Spatial Items of the Environmental Evaluation Showing Partitioning of the Space for the Organisational Unit Facet (Site 4)	282
10.1a	POSAC Item Diagram of the Environmental Evaluation Element of Organisation (All Subjects)	295
10.1b	POSAC Item Diagram of the Environmental Evaluation Element of Department (All Subjects)	295
10.1c	POSAC Item Diagram of the Environmental Evaluation Element of Self (All Subjects)	297
10.1d	POSAC Item Diagram of the Environmental Evaluation Element of Building (All Subjects)	297
10.1e	POSAC Item Diagram of the Environmental Evaluation Element of Office (All Subjects)	298
10.1f	POSAC Item Diagram of the Environmental Evaluation Element of Workspace (All Subjects)	298

10.2	Schematic Representation of the Essential Aspects of the POSAC of the Environmental Evaluation Elements (All Subjects)	300
10.3a	POSAC Item Diagram of the Environmental Evaluation Element of Organisation (Site 1)	303
10.3b	POSAC Item Diagram of the Environmental Evaluation Element of Department (Site 1)	303
10.3c	POSAC Item Diagram of the Environmental Evaluation Element of Self (Site 1)	303
10.3d	POSAC Item Diagram of the Environmental Evaluation Element of Building (Site 1)	304
10.3e	POSAC Item Diagram of the Environmental Evaluation Element of Office (Site 1)	304
10.3f	POSAC Item Diagram of the Environmental Evaluation Element of Workspace (Site 1)	304
10.4a	POSAC Item Diagram of the Environmental Evaluation Element of Organisation (Site 2)	306
10.4b	POSAC Item Diagram of the Environmental Evaluation Element of Department (Site 2)	306
10.4c	POSAC Item Diagram of the Environmental Evaluation Element of Self (Site 2)	306
10.4d	POSAC Item Diagram of the Environmental Evaluation Element of Building (Site 2)	307
10.4e	POSAC Item Diagram of the Environmental Evaluation Element of Office (Site 2)	307
10.4f	POSAC Item Diagram of the Environmental Evaluation Element of Workspace (Site 2)	307

10.5a	POSAC Item Diagram of the Environmental Evaluation Element of Organisation (Site 3)	309
10.5b	POSAC Item Diagram of the Environmental Evaluation Element of Department (Site 3)	309
10.5c	POSAC Item Diagram of the Environmental Evaluation Element of Self (Site 3)	309
10.5d	POSAC Item Diagram of the Environmental Evaluation Element of Building (Site 3)	310
10.5e	POSAC Item Diagram of the Environmental Evaluation Element of Office (Site 3)	310
10.5f	POSAC Item Diagram of the Environmental Evaluation Element of Workspace (Site 3)	310
10.6a	POSAC Item Diagram of the Environmental Evaluation Element of Organisation (Site 4)	312
10.6b	POSAC Item Diagram of the Environmental Evaluation Element of Department (Site 4)	312
10.6c	POSAC Item Diagram of the Environmental Evaluation Element of Self (Site 4)	312
10.6d	POSAC Item Diagram of the Environmental Evaluation Element of Building (Site 4)	313
10.6e	POSAC Item Diagram of the Environmental Evaluation Element of Office (Site 4)	313
10.6f	POSAC Item Diagram of the Environmental Evaluation Element of Workspace (Site 4)	313
10.7	Schematic Representation of the Essential Features of the POSAC of the Environmental Evaluation Items for Site 1	315

10.8	Schematic Representation of the Essential Features of the POSAC of the Environmental Evaluation Items for Site 2	315
10.9	Schematic Representation of the Essential Features of the POSAC of the Environmental Evaluation Items for Site 3	316
10.10	Schematic Representation of the Essential Features of the POSAC of the Environmental Evaluation Items for Site 4	316
10.11a	Item Diagram of Environmental Evaluation Element of Organisation from the POSAC of 3 Standardised Items	321
10.11b	Item Diagram of Environmental Evaluation Element of Department from the POSAC of 3 Standardised Items	321
10.11c	Item Diagram of Environmental Evaluation Element of Self from the POSAC of 3 Standardised Items	321
10.12	Schematic Representation of the Essential Features of the POSAC of the 3 Standardised Environmental Evaluation Items	320
11.1a	Projection of the SSA of the Organisational Perception Items Showing the Organisational Unit and Mode Facets	326
11.1b	Projection of the SSA of the Organisational Perception Items Showing the Area of Organisational Life Facet	328
11.2a	Item Diagram for the Organisation Element of the POSAC of the Organisational Perception Elements	332
11.2b	Item Diagram for the Department Element of the POSAC of the Organisational Perception Elements	332
11.2c	Item Diagram for the Involvement Element of the POSAC of the Organisational Perception Elements	332
11.2d	Item Diagram for the Flexibility Element of the POSAC of the Organisational Perception Elements	332

11.3	Projection of the SSA of the Work Orientation Items Showing the Elements of the Mode Facet	335
12.1	Hasse Type Representation of Possible Evaluation Profiles	353
12.2	Hasse Type Representation of the of Values Assigned to the Joint Evaluation Scores	354
12.3	A Hasse Type Representation of Values Assigned to the Lateral Evaluation Scores	355
A2.1	Hasse Diagram of a Set of Hypothetical Profiles	471

CHAPTER 1

Introduction

1.1 Introduction.

During the 1980s there has been a growing realisation of the importance of office environments both for organisational effectiveness and the psychological well-being of office workers. The accrescence of interest is clearly demonstrated by the number of books published on the subject (eg. Becker, 1981; Craig, 1981; Makower, 1981; Sundstrom, 1986; Wineman; 1986) along with special issues of journals (eg. Wineman, 1982), and conference symposia (IAAP, 1982; 1986; IAPS, 1984) which have been devoted to the area. Further there has been a steady stream of articles and research reports concerned with offices.

An encouraging and interesting development in the field of office research has been the attempt by numerous authors (eg. Ferguson and Weisman, 1986; Marans and Spreckelmeyer, 1982; 1986) to develop models of office evaluation. This trend is evident in the present thesis which has as its primary focus the production of a descriptive multivariate model of the internal structure of office evaluations. As the model to be developed is a description of the psychological structure of evaluations, the research will not be concerned with the evaluations per se. ie. whether one environment is better than another.

Since the earliest studies of the office environment (eg. Manning 1965), it has been clear that evaluations are not directly and solely dependent upon the objective physical conditions of the setting. As a consequence, there has been a search for other aspects of the person-environment context which may be related to office evaluations. At present the principal components of the context which have been identified are the worker's tasks, status, and role in the organisation. There remain, however, many areas which require investigation. A secondary aim of the thesis, therefore, is to explore the relationships between the office evaluations and external conditions which may be associated with them.

In the remainder of this chapter each of these aims will briefly be considered along with some of their implications. The structure of the thesis will then be described.

1.2 The Model of Evaluations.

The model to be produced here is based on the "purposive model of place evaluation" developed by Canter and his colleagues following research in a number of settings including, hospital wards (Canter and Kenny, 1981; Kenny, 1983; Kenny and Canter, 1981), housing (Canter and Rees, 1982), and offices (Donald, 1983; 1985).

Drawing on the meta-theoretical approach to research of

facet theory, outlined in appendix 1, the model is specified in terms of a "General Mapping Sentence for Evaluations" (GMS). The GMS consists of three basic facets; the level, referent, and focus of evaluation or interaction with the environment. In addition to the specification of the facets, the empirical relationships between the facets and their elements are hypothesised and form an important part of the model making it predictive.

The elements of the facets are specified in rather abstract form. In order for the GMS to be applied to a particular setting the content of the facets needs to be specified in terms relevant to the environment under consideration. This particularisation of the model represents a major challenge of the research. In the next section a brief consideration of the GMS in relation to offices will be given.

1.2.1 The GMS and Office Evaluation.

The first challenge of the thesis is to specify the facets of office evaluation. A first attempt at applying the purposive model of evaluation to the office environment was made previously by Donald (1983). The results of this research showed the application of the model to be feasible in the area of office evaluations. In this study Donald contextualised and tested two of the facets of the GMS; the level and referent.

The level facet was interpreted in terms of three elements; immediate work area, the office as a whole, and the office

building. Support for a distinction between two levels was found; the immediate work area/office, and the building as a whole.

The failure of the research to find a distinction between the the immediate work area and the office raises the question as to whether this finding is universal. Here we will attempt to firstly answer this question and, if support for the distinction is found, explore and explain some of the factors which are associated with the evaluatory distinction between the two elements.

In Donald's (1983) study the elements of the referent facet were similar to those used in other studies, and consisted of the social, service, and spatial aspects of the environment. Support was found for each of these elements.

All studies using the GMS have found support for the same three referent elements which were specified above. Donald's research, however, took the theoretical understanding of this facet further by showing that, in relation to the differentiation of individuals evaluations, the social and spatial elements of the facet were most important in two out of three evaluations included in the study.

It would seem from the above that the most fruitful direction for future research in terms of this facet is in the more detailed consideration of the social spatial

aspects of the evaluations. Thus while the present study will include the three previously tested referent elements, it will focus on important socio-spatial considerations. This will allow a further test of the basic model along with the possibility for its expansion.

The elements of the focus facet was not specified in the office research by Donald (1983), and no discernible focus for the evaluations was found. The question of the focus of workers' evaluations of their offices, therefore, poses some challenging questions for the present research.

The present research aims to build upon, and significantly expand the the previous office evaluation research using the GMS by clarifying issues raised by this research and proposing additional facets and elements of office evaluation. One of the additional facets is concerned with the organisational unit of evaluation.

A basic assumption of the purposive model of place evaluation is, as its title suggests, that people are goal oriented. Further the model supposes that evaluations are based on the extent to which the environment facilitates or impedes the achievement of these goals (cf. BPRU, 1972).

Research concerned with organisational behaviour and office evaluation is concerned with individual goals. However, there is also wide recognition that workers are social beings and members of groups. One hypothesis which ensues from this is that evaluations of the office environment are

not only made in relation to the goals of the individual, but also those of the group of which he or she is a member.

In addition to this "multiple perspective" on evaluation, the individual has goals in relation to the group. Firstly they may wish to be distinct from the group. Much office research and design has been concerned with this goal, usually specified in terms of privacy. However, there is the second goal, which is co-present, of being a member of a group. Again this has been a focus of research, for example, studies of cohesion.

In the present thesis an additional facet of organisational unit will thus for the first time be added to the facets of the GMS in order to incorporate the perspectives of individual and group in evaluations. The discovery of the empirical structure of this facet will be likely to be of considerable importance for understanding the relationships between the individual and group both generally and in terms of environmental evaluations.

1.2.2 The Nature and Uses of the Model of Evaluation

The model of office evaluations will take the form of an empirically based description of the categories or facets imposed on evaluations of the office setting by its users. It will be argued that the basis of these descriptions are the participants fundamental conceptualisations of the environment. It is also, therefore, a model of office

workers conceptualisations of their workplace.

There are numerous advantages and uses for such a descriptive model. For example, it can form a foundation for the usual process-causal models of person-environment interaction. Numerous process models have been specified (eg. Marans and Spreckelmeyer, 1982), however they are intrinsically weak as they fail to establish and validate the underlying components of their models.

In clarifying the importance of basic descriptive models one can draw on personality research for an analogy. In personality research there have been two basic questions. The first question is concerned with the aetiology of personality and the consequences of a particular personality. The second issue is concerned with the basic dimensions of the personality; its internal structure (Wiggins, 1973). Once the internal structure of the domain of personality has been established, it is possible to go on to consider the effects of antecedent conditions on individuals in relation to these basic dimensions.

A descriptive model also allows a common framework within which research can be conducted. At present there are a number of models which specify the mechanics of conducting a study (eg. Keys and Wener, 1980). However, other than allowing the use of similar methods for conducting evaluations, these proposals do little to resolve the widely recognised problems of place evaluation research

being noncomparable and noncumulative (eg. Canter, 1983; Donald, 1985). If a model can be developed which specifies the psychological nature and components of office evaluation from the users perspective, these may be incorporated into other studies and provide a framework for cumulative and comparable research. Additionally, from such a framework it would be possible to develop standardised evaluation instruments which would be of considerable use in applied research, saving both time and money, as well as improving their quality.

As no model of this type exists in the field of office research, its development not only represents a challenge to the researcher, but also a potentially significant contribution to the theory and practice of office evaluation.

In addition to the model having these broad areas of application, each of the facets themselves help us to develop an understanding of the way in which people experience, conceptualise, and evaluate their offices. Thus further contributions to office research will be made by a consideration of the individual facets.

1.3 Evaluations and External Domains

A second, subsidiary aim of the present thesis is to consider the relationship between office evaluations and external domains. With the exception of job type and organisational role, few of the external domains of office

evaluations have been investigated; here two will be considered.

1.3.1 Evaluations and Organisational Perceptions

Current thinking in organisational psychology views the organisation from a systems perspective. Although organisational psychologists pay little, if any, attention to the physical environment, it is likely to be a part of the organisational system.

One area of organisational theory which has been considered by environmental researchers is organisational climate. For example, Steele and Jenks (1977) have argued that it is possible to improve organisational climate via office design, and Moos has considered climate in relation to psychiatric wards (Moos, 1974), correctional institutions (Moos, 1968), and university students residences (Gerst and Moos, 1972) in order to try and establish its relationship to the environment. None of these studies, however, have considered climate in relation to place evaluation.

Organisational climate is basically concerned with peoples' perceptions of their organisations. Drawing on the work of organisational psychologists, an attempt will be made to develop a model of organisational perception similar in nature to that developed for evaluation. To date a model of this type does not exist. The development of such a model poses numerous problems which will have to be surmounted,

but if successful will have numerous implications and uses.

Firstly it will allow the comparison of the two domains; environmental evaluation, and organisational perception. The relationship between the two areas can then be studied more thoroughly than it has previously. Marans and Spreckelmeyer (1982), for example, have attempted to consider the relationship between organisational context and office evaluations. However, the authors fail to specify the components and dimensions of the organisation component of their study adequately.

Secondly, even if the model of organisational perception reveals there to be no relationship between the two domains, a significant finding in its own right, its development will be a contribution to organisational psychology by providing a model of organisational perception which will have the advantages previously mentioned in relation to the model of office evaluation.

Finally, while many attempts have been made by environmental psychologists and architects (eg. Duffy, 1974) to integrate environmental and organisational psychology by showing the relationship between offices and organisations, few advances have been made. The present research can thus contribute significantly to the development of this integration and understanding.

It should be noted that the study of perceptions of the organisation is not strictly concerned with organisational

climate as the latter term is used by organisational psychologists to describe an aggregate of perceptions of the organisation rather than the perceptions of individuals in relation to their own context (Payne et al., 1976). Thus it would be more precise to state that organisational perception as used here is concerned with job climate. Nonetheless, as the research does have implications for organisational climate, and draws most heavily on this research, the term organisational climate will be used.

1.3.2 Evaluations and Work Orientations

In addition to organisational perceptions, the individuals orientations toward their life at work will also be considered in relation to their office evaluations.

It is assumed that people's general work orientation is a relatively enduring characteristic. As such the orientations may reflect a relevant personality characteristic. The personality approach to person-evaluation research has been taken by numerous environmental researchers (eg. Craik and McKechnie, 1978). However the theories and measures which have been developed have been severely criticised for being atheoretical and tautological (Donald, 1987).

If it can be shown that orientation is related to office design evaluation, it will point to dimensions of potential

importance to the evaluation of other settings and personality and environment research. Additionally the finding would be of pragmatic importance for discerning whether different evaluations of the same physical environment are due to role, which is independent of its occupant, or some individual characteristics. In the latter case design would require tailoring to the individual, and in the former, to the more permanent role.

1.3.3 Internal and External Relations: A Methodological Point.

External factors are to be related to office evaluations. In order to do this one may compare organisations which differ in some way, and thereby draw some conclusions. This is an approach taken by Marans and Spreckelmeyer (1982; 1986) whose research inadequately attempts to tackle these issues. An alternative is to select individuals with common characteristics regardless of the particular organisation from which they are drawn. One can then compare those individuals. The latter approach is likely to lead to a more subtle understanding of the phenomenon being studied, and have wider generalisability. As generalisable results are seen as a priority in office research (eg. Ferguson and Weisman, 1986; Wineman, 1986) the latter approach will be taken.

1.4 A Methodological Contribution

The principal contribution of the present thesis is to the

theory and application of office evaluation. However, a small methodological contribution is also to be made. In Donald's (1983) earlier study of offices, the use of Partial Order Scalogram Analysis (POSA) in evaluation research was made for the first time.

The success of this application was encouraging. As a consequence the method, described in appendix 2, will again be employed here. However, in employing POSA a first attempt will be made to combine this procedure with inferential statistics. Not only has this not been attempted in evaluation research before, but neither has it been achieved in any other area of study.

1.5 The Structure of the Thesis.

To facilitate understanding of the arguments, rationales, and developments to be made in the thesis it is helpful to outline its general structure.

In chapter 2 the general context of the research will be discussed. It will begin by considering the antecedent conditions which have given rise to the study of offices. Following this there will be a general review of the psychological study of office environments. This will outline general trends and and developments in the field. Having considered these there will be a review of research which bears a direct relevance to the major focus of the present study.

Chapter 3 will address the issue of evaluation. It will begin by considering the nature of the field and the need for a theory or model such as that presented here. This will be followed by a review of a number of evaluation models which have been proposed. Chapter 4 will outline the purposive model of evaluation and its application. This chapter will be at a general theoretical level.

Chapter 5 will go on to consider the application of the purposive model to the office context. Here particular studies in relation to the development of a model of office evaluation will be reviewed. The review will also consider the role of the environment in organisational theory. A mapping sentence for the present study will be specified and the first pilot questionnaire shown.

Following the presentation of the results of the pilot study of the office evaluations in chapter 6, the next chapter will review the relevant literature concerned with the external domains. The results of a pilot study to test the organisational perception questionnaire will be reported along with the consequent mapping sentence for organisational perception.

Data collection for the final study will be described in chapter 8, and the results of the research presented in the subsequent four chapters, each dealing with a specific part of the research; evaluations, differences in evaluations, external domains, and the relationship between 'external

domains and evaluations.. A discussion of these results and the consequent conclusions will be given in chapters 13 and 14.

1.6 Summary of Research Aims

Each facet and element of the mapping sentences represent hypotheses to be tested. Rather than stating each of these here they will be specified at the appropriate point in the thesis. However it is useful to summarise the basic aims of the research.

1. The first aim of the thesis is to develop a multivariate descriptive model of office evaluation. In doing this the general model of place evaluation, and Donald's (1983) model of office evaluation will be expanded significantly.

2. The second aim is to investigate the relationship between office evaluations and, organisational perception and work orientation.

3. In relation to the above, a third important, though almost incidental, aim is to develop a model of organisational perception.

4. A final aim is an attempt to, in a simple way, combine the scaling procedure of POSA with an inferential statistical method.

Each of these components of the thesis make numerous contributions to several areas and disciplines. These

contributions, along with their implications, will be considered in the discussion chapter toward the end of the thesis.

CHAPTER 2

Office Research

2.1 Introduction

Over the past two decades considerable attention has been paid to the psychological study of office environments. Although the studies have been many and varied, there are a number of clear themes and foci which characterise the research. In the following chapter a number of these themes will be considered. In doing this the position of the present study in relation to other work in the area will become evident.

The interest of social scientists in the office environment did not occur in a vacuum. Numerous factors precipitated the growth of research into this area. Amongst these factors are societal change, design innovation, and the emergence of new disciplines. Together these not only provide the antecedent conditions which led to an interest in the office as a subject of study, but also shaped the nature and concerns of those studies. It will be seen that research has been chiefly concerned with the search for direct causal links between the environment and the responses of the office workers. Additionally, while the focus of office research is increasingly on the environment as a whole, few studies attempt to uncover the basic underlying conceptual dimensions of the office setting. In the next section we will consider some of the major

precedent conditions which resulted in the context within which the present thesis coheres.

2.2 The Antecedents of Office Research

The involvement of psychologists in the systematic study of workplaces began during the first world war with the work of the Industrial Fatigue Research Board (Vernon, 1919) which constituted the genesis of applied psychology in the UK (Donald and Canter, 1987). The focus of concern at this time was, however, with the environment of the factory, and on the then paramount concerns of productivity and fatigue amongst munitions workers.

It was not until the early 1960s that psychologists left their own offices to study those of others. Amongst the numerous antecedent conditions which precipitated this interest in the office environment some of the most important were, the dramatic growth in the number of office located workers, a change in the tasks and socio-economic composition of the workforce, a recognition of health problems related to office work, the introduction of a radical new design concept, and a growth of interest in the physical environment in general. Each of these factors has had its own role in shaping the nature of office research.

2.2.1 Changes In The Workforce

Initially office work was the province of a relatively small number of, essentially, middle class clerks and their

employers. Following rapid economic growth, brought about by colonial expansion and increased industrial production, there was a concomitant explosion in the numbers of office workers necessary to administer the new era.

In 1850 only one per cent of the working population of the UK were employed in office work. One hundred years later this figure had reached ten per cent. In the twenty five years between 1950 and 1975 the numbers employed in offices mushroomed to forty per cent of the total workforce (Craig, 1981). These changes were paralleled in the USA. In January 1981 over half (53%) of the US workforce were in offices; it has been estimated that this figure will exceed seventy per cent by the end of the century (Kleeman, 1986).

From these figures it can be seen that an increasingly significant proportion of the workforce of the developed World spend long periods of their life in offices. It is clear, therefore, that a better understanding of the relationship between workers and their environment is of considerable importance. Of course, in order that the office environment should receive attention there must be an awareness of its potential effects on the welfare of its inhabitants.

In addition to there being a vast increase in the actual number of office workers, the nature of the work they carry out has also changed dramatically. Fox (1974) has argued that jobs, or a person's relationship to production, lie

along a continuum from prescribed to discretionary work. In essence a prescribed job is one in which the individual has little opportunity to exercise judgement and has little autonomy. Discretionary jobs are those in which the occupant of the position may exercise judgement and control over their activities and are imbued with a degree of power. Excluding the relatively few highly specialised and skilled positions which exist in organisations, the average office worker has moved from the discretionary to the prescribed pole of the work continuum.

One of the earliest studies of office workers was performed by Lockwood (1958) who argued that white collar work was becoming indistinguishable from manual labour in terms of its discretionary component. There was, and is, an increase in the specification of tasks and a radical change in the nature of clerical work (Braverman, 1974). The role of the office worker has changed from one in which the person was concerned with many aspects of the organisation, to one which is the equivalent of the factory production line in that little discretion and power are associated with the role. The 19th Century role of the clerical worker has become the role of higher management, in effect the role of the average office worker has become deskilled.

An important consequence of the change in the nature of office work has been in relation to its implication for the study of the environment. By removing the discretionary role of the office worker it has been possible to study the

person-environment relationship within the deterministic paradigm and reduce the complexity of the relationship to one of stimulus-response. In common with research concerned with the factory environment, studies of the office worker sought to uncover direct, production related, responses to environmental stimuli. This characteristic, as will be repeatedly shown, has had considerable importance in shaping office research.

2.2.2 Health and Office Workers

A second change which led to a concern with the office stems from the challenge to the myth that the office, unlike the factory, represents a 'safe' working environment. As Goodrich (1986) notes:

"The office environment, unlike the factory, has not been the focus of much psychological research. As a benign, safe and clean workplace, it was not seen as having a significant impact on users and user performance. This is no longer true...Now...the office environment is becoming more intimately linked to the psychological needs, performance, and well-being of its users." (p 109)

Recently two major books have been published outlining the very real health hazards faced by workers in offices both in the past and present. The concern with the health of office workers is widespread. For example Craig's (1981) publication in the UK, which had the support of the trade unions, has its parallel in the USA (Makower, 1981). In addition to these contributions, accounts of studies looking at health in the office may also be found (eg.

Hedge, 1984; a; 1987; Turiel et al., 1983). Additionally, private organisations also recognise the health problems associated with office work (eg. Canter and Donald, 1982), and the concept of the 'sick building syndrome' has captured the popular imagination and been reported in the press (Robertson and Burge, 1985; Wilson and Hedge, 1987).

2.2.3 A Design Innovation: Burolandschaft

Important as the above developments are, perhaps the single most important factor in the emergence of the office as an object of study by psychologists was the introduction, from Germany, of the design concept of burolandschaft (office landscaping). A burolandschaft design is, in essence, an office which is entirely open and arranged for efficient work flow and communications. Private offices and status markers are considered inefficient and excluded. The linear juxtaposition of desks, once considered the norm, is replaced by an irregular arrangement of workspaces which may be moved around the office area as required.

In the present day it is difficult to appreciate quite how radical this new design concept was. However, its radicalism is clearly shown in the writings of designers who were its witness, as Duffy (1979) reveals:

"Many architects will remember very well the shock of seeing office landscaping for the first time. In the early '60s the essence of office design was to stack homogenised net lettable area into Miesian towers. Nothing had prepared us for those curious German drawings which actually showed desks (original

emphasis), hundreds of desks, randomly arranged in great open spaces. In schools or housing everyone agonised about the brief but never in office design.....Their look burned itself into the retina, an image never to be forgotten." (p 54).

File (1976) has similar recollections;

"American designers began to see plans published in European journals in the late 1960s that first appeared so shocking as to suggest some sort of joke." (p 36-37)

The introduction of a new design concept per se. is unlikely to provide a catalyst for such an unprecedented outpouring of writing and research as that which followed the introduction of burolandschaft. This is especially likely given the diluted form in which the new offices appeared; in practice the revolution was limited. As Duffy (1979) writes:

"In Holland the best known office building of the decade, Centraal Beheer, is open plan but is nevertheless entirely heretical in terms of the rules about lighting, circulation, depth of space which once were so fundamental. In the United States there are plenty of 'open plan' offices and much discussion of office landscaping but it would take a very subtle mind to distinguish between what is part of the old American tradition of open office planning and what has been imported from Europe" (p 55).

Given that the offices produced post-burolandschaft are fundamentally the same as those prior to the design concepts introduction, reasons other than the novelty of the design need to be considered in order to explain the increase in interest. It has already been seen that a number of factors were converging to provide a context and form for office research. In relation to the new design,

its presentation, promotion and underlying rationale were as important as the actual designs themselves.

Duffy has already given clues to the uniqueness of burolandschaft, noting that previously no one had had concerns over the design brief for an office. In relation to the new designs he talks of the violation of fundamental rules. The design concept came with a set of rules and rationales as to how and why the layout should take its form and relate to the organisation. The designs also had wide ranging implications for organisational structure, democracy, and practice.

The Schnelle brothers, who led the Quickborner team that introduced the concept, were masters of marketing. To make a final reference to Duffy (1979);

"If the image was not enough to convince there was always the rationale -beautifully presented arguments which gradually unfolded into a codebook of procedures....so much had been anticipated and yet there was no limit to debate as issue after issue of Kommunikation, the Schnelle's own journal, dealt with Cybernetics, Decision Making, Information Theory, and above all the Theory of Organisation...no branch of science (was) too esoteric to be relevant to the problem of designing better offices for better organisations...when the skills of the pamphleteer and slogan writer join the vision of the designer, the combination is deadly." (pp 54-55)

For the first time there was a manifest theory and rationale for the design of offices; it had become scientific. As Pile (1976) notes;

"Their interest in the physical set up of offices was the result of an empirical discovery that the office

effects work processes." (p 36).

As a result of the empirical, and apparently scientific, basis of the designs, researchers had, for the first time, something tangible that could be tested. What is more the concept bore directly on theories about people and organisations. These theories had emerged from the work of psychologists and other social scientists; burolandschaft provided a setting in which many could be tested.

Additionally the proponents of Burolandschaft made claims that increased productivity and improved communications and work-flow would result from the adoption of the designs. The notion of an office influencing productivity had, for the first time, come clearly into the arena of psychological, architectural, and organisational discourse. Again this was a issue open to empirical test, although ultimately, the measurement of productivity has been problematic.

In addition to the design's appeal to architects, it was popular with organisations and property developers; the open designs had distinct real estate and energy cost advantages. At a time when basic capital and overhead costs were rising, and the energy crisis was taking hold, a concept that provided for greater flexibility of space use, resale potential, and reduced capital outlay was bound to be enthusiastically embraced. It has been estimated, for example, that the use of open planning could save around

twenty per cent of the cost of creating and maintaining office space (Starbuck, 1976).

The office designs subordinated the more conventional issues of, for example, privacy and status demarcation, in favour of communication flow. The occupants of the offices, however, soon began to complain of distractions, excess noise, and a lack of privacy (Hedge, 1982; 1986). While the study of productivity in the office was difficult to measure, the concept of privacy was relatively amenable to research, consequently this and related issues became, and still remain, a central focus of office research.

To summarise, the introduction of burolandschaft in the late 1950s led to manifest and testable theories and claims about the influence of office design on productivity. Problems with privacy and the measurement of productivity, along with the designs challenge to norms of office functioning, made the open plan office a fertile setting for the attention of social scientists.

2.2.4 The Growth of Environmental Psychology

At the same time as the above changes were occurring, psychologists were beginning to take an active interest in the role of the environment in peoples behaviour generally.

Although an interest in the physical environment was evident during the early part of the present century, the disappointments and confusions which ensued from the

deterministic conceptualisations of person-environment relations, typified by the Hawthorne studies, stunted the potential development of environmental psychology. However, during the 1960s a number of factors emerged to provide a context in which environmental psychology could grow. The heady ideals of many post-war public design projects were not being fulfilled in practice. The show case Pruitt Igoe (1952-1972) housing project in the USA, for example, was razed to the ground after growing problems and degradation (Yancey, 1972). Such solutions forced an admittance that there was a gap in our knowledge and understanding that needed to be filled. Langdon (1966), for example, writing in the Royal Institute of British Architects Journal pointed out that for the first time the design professionals began to recognise that they could no longer fully know and understand the future users of their buildings as they had been able to when the clients they worked closely with were also the users (Canter and Craik, 1981). If this applied to the environment in general, it especially applied to the office setting with its rapidly increasing number of occupants.

The challenge and frequent failure of post-war rebuilding was but one element in a general emerging environmental crisis. Natural resources were becoming scarce, and pollution emerged as a major problem. The urban unrest in the USA, manifest in the inner city riots of the early 1970s, had a particular physical loci. Consequently design

solutions to the problems were sought.

"owing to this heightened awareness of community-environment crises and the existence of major scientific gaps in our understanding of these problems, the multidisciplinary field of environment and behavior expanded rapidly....several coherent paradigms of environment-behavior research emerged, focusing on topics such as personal space, crowding, and territoriality; environmental attitudes and assessment...." (Stokols and Altman, 1987; p xi).

Additionally the rapid growth in new and high technology in buildings led not only to new and untried design forms, but also to new problems. The introduction of new design technologies to the office in the form of air conditioning and lighting had allowed burolandschaft to emerge. The new design presented new problems, many of which were related to similar issues, such as privacy and crowding, to those which were found in the wider environmental context. Other concerns were directly related to factors such as new lighting forms. Additionally, the western world was moving rapidly toward massive economic decline making the productivity of the office worker a major concern.

2.2.5 Consequences of The Antecedents of Office Research

As a result of the conditions which converged to give rise to the study of office environments, the research developed in a number of characteristic ways. First, the field of environmental psychology was, if anything, applied; research was problem generated. As Canter and Craik (1981) note;

"The impetus of new applied problems has often energized environmental psychologists....Both the established and emerging themes of environmental psychology,..., underscore its inherently interdisciplinary and applied nature" (p 4)

As a consequence of this characteristic of the field there is a need for theoretical contributions. Again referring to Canter and Craik who, when discussing the problems posed for, and work undertaken by environmental psychologists state that they;

"highlight the need to ensure that broad and imaginative theoretical efforts at the psychological level be pursued along side interdisciplinary and applied research" (p 4).

The applied nature of general environmental research was directly reflected in the study of offices.

Secondly, principal foci were drawn from emergent issues resulting from not only the introduction of a radical new design concept with its claims of increased productivity, but also from issues evident in the wider environmental context; privacy and crowding, for example. Finally the deterministic paradigm of environmental and organisational psychology was applied to the office setting in which an increasingly deskilled work force was housed.

2.3 The Development of Research into Offices

During the 1960s research focused on various isolated aspects of the office such as lighting (Langdon, 1966a), socio-spatial factors (Wells, 1965), and office size

(Canter, 1968). One of the most significant events of this time, however, was the formation of the Pilkington Research Unit (PRU) at the University of Liverpool. This privately sponsored research group brought together, for the first time, architects and psychologists to work on important aspects of building design and use. The research unit's office study (Manning, 1965) represented one of the most important studies and publications of the day in architectural psychology. Commenting on office design at this time, Manning argued that its basis was quite arbitrary. Later in the PRU publication it was concluded that;

"design decisions affecting the social environment of office buildings are made almost entirely on the basis of expectations or personal prejudice rather than knowledge." (Manning 1965, p 41).

In discussing the importance of the PRU study Broady (1975) has commented that;

"it was not until the publication of the Pilkington Research Unit's study of office design in 1965 that the first major breakthrough in this field occurred. It signalled what Langdon ([and Keighley] 1965) described as 'a new stage in the evolution of office design technique' (p 735)

Following a move to the University of Strathclyde, the PRU developed and evolved into the Building Performance Research Unit (BPRU). In addition to carrying out research on offices, the BPRU systematised the early PRU formulations, and thereby provided a conceptual framework for general environmental studies which has now become

common place, and is acknowledged in writings to this day (eg. Ferguson and Weisman, 1986).

Conceptually, the important aspect of the BPRU's work (BPRU, 1972) was the significance and emphasis it gave to treating the environment as a unified whole with subtle and important interrelationships between the parts of that whole. In essence the BPRU proposed a systems model of person-environment interaction. In developing such a model the unit was following systemic approaches which, as we will see later, were emerging in the study of organisations, as well as being inherent in the design concept of Burolandschaft.

As Donald (1983) notes, by today's standards the BPRU studies were not particularly sophisticated, and neither were they examples of truly multivariate research. Nonetheless the work presented ideas which were later developed and formalised in the influential theories of Ittelson (1973), and Canter (1977), and provide the foundation of the model of place evaluation to be applied and developed in the present thesis. One of the most important aspects of this model was its teleological perspective. There will be recourse to this component later.

Research into various isolated constituents of the office environment continue to be made, and contribute usefully to our knowledge of the setting. In addition to those already

cited, there have been, for example, studies of density (Szilagyi and Holland, 1980), enclosure (Canter, 1972; Justa and Golan, 1977), privacy (Sundstrom, 1986a), status (Konar and Sundstrom, 1986; Steele, 1986), windows (Finnegan and Solomon, 1981; Marcus, 1967), ambient conditions, including lighting (Ellis, 1986; Katz, 1981; Nemecek and Grandjean, 1973; Yuan and Bennett, 1980), and finally, desk positioning (Hensley, 1982; Joiner, 1971; McElroy and Morrow, 1982; Zweigenhaft, 1976).

In addition to the above studies, and many more could be mentioned, a major thrust in office research, especially during the last decade, has followed the example set by the PRU and BPRU and considered the environment as a whole (eg. BOSTI, 1980; 1981; Clearwater, 1980; Donald, 1983; Goodrich, 1982; 1986; Hedge, 1980; 1982; 1986; Jockusch, 1982; Louis Harris and Associates, 1978; 1980; Oldam and Brass, 1979; Osrin and Mauer, 1984). As one would expect, given the subject matter of these studies, they also tend to be field based. Additionally the majority of research has been conducted in the fertile ground of open plan offices.

2.4 The Lack of a Conceptual Framework

The field of office research has received much attention, however, there remains a need for an adequate conceptual framework for structuring the research. The conditions in which office research evolved, with its applied

orientation, seems to have relegated the development of a model for understanding the office setting to a secondary position. This is despite a clear awareness of Lewin's (1951) famous dictum that there is nothing as pragmatic as a good theory.

The lack of a clear theoretical framework for the structuring of research is a deficiency to be found in much of environmental psychology (Stokols and Altman, 1987a) and, as will be seen, environmental evaluation research. More recently, however, there has been increased effort directed to the development of models of office use. Wineman (1986a), for example, argues that;

"there is a need to move away from the single case study to demonstrate results across settings (across organisations, job types, and design features), thereby improving the generalisability of research results and furthering the theoretical understanding of the field." (p 294).

Making similar comments, Ferguson and Weisman (1986) contend that a better understanding of the role of the office environment;

"will require moving beyond the case studies that constitute so much of the current office research literature." (p 92)

The trend toward the development of models is also in evidence in evaluation research (Holahan, 1986), and environmental psychology (Stokols and Altman, 1987a) in general.

2.5 The Need for a Descriptive Model

One of the problems with the model building attempts in the office research field is in relation to the form the models should take (Donald, 1987b). Wineman (1986a) identifies work in this area by Marans and Spreckelmeyer (1982; 1986) and Ferguson and Weisman (1986), and to this can be added the work of Sundstrom (1986), and Goodrich (1986).

All of the proposals made by these writers have in common the type of model they expound. Each model is presented as a process of interconnecting variables, or aspects of the environment-behaviour setting, which are thought to be causally linked. This type of model will be discussed further later when considering environmental evaluation. At this stage, however, it is worth making a critical point.

While these process models make suggestions as to how the various components are linked, they tell us very little with regard to what is included in the components, and what their internal structure is. The process models are not inappropriate per se., but they do represent, however, a stage in model building which presupposes the existence of a descriptive framework; at present no such descriptive framework exists in the field of office research.

There is a recognition of the need for a systematic descriptive stage in research amongst many social scientists (eg. Argyris, 1964; Armistead, 1974; Backman, 1979; Bruner, 1976; Forgas, 1979; Gergen, 1973; Girogi,

1970; Gould, 1983; Harre and Secord, 1972; Israel and Tajfel, 1972; Kenny, 1983; Levine, 1974; McGuire, 1973; Porter, et al. 1975; Schein, 1980; Shepard, 1974). Backman (1979), for example, considers description to be an essential part of the new paradigm research in social psychology. Girogi (1970) drew a similar conclusion for the development of a phenomenologically based psychology. Forgas (1979) contends that the first step toward understanding a phenomena is the development of initial taxonomies. Shepard (1974) argues that the first important application of multidimensional scaling is:

"an analysis for the discovery of previously unknown structure, and hence the achievement of new scientific insight. I still regard (this) as of possibly the greatest potential importance." (p 374).

The importance of a descriptive stage of research will be returned to throughout the present thesis. At this time it should be noted that this essential stage in the evolution of later models has been, to all intents, ignored in the field of office research. It is toward a correction of this characteristic of the field that the present thesis is in part directed.

While little emphasis has been given to description, there are a very small number of studies which do attempt to uncover the fundamental dimensions of the office setting.

2.6 Dimensions and Underlying Factors of the Office

As we have seen, the thrust of much research into offices has been toward the "total environment". With the exception of four studies, however, no research has used multi-dimensional or even multivariate analysis in order to examine the relationships between the various environmental components as evaluated, conceptualised, or perceived, nor has there been much effort directed toward uncovering the basic and fundamental dimensions or factors of the environmental experience or evaluation of offices.

2.6.1 Four Studies of the Dimensions of Office Experience

One of the few studies which has had the aim of discovering underlying factors of office evaluation was conducted by Hedge (1982). In this research a 96 item questionnaire was administered to office workers. The derived data were subjected to factor analysis revealing eight factors. Six of the eight factors were concerned primarily with the environment; the other two factors were health and job characteristics.

The environmental factors uncovered by Hedge were termed "privacy and disturbances", "thermal conditions", "workspace", "decor", "furnishings", and finally, "routes". By far the strongest of these factors was "privacy and disturbances" which accounted for 37.6% of the common factor variance. The remaining factors accounted for 6.3%, 5.0%, 4.1%, 3.2%, 2.6% of common factor variance

respectively.

The second study to be considered was also conducted by Hedge (1986). Using a similar 52 item questionnaire and the same analysis procedures, Hedge produced very similar results. Six factors, of which four may be considered environmental, were revealed. The factors were; "disturbances and privacy", "office conditions", "workspace", and "decor". Again, by far the strongest factor uncovered was "disturbances and privacy" which accounted for 33.5% of the common variance. The factor "office conditions" included, as one might expect, items of a rather general nature such as "satisfied with office conditions", "conditions improve personal productivity at work" and "conditions help me to do a good job".

The interesting aspect of these two studies, from the perspective of the present thesis, is the identification of the underlying dimensions of the evaluations and the interrelationships between the various items. It is this interest in the structure of the domain of office evaluation which sets Hedge's and other similar studies apart from those mentioned above. However, one of the limitations of the two studies by Hedge (1982; 1986) is the use of factor analysis. Principle component analysis with a VARIMAX rotation was used by Hedge to uncover the structure of the domain. This is unfortunate in that it imposes a model on the data which is not necessarily the most appropriate one.

First, the derived factors are orthogonal. Such independent factors will hide, or at least obscure, nonorthogonal dimensions if these exist. This is particularly important as other studies have identified such dimensions in the domain of environmental evaluation (Canter and Rees, 1982; Kenny and Canter, 1981) including office evaluation (Donald, 1983; 1985). In fact an oblique rotation of Hedge's data was performed and resulted in a very similar solution. Since the oblique rotation solution produced essentially orthogonal factors, only the orthogonal solution was reported in Hedge's previously cited publications (Hedge, personal communication).

A second drawback of the studies is the lack of a clear distinction between different scales of the environment, workspace, office, and building for example. There is some indication that the distinction is evident in some of Hedge's factors. For example "routes" (Hedge, 1982) tends to be at the building level, and "privacy" at the office/workspace level. The multiple component classification of items, such as those found in studies using the facet approach to research, would have helped in this regard.

Finally, with regard to Hedge's strongest factor, "privacy and distractions", the investigation focused on a rather simple conceptualisation of the notion of privacy, considering only its negative connotations. Privacy may be

conceived of as a control of interaction (cf. Altman, 1975); it is possible to have, if you will, too much privacy - isolation -, as well as insufficient. Hedge concentrated on the latter. For the functioning of organisations and individuals both sides of the privacy coin are important. Additionally, it should be noted that the factor order is a function of the number of items and therefore this may explain why privacy and disturbances consistently emerged first.

Two other studies have been conducted which have tried to uncover important dimensions of the office environment. These will not, however, be considered at length as the degree of detail provided by the authors with regard to their execution and results was not as great as given by Hedge.

Osrin and Mauer (1984) carried out the third study to be considered. In this study a 69 item office facilities questionnaire was administered to 165 office workers. The data were subjected to a hierarchical clustering procedure. The results of the cluster analysis revealed six clusters. The first cluster consisted of 21 items dealing with "productivity and aesthetics". The second group of 14 items dealt with "worksurfaces and storage space". The third cluster of 7 items related to "temperature and lighting". The fourth cluster consisted of 6 items concerned with "seating and fatigue". The fifth and sixth clusters

included items referring to "technological systems" (9 items) and "privacy and distraction" (12 items) respectively.

Finally, Brookes and Kaplan (1972) made a comparative study between workers present, ideal, and later occupied offices using semantic scales. The data from 100 individuals were subjected to factor analysis (VARIMAX). The authors give very little detail with regard to their findings, and those details which are given are a little confusing, however they do report what seem to be five factors; "function", "privacy", "sociability", "aesthetics", and "geometrics".

The interpretation of these factors is a little difficult due to the abstract nature of the "items" used. Nonetheless the five factors above do allow comparison with the studies of Hedge (1982; 1986), and Osrin and Mauer (1984)

From these four studies of the underlying factors or dimensions of office evaluation some consistencies are evident. The most consistent factors are "privacy" and "workspace". Additionally the engineering or service conditions of temperature and lighting are strongly in evidence. While the studies do allow us to gain some insight into the nature of office evaluations, they are conceptually weak and methodologically constrained.

The conceptual strength of the research could have been improved if a multiple classification scheme had been used. This would have allowed, for example, the differentiation

of 'outcomes' such as privacy or disturbances, from the conditions of the environment to which they relate.

2.7 Summary

In the preceding chapter it has been seen that numerous conditions converged to create the context in which office research developed. As a consequence of these antecedents, the field has been largely concerned with the solution of applied problems. The applied nature of the research has led to a neglect of important theoretical and model building stages. In recent years there has been a move toward the development of models of person-office interaction. Unfortunately, these models have been process oriented, and have presupposed the existence of a descriptive knowledge of the domain. Few attempts have been made to uncover the fundamental dimensions of the office context, and those which do exist suffer from conceptual and theoretical weaknesses, although they have shown some important consistencies. One of the aims of the present thesis is to uncover the structure of office evaluations and thereby provide a much needed descriptive model of person-office interaction.

CHAPTER 3

Place Evaluation

3.1 Introduction

The central focus of the present thesis is the development and provision of a descriptive structural model of office evaluation. It has already been observed that there is a need for such a model in the field of office research. In the following chapter this issue in relation to place evaluation in general is returned to. Before considering the recognition of the need for an evaluation model and a number of the models which have been proposed, the advantages and uses of evaluation research will be discussed as these provide some of the criteria against which an evaluation model may be judged.

3.2 Advantages and Use of Systematic and Scientific Evaluation

Throughout the life cycle of a building, from design brief to post-occupancy, many important and complex decisions are made regarding its form and use. Without a systematic and scientifically based understanding of the building vis-a-vis those who occupy it and the actions they perform, decisions will be based on personal bias, folk myth, limited personal experience, and professional fashions and stereotypes. No matter how experienced any one individual is, he or she cannot bring to the problem solving situation the breadth of knowledge and variety of perspective which is available from the large number of

individuals who can be included in a scientific investigation. As was seen in the previous chapter, a recognition of this was one impetus behind the growth of environmental psychology during the 1960s, and unscientific decision making in office design was typical prior to the research by the PRU.

A systematic study can provide an objective, comprehensive, and structured account of the plethora of factors involved in the interaction between the building and its users. The actual uses to which information gathered during an evaluation can be put are many and varied. In the following section some of the principal areas of utilisation will be considered.

3.3 The Role of Place Evaluation

Asimov (1962) introduced the notion of evaluation into the morphology of design. Three years later the Royal Institute of British Architects (RIBA) included evaluation in its design management handbook (RIBA, 1965). Four years after the RIBA publication, Marcus (1969), an influential architect, noted the importance of evaluation for feeding forward information into future designs in order to, hopefully, improve them.

Out of these early considerations came not only evidence of the growing recognition of the importance of evaluation for design, but also a good deal of confusion as to its

purposes and application. The Royal Institute of British Architects, for example, proposed that information derived from building evaluation could be fed back into the design of future buildings. It was also argued by RIBA that evaluation should be considered an integral part of the ongoing process of a particular design. Marcus argued that feeding back into an existing building would be prohibitively costly, and that information should be fed forward. Thus while there is some agreement as to the use of evaluation research in design, albeit slightly limited agreement, there is confusion in the use of terms, with feedforward and feedback both being used to mean the same and different processes.

While the need for evaluation provided an opportunity for social scientists to have an input into the design and use of buildings, they became concerned with the apparent neglect of their work by designers (Canter and Donald, 1987) who were seemingly repeating the same mistakes in later projects. This criticism was countered by designers who claimed, often justifiably, that the information supplied by social scientists was inappropriate.

In an attempt to overcome some of the confusion in the terminology used to describe the function of evaluation, and to clarify the areas of research application, Donald (1987) proposed three broad functional categories of evaluation uses; feedforward, feedback, and feedin. Each of these will be considered below.

3.3.1 Feedback

The argument that information from evaluations can not be fed back into an existing building due to the high cost of making major structural changes neglects the more minor changes which may be made, for example to spatial layout, which can have a dramatic impact on the use and functional appropriateness of a building.

Evaluation research conducted in order to change the internal relationships of the 'dynamic' components of an existing building usually take the form of 'diagnosis'. Problems which have arisen from an incongruence between the use and form of the building, be they due to an inappropriate initial design or changes in the use of the building, may lead to the involvement of a social scientist in the diagnosis (evaluation) of the buildings failings, and recommendations for an appropriate course of action; treatment.

Although the results of a diagnostic evaluation may be fed back into the building, it is also possible that the research will provide insights into person-environment transactions which may have utility for future designs. While the information fed back into an existing design may be rather particular in nature, in the same way as a medical examination of a person has particular relevance for the individual, there will also, in a good evaluation

study, be knowledge of a general nature which can be used in later designs. Continuing the medical analogy, the examination of an individual may also contribute to an understanding of general physiology.

3.3.2 Feedforward

Evaluation research for the purpose of feeding forward into future designs has proved to be problematic. Architects have been accused of ignoring the knowledge available to them, and social scientists have been criticised for providing inappropriate information. The basic problem would seem to be one of a supply and demand mismatch, or as it is often termed, an applicability gap. In order to understand how the mismatch may be resolved it is necessary to examine the way in which buildings are designed, and the types of information which would be appropriate for feeding forward.

Over the last two decades studies have led to the conclusion that information provided for architects should be clear, accurate, and in the language of architects (Burnette, 1979; Goodey and Matthew, 1971). The information which is most likely to fulfil these requirements would be ergonomic in nature, for example, appropriate levels of lighting, temperature, and so forth. Such guidelines as these could be derived from evaluation studies which measured satisfaction with the particular aspect of the environment against the actual objective

conditions of that setting.

Such information is only one aspect of the potential use of evaluation research for feeding forward, and addresses only one problematic issue in research for design utilisation. Numerous authors have argued that the nature of the presentation of information is not the central issue (eg. Asprino, et al., 1981; Lera, et al., 1984).

Studies of the design process actually followed by architects have shown that a design begins with an initial concept or general plan (Mackinder and Marvin, 1982) which, Cooper and Crisp (1983) argue, crystallises around primitive value judgments. These primitive judgments are likely to be based on personal experience and, just as likely, professional fashion; inadequate and subjective sources.

Following the initial idea the design is refined and, if necessary, modified by a consideration of the available literature. Despite these modifications, however, the initial concept forms the basis of the final design, and only limited changes are made. Additionally, there has been found to be a good deal of reluctance on the part of architects to consult the available information (Lera, 1982).

It seems clear from the research into the design process that different types of information should be supplied at different stages in the design (Donald, 1987; Lera, 1981).



For making minor modifications to a design, the ergonomic details, available from evaluation, would seem appropriate. However, in order to have a significant impact on a design, information should be aimed at influencing the designers initial concept formation. The question which arises from this is whether evaluation research can have an influence at this stage.

The primitive value judgments, which Lera et al. (1984) contend are grounded in predispositions and deeply held, taken for granted, sets of attitudes and beliefs, should be the target for change based on scientific research (Donald, 1987). To be effective this information should take the form of general ideas, concepts, and approaches. Donald and Hedge (1984) have argued, for example, that the deterministic paradigm held by designers in order to frame their understanding of person-environment transactions should be challenged. Sime (1985) has called for the creation of places rather than spaces, similarly Donald (1987) speaks of the creation of places for action, rather than environments for behaviour, and finally, Sime (1985a) has talked of designing for people not ballbearings. Broady (1975) has suggested that evaluations have a similar role in which the purpose of research is to;

"indicate areas and ideas of which the designer needs to be aware. Research...helps sensitise the designer rather than to prescribe a design" (p 738)

The knowledge which may come from evaluation research, and

which is aimed at changing initial concepts, should be in the form of general ideas, or even slogans, and in the form of clear generalisable models of the way in which people evaluate, experience, and conceptualise places. Unless evaluations produce this type of information, it is unlikely that they will have more than a negligible impact on design. The research presented here should have this potential, and its worth be judged, at least in part, in relation to it.

3.3.3 Feedin

The final way in which evaluations can be utilised is when they are conducted during the course of a design and are specifically for that design. There are numerous examples of such research (eg. Ellis and Duffy, 1982; Grainger, 1980; Peled, 1974; 1976). Evaluations for this purpose can, for instance, act as a measure of the degree to which the architects ideas and concepts are matching those of the client and potential user.

Again, this type of evaluation research could be facilitated by the development of a framework within which both design and evaluation could be structured. This would be especially useful if the framework had an influence on the initial concept formation of the designer. At the very least the framework could provide a heuristic for the conduct of evaluation research, facilitating more rapid evaluation studies, and provide points of reference between

architect and user.

It can be seen that evaluation research has many potential areas of application and purposes. All of these applications would benefit from the identification of relevant aspects of the physical environment in terms of peoples experience, conceptualisations, and evaluations of them. The model developed during the present research will, in the final discussion of the thesis, be assessed in relation to its implications for these uses and purposes.

3.4 The Need for a Theory of Place Evaluation

The quality and execution of evaluation studies has been criticised by a number of writers. Marans and Spreckelmeier (1982), for example, have stated that "many are inherently weak in both execution and theoretical foundation" (p 334-335). Zimring and Reizenstein (1980) have noted that the field is "beset by considerable methodological confusion" (p 439), and argue that the methodology needs to be improved. Bechtel and Srivastava (1978) have questioned the relevance of evaluation studies, and Zimring and Wener (1985) raised the question; "How much of the flood of POE is good research?" (p 98). As a consequence of these criticisms numerous authors have proposed conceptual schemes for categorising and evaluating the quality of evaluation studies (eg. Zimring and Reizenstein, 1980; Zimring and Wener, 1985).

While the criticisms made by these and other authors are valid, and the conceptual schemes they provide helpful, they neglect and divert attention from the more fundamental criticism that the field is lacking both a conceptual and theoretical framework (eg. Canter, 1983; Canter and Donald, 1987; Donald, 1985; 1987; Donald and Hedge, 1984; Kenny, 1983; Kenny and Canter, 1981; Friedman et al., 1978; Marans and Spreckelmeyer, 1982; Peterson, 1976; Wener, 1982; Wohlwill, 1976; Zimring and Reizenstein, 1980; Zimring and Wener, 1985).

Within the general context of environmental psychology no single area of the discipline has come under such heavy criticism on the grounds of being atheoretical as environmental evaluation research (Donald, 1985). In Stokols (1978) annual review of environmental psychology, evaluation research was identified as the principal area of the discipline which is deficient in theory. In a similar review four years later, Russell and Ward (1982) reiterated the criticism showing the emphasis of the field to be on the technology of evaluation (ie. simulations) rather than on theory. The most recent of these reviews of environmental psychology (Holahan, 1986) indicates some progress in theory development, however, as will be seen, the models which have been proposed are often rather inadequate.

3.4.1 Consequences of Atheoretical Evaluation

The lack of a substantive theory in evaluation research is not simply problematic from a purely academic standpoint. Two principal and important consequences which accrue from atheoretical research have been identified in relation to place evaluation (Donald, 1983; 1985; Kenny, 1983); atheoretical research tends to be noncumulative and noncomparable. It has been argued by Wener (1982), for instance, that the use of situation specific research instruments:

"has resulted in data...in a dizzy variety of formats, scales and questions...(resultantly)...we are not easily able to compare results of one study with those of others - or to combine the data from several studies to create a larger data base. The diversity of research styles that characterizes the field is such that there is little similarity among the data, even when identical types of buildings are evaluated" (p 78).

Canter (1983) has contended that:

"Across a decade of major publications in environmental evaluations.....there have been little cumulative findings, each study has emerged almost as if no others had ever been conducted" (p 660).

Donald (1985) noted that:

"Although certain consistencies have been found (for example, problems of privacy in open-plan offices) these tend to be trivial and extremely limited. Moreover direct comparisons tend to be misleading" (p 175).

Research which is devoid of theory, and thereby lacking in comparability, and consequently is noncumulative, has questionable pragmatic utility as well as having little

scientific status. In his writings on the philosophy of science Kuhn (1970) contends that cumulative research is a defining aspect of scientific enterprise. Additionally Shye, in his exposition of facet theory, argues that cumulative research is necessary for the development of scientific laws. Here he includes both the evolution of laws in the natural sciences as well as the social sciences (Shye, 1978a).

Throughout the discussion of environmental, office, and evaluation research, the applied nature of the fields has been identified as a major contributory factor to their atheoretical development. However, the applied character of the areas also dictates that a theory has to have applied advantages to be worthwhile. A number of applied advantages have been identified. Two of the major advantages and consequences of a model of evaluation are savings in time and resources, and the ability to predict.

Suchman (1969) has noted that evaluation researchers usually have to meet a deadline. The time constraints implied by the presence of a deadline are also compounded by the limited financial resources available for conducting research. The issue of limited resources can be found to varying degrees of explicitness in the work of many evaluation commentators. Keys and Wener (1980), for instance, write that:

"it may be useful to educate the client about the resources and time necessary to conduct a study and to

help the client set realistic research goals" (p 537).

In considering the future directions for evaluation research, Friedman et al. (1978) present five themes. The second of the important issues to which they point is the "need to be financially feasible". They argue:

"Often even highly successful firms do not have the time or money to complete evaluations. In publicly funded construction there needs to be contractual provisions similar to program evaluation components of federal social programs. For example, after a design contract is let it may be increased by 5% for evaluation" (p 194).

And finally Donald (1987):

"In conducting a study, the investigator may wish to develop appropriate tests or information gathering instruments. However, those commissioning the research do not want to expend time and money so that the researcher can develop and test them" (in press).

A number of consequences can ensue from the lack of sufficient financial and temporal resources. Evaluations may be incomplete and limited, they may also be poorly conducted, and inappropriate methods, developed in other contexts and lacking validity within the setting being evaluated, may be employed.

With regard to this latter point Kenny (1983) draws attention to the work of Trites et al. (1970) as an example of the application of inappropriate measures. In their evaluation of hospital wards Trites and his colleagues used measures of tension, anxiety, psychosomatic disorder, and fatigue for environmental assessment.

Consequently, as Kenny (1983) notes:

"as would be expected, when the results of this survey were analysed the findings were completely inconclusive; no clear pattern could be found" (p 32-33).

The second pragmatic issue which it is necessary to consider is prediction. The need to be able to predict the consequences of particular designs is widely recognised by environmental evaluators and is even enshrined in legislation. In the USA, for example, the National Environmental Policy Act (1969) requires from evaluators the ability to predict the consequences of proposed developments. The American Society of Landscape Architects (ASLA, 1974) have asked for a greater emphasis to be placed on cumulative research which could assist in their decision making. For prediction to be a viable proposition there are a number of requirements of evaluation research.

Friedman et al. (1978) argue that prediction presumes;

"the existence of some substantive empirical and/or theoretical base, and yet no such base exists" (p 5).

A substantive empirical base requires research to be cumulative and comparable. Such research, we have noted, is facilitated by a theoretical foundation. Thus a model of evaluation which allows the composition of large data bases will in turn aid prediction.

In order to overcome the criticisms outlined above, a model would need to be of sufficient generality as to allow its

application to numerous and quite divergent settings. However, simultaneously the model would need to be sufficiently specific as to allow its speedy application to particular settings. Below we will assess a number of models of evaluation in relation to these and other requirements.

3.5 Models of Place Evaluation

There is a clearly recognised need for a model of evaluation. The model is necessary to allow cumulative and comparable research which would reduce the pressure on the resources available to the researcher and aid prediction. In this section a number of models of environmental evaluation which have been proposed will be considered.

3.5.1 Some Distinctions Between Models

At this point it is worth making some distinctions between the different types of model which exist. When the field of office research was addressed in chapter 2, it was noted that there have been a number of process models proposed for the area. It was also argued that these relied upon the existence of descriptive models in order for them to be useful. In this context process models were considered to be models of a hypothetical causal process.

In the field of evaluation, the terms process and descriptive have been used to describe models in a rather different way. In the evaluation context, the term process

model applies to those which provide descriptions of the process of evaluation research and the design of research projects (eg. Keys and Wener, 1980; Shibley, 1985). The term descriptive models has been used for those models which are descriptive of evaluation as a psychological phenomena:

"They describe the categories and cognitive structure which individuals who are evaluating their environment impose upon that setting." (Donald, 1987, in press).

The distinction between these type of evaluation model has also been made by Kenny (1983). Basically she argues that process models provide a rationale for the approach taken when investigating a particular setting, and descriptive models are concerned with what evaluation, from the users perspective, is.

Simplifying the distinction, Donald (1987) describes process models as being models of "something the researcher is doing" and descriptive models as models of "something which goes on in the head of the person using the environment"; descriptions of a cognitive structure.

As at least one model considered in the following pages is a model of a hypothetical set of causal relationships, but is not a specification of the steps to follow in conducting research, the types of model will be distinguished by different terms in order to avoid confusion. For the present work the terms "researcher oriented models" (those models which are concerned with the act of evaluation

research) and "user oriented models" (those concerned with evaluation as a psychological phenomenon) will be used.

At a later stage the importance of the different models for the progress of psychological research will be considered. For the remainder of this part of the thesis we will consider some of the existing proposals.

3.5.2 Researcher Oriented Models of Evaluation

3.5.2.1 Keys and Wener's (1980) Four Phase Approach to Post-Occupancy Evaluation

Keys and Wener begin their article on evaluation by stating that:

"Post occupancy evaluations may be viewed as a data-based method of environmental intervention, characterized by a deliberate effort by a change agent to use data as a means of initiating change in an organisation" (p 533)

This definition, or perhaps more accurately, description, throws into sharp relief the focus of the researcher oriented approach to evaluation which is clearly the research act itself, and the broad aim of the particular study.

Keys and Wener go on to identify four crucial phases in an evaluation: entry into the system, needs assessment and research planning, data collection and analysis, and data feedback. Each of these phases are considered in relation to the problems which may be encountered by the researcher,

and suggestions are made as to how they may be overcome.

The first phase, entry into the social system, includes a consideration of the need for consultation with, and support from, individuals at all levels of the organisational hierarchy. It is also suggested that there is a need to understand what experience the organisation has previously had of evaluations.

The second phase proposed by Keys and Wener is "needs assessment and research planning". Their outline of this phase again shows clearly the difference in emphasis between researcher and user oriented models of evaluation. In considering this phase the authors state;

"Once key members of the client system are committed to the general concept of POE, an assessment of the organisations specific evaluation needs can proceed...(and) researchers can formulate testable hypotheses, select and develop measures, and plan data collection procedures" (p 536).

From this statement it is clear that "needs" are seen as the needs of the organisation and not the individuals who are making the evaluation; the users. Also, no mention is made in this phase as to how measures are developed or selected, and no consideration is given to how one may build upon previous research.

The third phase of the model addresses the logistics of data collection and the problem of the absence of the researcher from the organisation for long periods of time during data analysis. While again the writers provide

useful warnings, for example the need to ensure that all individuals in the organisation are informed of the study, they do not address the inadequacies of the field.

The final phase proposed by the authors is concerned with the use of the results and findings of the research. The emphasis is clearly placed on the use of the findings within the specific context of the particular evaluation. No consideration is given to how the results may contribute to future studies, this is despite the researchers seeing the evaluation being conducted from an academic base.

In their conclusion Keys and Wener express the hope that:

"by attending to intervention issues, researchers can improve the quality and impact of their post occupancy evaluations" (p 539).

There is little doubt that consideration of the issues raised by Keys and Wener (1980) would be likely to lead to improved research. However, the proposals made do little to resolve the problems of making research results comparable or cumulative. Indeed, as each evaluation is developed independently and exclusively for each organisation, the approach is likely to aggravate these problems.

In considering the work of Keys and Wener, it is not the intention to criticise their paper per se., the authors at no point claim to answer the inadequacies of present evaluation research, however the proposals they make represent a typical example of this approach to evaluation

models and theories.

In contrast to Keys and Wener, Friedman et al. (1978) set out to propose a model intended to resolve the problems which have been identified in the field. It is a consideration of their model to which we now turn.

3.5.2.2 Friedman et al.'s (1978) Structure-Process Model of Evaluation

The model proposed by Friedman et al. consists of two principal parts; structure and process.

Structure

The structure part of Friedman et al.'s model consists of a five part conceptual scheme for the organisation of the researcher's "knowledge of the situation and establishing models for focussing conclusions". The constituents of this part of the model include, the users, the setting, the "proximate environmental context", the historical context, and finally the design activity.

A closer consideration of some of these components helps reveal the inadequacies of the structure-process model. The "setting" for example, includes such features as, organisational goals and functioning, the materials used, structural elements, spaces and design solutions, "important" ambient qualities, and elements of symbolic value.

No attempt is made by the authors to relate each of these

components to one another within some overall framework. Additionally they do not propose what, if any, the interrelationships between these various elements are. Without such frameworks and propositions there is little rationale for their inclusion under one heading and consequently they represent no more than a check list of elements to include in the evaluation. Such a check list has its value, but is nonetheless atheoretical and does little to progress the field of evaluation in general, which is one of the stated aims of the authors.

The same criticisms may be made of other components of the structure part of Friedman et al.'s model. The "proximate environmental context", for example, includes the immediate physical and social context within which the setting exists. The context includes further elements such as local climate and communications links. One is left to wonder what relationships there are between the elements of this component, and between this component and others.

The final component of the structure part of the Model to be considered here is "the user". This component consists a list of possible user groups and their relationship to the study; the actual research endeavour. No indication, however, is given by the authors as to how one would delineate or identify the various groups. Additionally, even if one expects differences in the actual evaluations made by the groups, it is not specified what the basis of

the differences is likely to be. One is also not told how the other various components of the model relate to the different users. Thus the importance of defining the user is recognised but is neglected with regard to any further clarification and rationalisation.

Process

The process part of Friedman et al.'s model refers to the process of conducting an evaluation study; the steps to be taken by the researcher. There are two sections to the process part of the model; who is to be included in the evaluation along with what is to be evaluated, and the evaluation process itself. This latter section includes the identification of the focal position of the researcher and the analysis methods to be used.

The process part of the model may provide some useful guidelines for the researcher, however it by no means represents a theory of evaluation. The model prescribes how to do it rather than specifying what it is. The model is a model of administration and is not a psychological model.

Friedman et al.'s proposal is presented in a publication which also includes a number of actual evaluation studies. The studies themselves, however, constitute good examples of the atheoretical and idiosyncratic research which is criticised by the authors. Friedman et al. state that the studies which they present fit within their model. If this

is the case, as indeed it is, one must conclude that their model is of little use in redressing the criticisms they themselves make of the evaluation field. The studies fit because of the nature of their administration, and because what Friedman and his associates present is in fact a model of that administration.

In the next section we will consider the second category of model; user oriented models. In looking at these models the differences between the two types of model suggested above will become more apparent.

3.5.3 User Oriented Models of Evaluation

3.5.3.1 Marans and Spreckelmeyer's Conceptual Model for Evaluating Work Environments

Marans and Spreckelmeyer (1982; 1986) have concurred with numerous criticisms which have made of the evaluation field. They state, for example, that many:

"attributes that are to be measured in the work place, both objectively and subjectively, have been either poorly or incorrectly specified and measured." (1986, p 68)

Unfortunately, as will be seen, this is one of the principal criticisms which can be made of the model which Marans and Spreckelmeyer propose. However, the authors argue that their conceptual model;

"provides the reader with a map showing how different sets of variables covering workers and their actions, feelings, and environmental settings might be

related....(and serves) as an organizational framework for guiding the collection and analysis of data as part of the evaluation." (1986, p 69)

The model itself, shown in figure 3.1, specifies numerous sets of variables which may be thought of as "objective context", "perceptions", and "outcomes". Although these components are specified, Marans and Spreckelmeyer only empirically test the environmental component. It is thus the environmental component of the model upon which the discussion will focus for the moment.

The model presented by Marans and Spreckelmeyer was initially developed in the field of housing evaluation (Marans and Rodgers, 1975), however, the authors consider it to be of some generality:

"place evaluations conducted from the perspective of users can operate from a common analytical framework irrespective of the type of physical environment being evaluated" (Marans and Spreckelmeyer, 1986, p 70).

They go on to argue that a;

"particular place is made up of component parts or environmental attributes" (p 70).

Marans and Spreckelmeyer's argument basically contends that places have a number of components which are common across all settings irrespective of their particular physical properties. A model which identifies these general characteristics fulfils one of the requirements specified in the previous section. However, Marans and Spreckelmeyer stop at this point in their argument and do not provide the

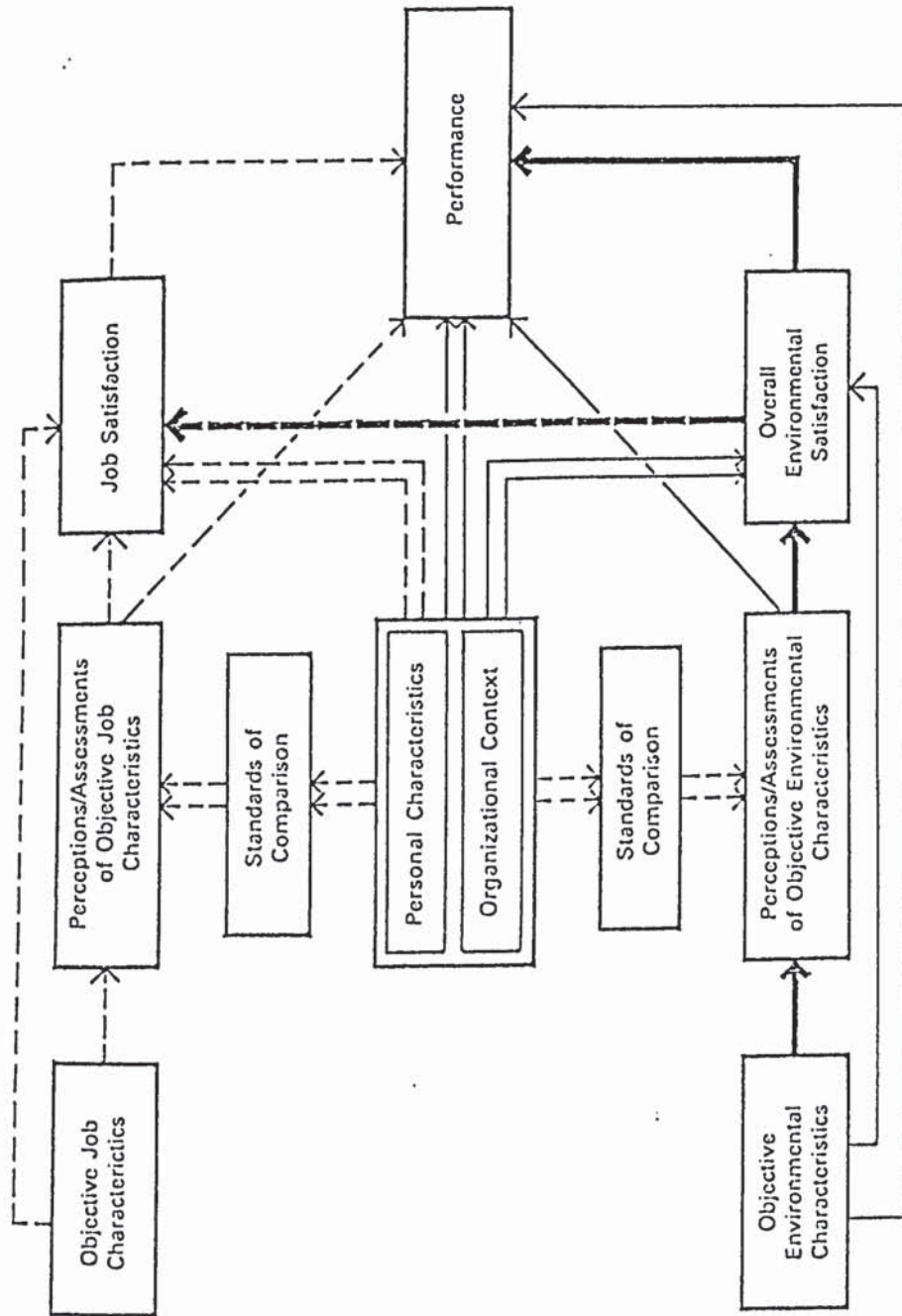
reader with any indication of what these universal properties are, or, in any general way, how these properties are related consistently across settings. Although the authors argue that there would be similarities between housing environments, hospital wards, and offices, the similarities are not revealed.

As a result of Marans and Spreckelmeyer's failure to specify the generalities, it seems unlikely that they have advanced the field of environmental evaluation in any fundamental way, or overcome the criticisms of the field which they and others have made, and which their model is designed to answer. All we are told is that we need to consider the various attributes of the environment as it is and as it is perceived.

It was mentioned earlier that Marans and Spreckelmeyer present what they consider to be the outcomes of the interaction between the user and the environment. The outcomes, they argue, correctly, are a consequence of not only the environment, but the purposes the users have within the setting. The writers then go on to specify the outcomes and purposes of the environmental interactions. However, there seems to be some conceptual confusion in their argument at this point.

As outcomes Marans and Spreckelmeyer include "overall environmental satisfaction", which leads to job

Figure 3.1
Marans and Spreckelmeyer's Conceptual Model of
Office Evaluation



satisfaction and thus to performance. Performance is considered a consequence of job satisfaction and the environment as it is perceived and assessed. There are three evaluation criteria: assessment of the environment in terms of overall satisfaction, job satisfaction, and performance. These criteria are obviously different, and their use requires different sets of questions.

Marans and Spreckelmeyer do not seem to fully appreciate the nature of either the causal relationships they propose or of purposive evaluation. Taking the first point, there has consistently been shown to be, at most, only a weak association between satisfaction and performance. Porter and Lawler (1968), for example, have argued that satisfaction is likely to be a consequence of performance rather than the converse. This argument was more recently reiterated in relation to the environment by Wineman (1986). Secondly, an assessment in relation to peoples purposes requires that they assess the environment in terms of those purposes; productivity may not be a purpose.

The next part of the model that requires consideration is the characteristics of the individual and the work they perform. Whilst Marans and Spreckelmeyer correctly recognise that different people will perceive and evaluate the environment differently, they give no theoretical rationale to explain why, or how, these differences will be evident. As with environmental attributes, a general

theoretical model which can be applied across settings is required. Again such a theoretical formulation is not forthcoming.

The next aspect of the model to be considered here is what Marans and Spreckelmeyer term "organisational context". Here again the model is inadequate:

"overall environmental satisfaction is dependent upon the organizational context in which employees operate. This context encompasses, but is not limited to, the morale of the organisation and the general nature of employee/employer relations" (1986, p 72)

This is not, by any means, an adequate exposition of organisational context. There is no specification as to how the limited organisational aspects relate to one another, to the individual, or the environmental evaluations; little conceptual thought appears to have been given to the organisational component of the model. Additionally, as will be shown later, the methods used by these researchers to identify the relationships are also inadequate.

Each aspect of the model proposed by Marans and Spreckelmeyer requires a far greater exposition and specification; the "boxes", or what the authors term "sets of variables", of their model need to be empirically tested and completed. There are numerous models within the principal model which is proposed by the authors. How these all relate is unclear and, unfortunately, the criticisms made by Marans and Spreckelmeyer of other evaluations apply to their own.

Before going on, a final point needs to be made about the above model. The work of Marans and Spreckelmeyer has been included in the "user oriented models" section as it is potentially such a model. However, until they actually provide user based descriptions of the components of their model it will lie between the two classifications used, being neither a useful guide for the carrying out of evaluations, nor a description; it is a hypothesis of causal relationships between ill-defined components of the environment-organisation context. A secondary aim of the present thesis is to develop descriptive models of the domains of study and to relate them to one another. This will help to demonstrate the utility of descriptive models, and highlight the weaknesses of such models as that proposed by Marans and Spreckelmeyer.

3.5.3.2 Russell and Pratt's Model of Affective Assessment

In a 1986 review of environmental psychology Holahan identified Russell and Pratt's (1980) model as one of the theoretically oriented contributions which have recently been made to the field of environmental assessment. While Holahan (1986) differentiated the model proposed by Russell and Pratt (1980) from the purposive model discussed in the next chapter, claiming that the former emphasised psychophysical dimensions, and the purposive model cognitive dimensions, of the proposals discussed thus far, the model by Russell and Pratt is conceptually the most

similar to that used in the present thesis.

Basically, ' Russell and his colleagues proposed that places may be classified according to the affective qualities attributed to them. These attributions took the form of affective assessments. They argued that the affective attributes could be fully classified or described in relation to two bi-polar dimensions; arousing-sleepy, and pleasant-unpleasant, which are consistent across settings

Clearly following the work of Wiggins (1973) on personality, Russell and Pratt argue that if attributes could be classified in relation to the two bi-polar dimensions, they would form a circumplex when plotted in two dimensional space. A circumplex being a circular ordering of points or items. In order to test this structural hypothesis Russell and Pratt constructed eight affective scales from a large pool of attributes. The scales were then plotted using a principal component analysis. The results of this analysis supported their hypothesis.

Russell and Pratt were primarily interested in the internal structure of the affective attributes; the authors were not concerned with the relationships of these attributes to external variables, such as the actual physical components of the environment or personalities of the assessors. Once the internal structure of the attributes was established, the writers argued, it would be possible to relate them to

'outside' considerations. This was indeed achieved in later work (eg. Russell and Lanius, 1984; Russell and Snodgrass, 1987).

In common with the model of office evaluations to be developed here, the above work was an attempt to define a generalisable domain, rather than to look for causal relationships with external factors. The authors recognised the importance of the definitional or descriptive stage of model building and research which should precede other more causally oriented investigations. Their model is also psychological in that it uncovers the structure of people's affective assessments, rather than providing instructions as to how one should elicit such assessments.

The contribution of Russell and Pratt's model is important. However, as Canter and Craik (1981) point out, the affective domain is "well mapped out" (p 6). In relation to personality this can clearly be seen from the work of Wiggins (1973; 1979). Russell and Pratt recognise that the cognitive domain is an area of importance which requires investigation, and Canter and Craik (1981) argue that cognitive categories are less well understood than the affective domain and require systematic taxonomic analysis. The present research is directed at the less well understood cognitive domain.

Although the work of Russell and Pratt is commended, there are several criticisms which can be made. These criticisms

are, however, addressed at the limitations of the model as developed to date, rather than criticisms of the authors approach to the subject matter.

The first limitation of the model is theoretical. From the writing of Russell and Pratt it is difficult to discern the role of the affective attributes of environmental assessment. It is possible that they are categories or facets of the domain, alternatively, they could be criteria against which a particular place is to be judged. It is important that this distinction be clarified.

If the attributes are simply descriptions, then the model is little more than a two dimensional semantic differential. If the attributes are criteria, then the components of the place need to be specified. It could be argued that Russell and Pratt's concern was with the internal structure of affective assessment. This however is only partly a justification of the limited nature of the study. What they are concerned with is the internal structure of a domain. By not including other place dimensions, or facets, and addressing them as 'external', they are, in effect, arguing that the constituents of the place are part of a different domain. In this case, they have a two dimensional semantic differential.

If the affective assessments are criteria, the work is limited, but contributes to our theoretical understanding to a greater extent. Preempting the discussion in the

following chapter, the work of Russell and Pratt could be combined with that presented here such that the following mapping sentence (table 3.1) for the assessment of offices could be developed.

Table 3.1

Possible Mapping Sentence for the Affective Assessment of
Offices Developed from Russell and Pratt's theory

The extent to which person (x) considers the			
(Social)	aspects of the	(Building)	to be
(Service)		(Office)	
(Spatial)		(Work Space)	
(Pleasantly)	(Active)	----->	Very Much
(Unpleasantly)	(Sleepy)		to
			Not at all

The above mapping sentence helps to reveal a second theoretical issue in relation to the affective model. If the dimensions or components of affective assessment are criteria, then it can be seen that one of the dimensions or facets is in fact a common range. The mapping sentence shown in table 3.2 helps to reveal this more clearly:

Table 3.2

A Second Mapping Sentence for the Affective Assessment
of Office Evaluations form Russell and Pratt's Theory

The extent to which person (x) considers the

(Social)	aspects of the	(Building)	to be
(Service)		(Office)	
(Spatial)		(Work Space)	

Pleasantly	(Active)	is ----->	Very Pleasant
	(Sleepy)		to
			Very Unpleasant

It can be seen from the above discussion that there are some theoretical problems with regard to the question of what in fact Russell and Pratt are concerned with, and the role of the affective dimensions in assessment. Thus while the model is generally useful it is rather limited and in need of expansion. The development of the model could, as has been seen, be readily undertaken.

3.6 Summary

In the preceding chapter, evaluation research has been identified as an applied area of research which has been recognised as important since the early 1960s. In common with office research, the field of environmental evaluation has been seen to lack a framework or model which could unify the field and allow the numerous studies to be comparable and cumulative. It has been contended that research which has these characteristics would allow research to be conducted efficiently within the financial and time constraints imposed on applied research, and to

form data bases necessary for the prediction of consequences of design decisions. It has also been argued that models of evaluation would need to be both general and setting specific in nature.

Two sets of models have been presented which can be judged in terms of their likely contribution to solving the problems which exist in the field of environmental evaluation. The first set of models are seen as useful in guiding the actual research enterprise, but are inadequate in that they fail to specify what it is that is actually being evaluated. The second set of models are psychological in that they are concerned with the actual cognitive structure of the components of the domain to be evaluated. The first of these latter models has been shown to be inadequate. The second model is limited but conceptually more appropriate.

CHAPTER 4

Purposive Model of Place Evaluation

4.1 Introduction

The model of office evaluation which will be developed and presented in the next chapter is based on Canter's (1983) purposive model of place evaluation. In the present chapter the purposive model will be outlined and discussed along with three applications of it. In order to fully comprehend the model and definition of place evaluation, it is necessary that an explicit exposition of the particular model or paradigm of human behaviour which underlies the present work be provided. In the first sections of this chapter, consideration will be given of some basic assumptions about human functioning.

4.2 Action Oriented Perspective on Human Functioning

As the title of the model of place evaluation suggests, the basic perspective taken is that people are goal oriented and purposeful beings. The concept of an individual as goal oriented, with intentions and purposes, has been strongly present in psychology since the early part of the present century; its history in philosophy dates back considerably further, and the objectivist versus subjectivist debate has been central to much work in sociology and history (Giddens, 1987), and is the essence of hermeneutics (Bauman, 1978). More recently in psychology there has been a renewed interest in goal oriented models of human

activity with the accretion of action theory and "new paradigm" research.

In describing the action orientation Giddens (1987) has stated that;

"One of the distinctive things about human beings....is that normally we know what we are doing in our activities, and why. That is to say, human beings are concept bearing agents....In addition, human actors have reasons for their actions, reasons that consistently inform the flow of day-to-day activities." (p 2-3)

and Kenny (1983) writes;

"Such an approach assumes that the individual initiates and directs actions towards ends that will eventually be satisfying to the individual. These fundamental organising principles are referred to as 'purposes'." (p 41).

There are a number of features of the action oriented approaches which have importance for the present work. We will consider each of these below.

The most clear corollary of a purposive perspective is that individuals are not passive beings, and their behaviour is not determined by external forces, including the environment. Huber, et al. (1984), for example, state that

"...goal-directed human activity...is differentiated from behaviour which emphasises the observable part of activities and has the connotation of the human as a passive being." (p 4)

Gould (1983) argues that there are three types of causal explanation. The first two of these types, which may be

described as strongly deterministic, need not concern us here. The third type of explanation is of more importance. In this category Gould includes theories which consider social structure, norms and roles as determinants of social action.

At a superficial and naive level such theories in social psychology as those proposed by Harre (1979), Argyle (1980), and in the field of environmental psychology, Canter's (1986) application of the approach, could be included in this category. Each of these writers argue that individuals act in accord with roles and rules which are evident in a particular situation or context. These rule following approaches, as Huber et al. (1984) note, "assume at least some kind of contingency in human activity" (p 4).

While some theories which stress the importance of social structure, norms, and roles in human behaviour, for example Levi-Strauss, Parsons, and especially Althusser, are deterministic in that they view action as caused by these external factors, the theories mentioned in the preceding paragraph do not fall into this category. The distinction can be found in the second important aspect of the purposive approach; choice.

While the individual may be guided by rules and roles, and by adherence to them may find goal attainment to be facilitated; the norms, roles, and rules do not cause the purposes and goals, and nor does the individual have to

adhere to them.

In introducing the importance of choice, reference can be made to aspects of the context within which the action takes place. Giddens (1987), for example, notes that;

"However oppressively the burden of particular circumstances may weigh upon us, we feel ourselves free in the sense that we decide upon our actions in the light of what we know of ourselves, the context of our activities (emphasis added), and their likely outcomes."
(p 3)

The role of these external aspects of context within a non-deterministic action model have also been outlined by Gould (1983):

"...those conditions which may be necessary for a given action, or which constitute the means for its fulfillment may make a certain course of action impossible, at least until these conditions are provided, or an alternative to them is found. However the absence of those conditions does not itself determine or cause a given course of action. Under these circumstances, an agent may choose to modify or abandon an envisioned (emphasis added) course of action" (p 60)

These quotations bring us to a further important aspect of the action perspective. The notion of an 'envisioned' cause of action implies a number of important characteristics, the most important of which is that the individual is aware of their present and possible future state. The decision to abandon the envisioned course also indicates an awareness of the possibilities of attaining the particular goal under the existing circumstances, and of those circumstances which would be necessary for their attainment. Expression of this awareness is a statement, explicit or implicit, of

evaluation; "a re-evaluation of the situation". The process of arriving at that decision is part of the process of evaluation.

There is some dispute amongst action theorists as to whether an individual is actually aware of his/her goal-directedness and the conditions within which he/she operates. Giddens (1987), however, contends that;

"neither reasons nor act-identifications need be expressed discursively for them to govern the content of behaviour. Yet in general I think it valid to hold that agents virtually all of the time know what their actions are.." (p 3).

Although people may not always be reflecting upon purposes and conditions, it seems that these purposes are, nonetheless, open to reflection. It would also seem probable that reflection upon the purposes and conditions is likely when; there is a consistent failure to achieve the purposes; when constraints are extreme; or when an individual is asked to reflect upon them.

Before moving on to consider the action perspective in relation to the environment, one further important point needs to be made. So far action theory has been considered in relation to the individual's goals. However, Gould argues that goals or purposes may refer to those of the individual or, equally, a collective such as a group, society, or organisation. She writes, for example;

"when I use the term agent, it should be taken to connote either a single individual or a group of

individuals acting together" (p 59)

This aspect of the approach is of importance, and more consideration will be given to it when the relationship between the individual and the organisation is addressed.

At this stage it is helpful to summarise the preceding perspective on human activity.

i) People are purposeful, goal-directed and intentional agents,

ii) The achievement of goals and purposes may be constrained by the contexts in which the action takes place. One component of the context may be the physical environment,

iii) People are aware of their goals, what their present position is with regard to these, and how far the present position is from the desired state; they are capable of making evaluations

iv) Purposes may be those of an individual or a collective.

In the next section we will consider the application of this approach in the context of environment-behaviour, or more appropriately, action-place, research.

4.2.1 Purposive Action and Environmental Evaluation

Environmental research began with rather deterministic aims and orientations. The aim of architectural psychology

research was the provision of scientifically based, and simple to follow, "laws of person environment relations". Canter (1970), for example, suggested that architecture could become "a science with firm roots in psychology", and Lee (1970) argued that there were "emergent laws of environmental psychology" and that from these "sets of formulae" could be derived and used to guide architects. The assumption of this view is that people will respond to an environment in a predictable, or potentially predictable, way. That people do not react to the environment in this simplistic way has been a cause of surprise and concern. For example, the PRU publication (Manning, 1965) reveals that "attitudes and prejudices rather than a genuine subjective response to the environment" (p 59) are reflected in peoples evaluations. Additionally, in relation to the use of research findings, Wells (1965) reassures the reader that "the exact results of particular arrangements (of space) cannot yet be predicted". Fortunately, as more recent publications have shown (eg. Canter, 1985a), this approach to person-environment relations has changed.

The purposive quality of human action in relation to the environment is increasingly being recognised in environmental psychology. A conference held by the International Association for the study of people and their Physical Settings (IAPS) in Berlin during July 1984 was, for example, entitled Umwelt und Handlung (Environment and

Human Action). Additionally, a recent volume edited by Canter et al. (1987) was given the title' Ethnoscapes: Transcultural Studies in Action and Place.

The action perspective is increasing internationally. Kruse and Graumann (1987), in relation to the development of person-environment studies in Germany, for instance, note that;

"a lot of theorizing and modeling (sic) in ecological psychology is very closely related to the gradual and still ongoing transition from theories of behaviour to theories of action...It (action) is, in principle the more appropriate concept for the complexities of every day activities in natural settings, whereas behavior appears to be the adequate term for highly restricted activities of organisms in settings" (p 1208).

A similar trend can also be found in the Soviet Union where dialectical materialism has dominated much scientific thinking. Nitt et al. (1987), for example, write that;

"physical objects do not appear in these processes as independent units but are included in the general process of social development, being, as a rule, means of action for social subjects." (p 1312).

While it is clear that the purposive perspective is becoming more popular amongst environmental psychologists, it is not universal. In the field of environmental and place evaluation, however, there is, according to Kenny (1983), almost complete acceptance of the action perspective in one form or another. While it could be suggested that in fact a weaker determinism can be implied from many of the statements made by writers in the area,

there is at least a recognition of the appropriateness of the approach, if not of its full implications.

Sanui and Inui (1984) carrying out housing evaluation research in Japan, for example, state that;

"Housing evaluation can be taken as the degree to which housing is seen as helping people to achieve their goals." (p 531).

Marans and Spreckelmeyer (1986), in their office evaluation research, argue that;

"an underlying purpose of any environmental evaluation should be to develop a better understanding of how a place contributes to or impedes the goals or purposes of individuals or groups of individuals operating within that place." (p 68-69).

Kaplan (1983), in discussing person-environment compatibility states that;

"It might be reasonable to attempt to discover if there are aspects of the environment that facilitate (or, for that matter, hinder) the carrying-out of plans in general." (p 312).

and Kenny (1983) has defined evaluation as;

"a subjective assessment of the goodness of an object based upon the individual's perception of the degree to which it facilitates the purposes the individual associates with that object." (p 43).

The most clear statement on evaluation which takes into account the basics of the purposive perspective was made by the BPRU (1972);

"It is central to our goal oriented model of people that

if they had no concept of their state when their goals were achieved then there would be little direct impetus towards achieving them. It must also therefore be possible for people to estimate at what position they are in relation to their goals. Statement of this position is a statement of satisfaction." (p 68).

The statement by the BPRU corresponds closely to that made by Gould (1983) cited above in which awareness of ones present state in relation to an envisioned future state is seen as fundamental to human action.

It is clear from the above writings that an evaluation is an expression of the extent to which a person considers that a place facilitates the achievement of his or her goals, and/or the goals of some collective. This is the definition of place evaluation taken here.

It should be noted that as evaluations are made as a result of peoples ongoing, purposive interaction with the environment, they need to be made from the perspective of those who use the environment. Evaluations are also, therefore, emergent (Kenny, 1983; Ittelson et al, 1974); they emerge from the process of purposive interaction with the environment.

4.3 Basic Form and Aim of the Model

In previous chapters it has been shown that there are a number of types of model. The basic distinction which has been made is between descriptive and process models. It was also noted that there has been a wide recognition of the need for descriptive stages in research.

The purposive model is a descriptive model of people's environmental evaluations. The model of office evaluation is, of course, also to be descriptive. The actual descriptions are of the components or categories of environmental evaluations. The extent to which these categories are valid is a function of the degree to which they match people's conceptualisations of the environment.

It is widely accepted that in order to function in the world individuals need to impose a structure on that world. This notion is evident in, for example, gestalt psychology and personal construct theory (eg. Kelly, 1955), as well as in environmental psychology and environmental cognition research (eg. Rapoport, 1977). It should be noted that thus, while the model is a model of evaluation, due to its cognitively based descriptions, it is also a model of people's environmental conceptualisations; of the categories imposed upon the environment by those evaluating it. As Kenny, (1983) notes;

"the literature on environmental evaluations has failed to utilise the individual's conceptualisations of the direct experience in order to provide a description of environmental evaluation." (p 44)

A final assumption of the model is that people's conceptualisations of the environment have a common structure across settings. It was noted earlier that there is a need for a model of evaluations which would allow research to be comparable and thereby cumulative. As the

descriptive model is based on people's conceptualisations it is likely that it is applicable to most, if not all, places as the conceptualisations would need to be consistent in order to allow people to understand and structure their environmental interactions. If the conceptualisations are not general, it would be necessary for each environment to be reconceptualised as it is encountered.

The belief that people's conceptualisations of the environment are consistent in structure across setting is accepted in research on environmental cognition (eg. Ittelson, 1983), and environmental evaluation (eg. Canter, 1983; Donald, 1987; Marans and Rodgers, 1975; Marans and Spreckelmeyer, 1982; 1986). It is argued that the purposive model is a model of these fundamental conceptualisations (Canter, 1983). In order for this contention to be supported there must be empirical evidence in its favour. To date there have been three published studies which have supported the model (Canter and Kenny, 1981; Canter and Rees, 1982; Donald, 1985). The evidence from these three studies has led Donald (1985) to suggest that the purposive model is indeed generalisable.

The model, which will be described in the following sections, is specified in the form of a number of general facets. In order for these to be applied to a setting, the elements of the facets need to be contextualised;

interpreted in relation to the particular characteristics of the place being evaluated. The research presented in the thesis reported here contributes to evaluation at a fundamental level in at least two ways. First it provides a further test of the purposive model, and second, it contributes to the understanding of the particular setting of the office; providing a contextualised model of that place.

4.4 Facets of The Purposive Model

The model of place evaluation is presented in the form of a set of facets which describe the domain. In the following subsections each facet of the model will be described along with the literature from which they are derived.

4.4.1 Referent of Interaction

A person's transactions with a place may be subdivided into smaller, more discrete components. Despite this ability to subdivide place experience and transaction, the individual's experience of place is unitary (Canter, 1977; 1983). In order for a evaluation to be comprehensive it is essential for the research and information gathering instruments to include all place constituents.

At a relatively macro level the obvious subdivision of place experience is between the physical and social objects of the place transaction. This, seemingly obvious, constituent differentiation highlights a fundamental aspect

of human existence; individuals operate within a social and physical universe, that is, there are animate and inanimate components of place. People's goals and objectives within a place relate to these two basic components of the setting.

The social/physical differentiation, although apparently trivial, has important implications for experience and research when seen as part of a single domain rather than as orthogonal and independent domains. Canter (1983) has discussed a number of consequences which accrue from this conceptualisation of the environment.

A principal sequel to this conceptualisation can be found in its implications for the stimulus-response paradigm of person-environment relations. Despite a movement toward an action perspective, traditionally the conventional wisdom in environmental research, especially in the USA (Canter and Donald, 1987), has held the physical environment to be the stimulus, with the social or behavioural side of the S-R equation constituting the response. By rejecting this rather simplistic conceptualisation it is possible to overcome some of the problems which arise from its application. For example, if one conceptualises the individual as being goal oriented, one can consider objectives, goals, or purposes in relation to the physical and social environment.

Although there is a distinction between the physical and social, the components are not viewed as distinct

orthogonal dimensions. As a consequence of this particular feature of place experience, factor analytic and certain principle component procedures, which assume linear dimensions, are unlikely to reveal the essentially qualitative nature of these two elements of experience. It is for this reason, as Canter and Rees (1982) argue, that no systematic exploration of this facet can be identified in the evaluation literature.

In Canter's (1983) exposition of the purposive model, attention is drawn to the extensive writings on evaluation which have found fruit in making a distinction between the social and physical components of place experience and related objectives. Levy-Leboyer (1978), in discussing the 'needs' of young males, for example, made the distinction between "social life" and "environmental comfort". Additionally Rapoport (1977) classified elements of evaluation into the categories of "physical" and "social".

In addition to the environmental literature, evaluations of other aspects of an individual's life experience also find use in a social/nonsocial (ie. inanimate) classification. Levy (1986), for example, made an extensive survey of general well-being amongst the peoples of Israel. In her study she includes a facet amongst the elements of which can be found distinct social elements, such as "family" and "society", as well as elements which refer to the inanimate components which contribute to well-being; "work" and "economics". There are two asides derived from Levy's study

which are worthy of mention here.

Firstly, in relation to the non-orthogonality of these elements, Levy found that the distinction between these two components of well-being were essentially qualitative and not orthogonal dimensions. Empirically, this finding is similar to that found in environmental studies. The second aside, which is of slightly more oblique relevance here, is Levy's use of facet theory. In using facet theory to specify her research domain, and its empirical correspondence, Levy allows and facilitates more ready comparisons, both theoretically and empirically, with the present study to be made.

The distinction between the social and physical can also be found in Lee's concept of socio-spatial schemata (Lee, 1954; 1968). In this concept the environment is seen to have both social and spatial aspects or referents which are both part of a single domain. It is worth adding to our consideration of Lee's work that implicit in his concept is the view of people as purposive. Although Lee, a committed architectural determinist (eg. Lee, 1976), does not seem to recognise the fact, the existence of differing socio-spatial schemata relates directly to the objectives of his participants.

Taking the exposition of the objects of evaluation further, an additional distinction can be made within the realm of the physical environment. This third important

differentiation is between the spatial and service aspects of the physical environment. Again the environmental literature is replete with examples of a differentiation between these two constituents of place experience.

To refer again to Levy-Leboyer's (1978) study, in addition to a division between social and physical components of the environment, she makes a further distinction between "environmental comfort" (services) and "secure personal space" (spatial). Canter and Stringer's (1975) introductory text, Environmental Interaction, includes a chapter devoted to the spatial environment and three concerned with service aspects; the thermal, acoustic, and luminous environment. Altman's widely read and influential Environment and Social Behavior (Altman, 1975) focuses on socio-spatial issues, whereas numerous publications are devoted to such considerations as lighting (eg. Boyce, 1981) and other environmental services.

Of course, many other examples exist, however the examples cited above should be sufficient to make the point that the differentiation of the physical environment into service and spatial components is both important and valid. Later we will consider empirical evidence for the tripartite division of social, spatial and services when we look at studies which have used the General Mapping Sentence for Place Evaluation (GMS) explicitly, and the literature relevant to the office environment.

4.4.2 Focus of Interaction

During person-place transactions the centrality of the various objects or referents of the transaction, and the activities associated with them, will vary in relation to the goals of the individual. The extent to which a place referent contributes to, or is important for, the achievement of the individual's objectives for being in a place may be regarded as the degree of focus; how central or peripheral the referent is to the person's experience of, and transaction with, the place. The precise form which the central/peripheral variation will take is a function of the nature of the place being evaluated and is also contingent on the purposes for which the place exists (Canter, 1983).

An initial attempt at the classification of place foci has been made by Canter (1983) and expanded and explored further by Donald (1985). This classification will be considered in more detail later when we look at the specific applications of the GMS. For now it suffices to note that the basic argument is that formal, highly serviced settings, such as a hospital, are likely to have a focus which relates to the ancillary/principal purposes of the user. When the setting is more informal the focus is likely to refer to the general or specific aspects of the place.

There is evidence for the existence of foci in the

environmental literature. Canter (1983), for example, points to Stokols and Shumaker's (1981) consideration of "specific" and "non-specific" association of a person with a place, as well as to Craik and Appleyard's (1981) banner carrying for Brunswik's (1956) lens model of assessment.

Kimura (1986) has revealed a focus in the use of Japanese and British living-rooms. Kimura's study not only supports the notion of focus, but also demonstrates that it is likely to be a cross culturally valid construct.

In a study which involved the classification of buildings according to their appearance Young (1978) not only empirically revealed a classification according to the buildings function, but also a focus.

Finally, an unpublished report (Canter and Donald, 1983) on the classification of university campus buildings showed a focus according to the nature of the activities to be found in each of the buildings. Buildings with a general purpose were found to be central in focus, and more specific buildings to be peripheral. This classification followed that used by Canter and Rees (1982) in their study of housing evaluation.

One important feature of the research by Young (1978) and Canter and Donald (1983) is the methodology employed. It could be thought that the specification of items of a questionnaire according to a particular set of facets ipso

facto produces empirical support for the elements; the results are an artifact of the data gathering instrument rather than a revelation of people's conceptualisations. Both of these studies employed the multiple sorting procedure (Canter et al. 1985) to obtain data. The participants were asked to sort the buildings into categories of their own choosing. Such freedom would allow very different structures to those hypothesised to emerge. In fact the sortings provided clear support for the proposed facet.

As a result of these and other studies, Donald and Canter (1986) have argued that the purposive model of place evaluation may not only be a model of evaluation, but also part of a superordinate model of place experience. Such a model could find application in many other areas of applied environmental research. This being so, the application of the model to the present context has wider implications than those related specifically to the evaluation of office settings.

From what has been proposed, it should be clear that the specification of the elements of the focus facet is more problematic, as well as perhaps more important in terms of furthering our knowledge of the environment, than the elements of the referent. The elements of the referent are universal and, in general, less place dependent. The converse of this is true for the focus. A more thorough understanding of the setting under study is, therefore,

required before the focus facet can be proposed.

4.4.3 Level of Interaction

The final facet of the GMS is the level of interaction. The notion of a level of interaction with a place builds upon the important concept of hierarchy. In what may be termed 'place psychology' (Donald, 1987) the hierarchical relationship between places may be found, explicitly or implicitly, in the writings of numerous contributors to the discipline. The concept of hierarchy can, as Stokols and Shumaker (1981) point out, be found in the work of Barker (1963). It is similarly present in the writings of Wicker (1979), and the concept is also given special mention by Russell and Ward (1982) in their review of environmental psychology.

While the idea that a place can only be clearly defined in relation to other places of which it is composed, and those of which it is a part, has been recognised by a number of contributors to environmental studies. However, with the notable exceptions of Rapoport (1977) and Canter (1977), writers have, in the main, not fully considered the theoretical and implications of the hierarchy.

Rapoport and Canter present rather different theories as to the hierarchical nature of place. Rapoport's (1977) model is the more simple conceptualisation of the two concepts of place hierarchy. Basically Rapoport contends that the

levels of place are nested one within another. A direct implication of this conceptualisation is that each level is mediated by one's experience of other levels; each is an outgrowth of the experientially prior level.

The view propounded by Canter (1977) is different to Rapoport's both in terms of its conceptual complexity and empirical and experiential implications. Although in Canter's formulation levels may be specified in terms of some direct architectural loci, and thereby shares a similarity with Rapoport's model, it also includes what may be thought of as closeness of interaction. Canter's conceptualisation is most clear in the hospital ward evaluations using the GMS (Kenny, 1983; Kenny and Canter, 1981).

In a later expansion of Canter's model Donald (1985) proposed that two types of level may exist. The first level corresponds to a geographical or architectural entity, and the second to the closeness of interaction. To avoid confusion Donald (1985) termed the former type of level "scale". The difference between these two types of level, and the rationale for them, will be considered and clarified when we go on to look at actual studies using the GMS.

In addition to the theoretical proposition that the hierarchy of place experience is a more complex and broad concept than simple geographical scale, there is a

difference in the positions taken on the nature of the relationships between each of the levels of the hierarchy. As was noted previously, Rapoport argues that places are nested one within the other, and that the experience at one level is mediated by, and contingent upon, experience at other levels. In contrast to Rapoport, Canter's notion of place hierarchy is one in which each level is independent. While interaction at one level may be similar to that at another, each is quite distinct with no one level being central. Additionally each level of interaction has its own focus (shown by the focus of interaction facet).

4.5 The General Mapping Sentence for Place Evaluation

The constituents of the model of place evaluation are expressed in the form of a general mapping sentence for place evaluation. The mapping sentence is general in that it states the conceptually distinct components of evaluation, thereby providing a point of reference for comparative research, but leaves the actual specific content or elements of the facets open to interpretation in relation to the particular setting being studied.

The general mapping sentence for place evaluation, shown in table 4.1, provides a definitional system. As is noted in the discussion of facet theory in appendix 1, the definitional system is but one aspect in the specification of a theory. We now turn to the other constituents; the hypothesised empirical structure of the domain.

Table 4.1
General Mapping Sentence for the Purposive
Evaluation of Places

Person (X) evaluates the extent to which being in place (p) facilitates			
FOCUS = F	REFERENT = R	LEVEL = L	
(1 the overall essence) (2 the general qualities) (3 specific aspects)	(1 social) (2 spatial) (3 service)	objectives at the	(1 local) (2 intermediate) (3 greater) levels of interaction
by stating that it	(greatly facilitates) (to) (interferes with)	his/her objectives where (p) is a place of which person (X) has	
direct experience			

4.6 Cylindrex: The Empirical Structure of Evaluation

Each of the substantive aspects of the mapping sentence has empirical implications for the relationships between the facets and the elements of those facets. In this section we will consider the empirical implications of each of the facets. In doing this, the various relationships will be discussed in relation to their structure when portrayed using the multidimensional scaling procedure of SSA.

4.6.1 Referent of Interaction

The three referent elements are considered to be qualitatively distinct aspects of place experience. As such it is not possible to arrange the elements along a linear continuum or dimension. Analysis of the data collected in accord with such a facet should reflect the qualitative distinction. The structure most likely to reflect the qualitative property of the facet is one in which there is no high or low point; a circle, or more technically, a circumplex. It will be remembered that a circumplex is the structure obtained by Russell and Pratt (1980). The circumplex has also been identified as an important structure in the realm of personality theory (eg. Wiggins, 1973; 1979).

4.6.2 Focus of Interaction

The focus facet plays a modular role in relation to the referent. The referent items can be classified in terms of

their focus. The elements of the focus may be considered to be ordered from central to peripheral in relation to people's transactions with, and conceptualisations of, a place. The contention that the focus modifies the referent has two empirical implications. First, one would expect regions for each facet to be found on the same plane of multidimensional space. Secondly, combining the facets has the effect on the the unordered, structurally circular facet (referent), of pulling some items from each referent closer to the origin, and pushing others further away to the edge of the structure depending upon their focus. The items of the facets thus produce wedge like regions. Taken together the polar and modular facets form a radex structure.

4.6.3 Level of Interaction

Earlier two competing models of place hierarchy were presented. The two formulations have different empirical implications.

The nature of hierarchy proposed by Rapoport (1977) is one of nested levels with each level being dependent upon and in turn influencing higher and lower levels. Such a hypothesis would predict that items which address the lowest or most central level would, on average, be more highly correlated with all the other items than would items which measured the experience of other levels. The least central, or largest scale, level would have the lowest

average correlation with all other items. In terms of an MDS representation of the associations between the items, one would predict from Rapoport's concept that the smallest scale items would be located in the centre of the space, and those concerned with larger scales to be located around them, toward the periphery of the space.

Canter (1977) argues that each level is independent and has its own distinct focus. In this formulation no one level is considered to be central to the others, or to the experience of place in general.

Empirically Canter's hypothesis suggests that the items of each level will be more highly correlated overall with items within one level, than with items of other levels. Further, the items of a particular level will generally be more highly correlated with items that measure satisfaction with, or experience of, levels directly above and below that particular level, than with levels higher or lower than those. None of the levels are however central.

This model predicts groupings of correlations at each level. The groupings are further arranged along some axis; thus being considered to play an axial role in the structure. As the level facet does not interact with any other facet, one would expect the regions of the space to be found on a different plane of space to the other facets and to form parallel partitions.

4.6.4 The Cylindrex

Taking the three facets and their hypothesised structures and relationships one would expect them to be empirically portrayed by a three dimensional structure; a cylindrex. The cylindrex structure and its components is shown schematically in figure 4.1.

It is perhaps worth mentioning at this point that the model of place evaluation and, therefore, of office evaluation is predictive in that it predicts the empirical structure of evaluations.

4.7 Published Studies Using the GMS

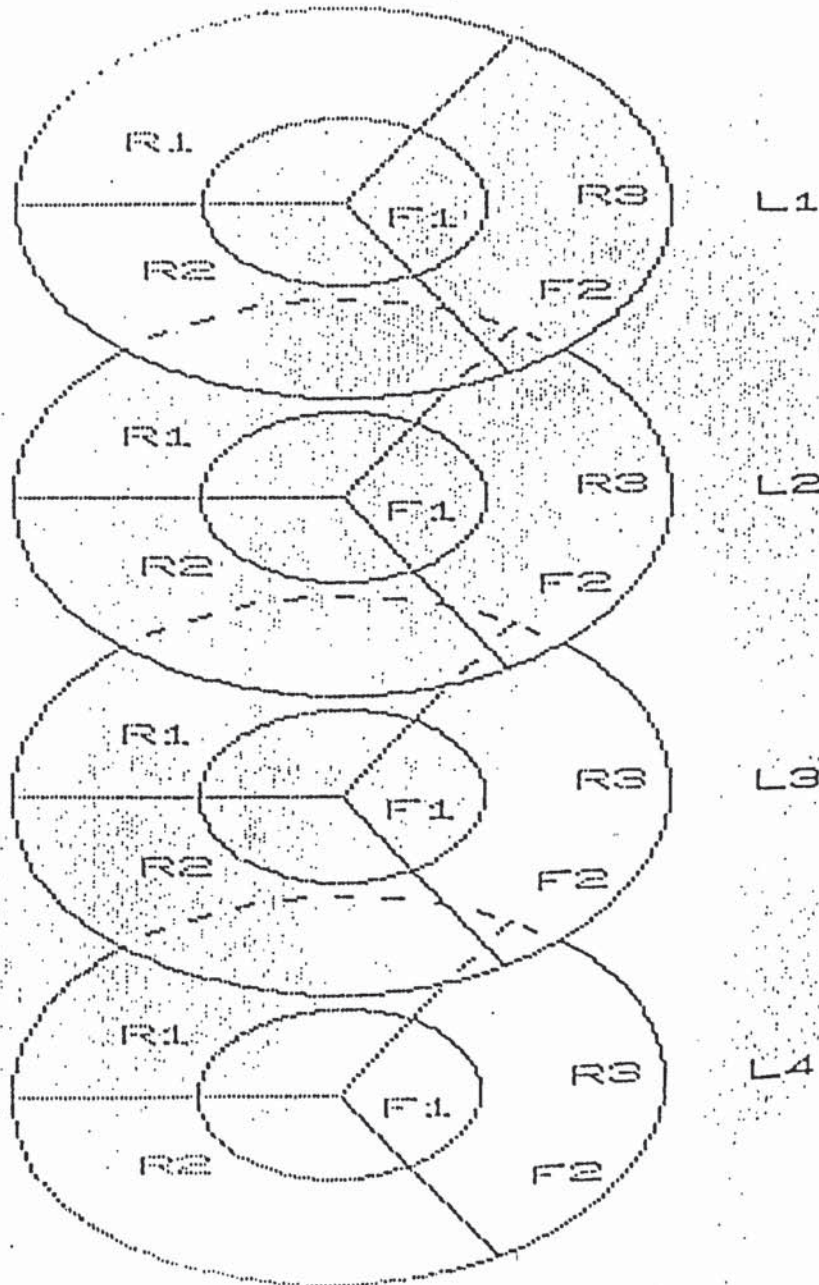
At present the application of the approach to three settings, hospital wards (Kenny, 1983; Kenny and Canter, 1981), housing (Canter and Rees, 1982), and offices (Donald, 1983; 1985), have been published, and provide support for the hypothesised structure of place evaluation. In this section the results of these applications will be considered along with a discussion of the implications they have for the model and present thesis. The most useful way in which to consider and compare the studies is by taking each facet in turn.

4.7.1 Referent of Interaction

It is not surprising that the most conceptually and empirically consistent facet across applications of the GMS has been the referent. Each application has included the

Figure 4.1

Schematic Representation of the Cylindrex
of Place Evaluation



same three referent elements; social, spatial, and service. Similarly each application has empirically revealed the hypothesised qualitative structure for the items.

To reiterate a previous contention, it can be expected that the elements of this facet are the most universal of all those included in the GMS. In all person-place transactions the objects of the transaction are, at this general level, likely to be the same. All typical environments are likely to contain the three elements of the referent. It is possible however that other elements may exist. One such additional element, aesthetics, has been suggested by the results of Donald's (1983; 1985) office studies.

In his evaluation of three office buildings Donald included two items in his questionnaire which referred to the general appearance and decorative quality of the offices. The results of the research showed the possible existence of an aesthetics region for one building but not for the other two. However, as Donald cautioned, a region composed of only two items must be treated with some skepticism. Nonetheless there is a rationale as to why such a region existed for one of the buildings and not the other. The building with an aesthetics region was the only one of very poor decorative quality. It was consequently contended that such an element may be conceptually distinct when the condition of the environment make it salient. Such an argument has support from other authors (eg. Becker, 1982).

For the other two buildings considered in the study the aesthetics items were located in the spatial region. Indeed the aesthetics region in the first building could also have been considered as part of the spatial region. These results suggest that this element may in fact be a sub-element of the spatial element. This thus leaves the original tripartite formulation unchallenged.

4.7.2 Focus of Interaction

The focus of place transactions, being action and place specific, represents a somewhat more complex issue than the referent. An inspection of the mapping sentences for each of the studies (appendix 3) reveals differences in the elements of the focus. The office study does not include a focus facet, for housing evaluation the focus elements are overall, in general, and in particular, and for the hospital study, direct and indirect in relation to care and comfort provision for patients. In both of these studies the hypothesised structure of the focus facet, and its relationship to the referent, was supported.

Donald (1985) has discussed the differences between the various foci at considerable length. For the present purposes it is sufficient to note that for places in which rather specific activities take place, as is the case for the hospital ward, then the focus is likely to be the extent to which a referent helps or hinders the direct or indirect fulfillment of the specific place related goals.

In a more multipurpose and general setting, such as housing, the focus is the extent to which general, particular and overall aspects of the environment are satisfactory.

The results of the office study, it is worth mentioning, had no items which could be considered as central to the focus of person-office transactions. This suggests that either office work has no focus or, more likely, the research instrument did not tap that aspect of workers experience, evaluation, and conceptualisation. The issue of focus will be returned to throughout the thesis.

4.7.3 Level of Interaction

The level of interaction facet has been included in all previous studies using the GMS. However Donald (1985) has argued that the different interpretations of the content of the facet are indicative of two conceptually distinct facets, one referring to a level of action in relation to the environment, and the other, the scale of the environment in which that action takes place.

The first studies using what was later developed into the GMS, were hospital ward evaluations (Canter and Kenny, 1981; Kenny, 1983; Kenny and Canter, 1981). In this research, the level of interaction was specified in relation to behaviour rather than environmental scale. The elements of the facet included, for example, "contact

with", "reduction in disturbance from", and "movement toward" an object. Each of these elements clearly relate to the behaviour of a person in relation to the environment in order to achieve their goals.

In a later study of housing evaluation Canter and Rees (1982) interpreted the level facet as consisting of elements of "house", "location of the house", and "neighbourhood", and the extent to which people were satisfied with them. Clearly these elements refer to environmental scale, rather than levels of behaviour.

The scale interpretation was also applied by Donald (1983) in his evaluations of offices. In this instance the elements were specified as "immediate workarea", "office" and, "building". Here the elements received general empirical validation, although no distinction between immediate workarea and office was found.

From the above research, it can be seen that the levels took conceptually different forms and were thus different components of the evaluation domain. In the latter two studies level was viewed as a physical component of the environment being evaluated. In the hospital ward studies the level elements were not components of the environment, but of behaviour in relation to the environment.

In explaining the differences between the above studies, Donald (1985) has argued that both interpretations of the level facet are valid and part of the same domain, but do,

however, address different aspects of it. If this argument is correct it should be possible to generate meaningful structuples, or questions, from a mapping sentence which includes both interpretations.

By briefly considering the study by Kenny (1983), one finds that structuples generated by including both interpretations of the level facet are indeed meaningful. In Kenny's study, the evaluation was of hospital wards. The scale facet, in relation to this study, can be thought of as consisting of a single element; hospital ward. However, the evaluation could equally have considered the ward and the hospital as a whole. One would then generate questions such as "how satisfactory is the ward for contact with the patients" and, with the second element applied, "how satisfactory is the hospital as a whole for achieving ease of contact with patients".

Thus to the original GMS may be added a fourth facet; environmental scale. In the present study it is the environmental scale interpretation which will be applied, and not level of interaction. Despite the use of this interpretation, the term "level" will be used as this may save confusion in any comparison between the office evaluations here and those previously reported by Donald (1983; 1985).

4.8 Summary

In this chapter it has been argued that people are purposive and goal oriented. Given this perspective the role of the environment is the facilitation of the person's goals. While people may not necessarily be aware of their goals, they are open to reflection. Additionally it is possible for individuals to compare their present position in relation to goal attainment with the desired position. Such a comparison is a statement of evaluation; in relation to the environment it represents a place evaluation. It was also noted that evaluation may be made in relation to the individual's purposes and/or those of some collective of which the individual is a member.

The purposive model presented in the chapter has the aim of providing an empirically based description of peoples place-related evaluations. As such the model is based on the cognitive structure, or conceptualisations, of the environment. The model itself consists of three distinct facets; referent, focus, and level of environmental interaction. Being general, the model may be used in numerous settings and allow comparisons between them to be made. Three published studies using the GMS have supported the hypothesised model and demonstrated its utility as both a general model, and for application to particular places.

CHAPTER 5

Applying the Purposive Model to the Office Context

5.1 Introduction

In the previous chapter it was seen that the referent and level facets of the GMS have, to an extent, already been validated in the office context (Donald, 1983; 1985). The focus facet was not included in these previous studies and their results failed to reveal any aspects of the evaluations to be central. A consideration of this facet is potentially of great importance for progressing our understanding the role of the environment in the life of the worker and organisation.

In this chapter a detailed consideration will be given to the derivation of the elements of the GMS for its application to office evaluation. In the first two sections, attention will be paid to the role of the office in the work of the individual and in relation to the organisation. This will then be followed by the discussion of each of the facets of office evaluation.

5.2 The Function of the Office

According to Craig (1981) the first recorded use of the term office in the English language can be found in Chaucer's The Canterbury Tales. However if we look at the way in which the term was used by Chaucer we find its meaning to be somewhat different to its present use. In the

Friars tale Chaucer writes; "And his offyce I shal him telle, y-wis." (Chaucer, 1386, p 325). In a respected translation (Coghill, 1951) of The Canterbury Tales the line reads; "I'll tell him all about that job of his" (p 311).

From the change in the way "office" has been generally used in the English language, it can be seen that the office setting is intimately tied to the role and activities of the person who occupies it. In present day English the term office applies equally to an environment and a job or organisational role.

In more recent times there has grown a consensus as to the functions of the office. In discussing office design Pile (1976) argues that, "The functions of the office all have to do with two activities, which can be summarised as communication and control." (p 11). Pile goes on to contend that;

"communication is only the servant of control, providing the data needed as a basis for action and carrying the controlling decisions outward...Control is the making of decisions in a form that will lead to their implementation" (p 11).

Noting that decisions may be made anywhere, Pile continues by stating that decision makers need to be established where they can communicate; the office. Finally Pile concludes by writing;

"Thus, an office is, primarily, a place for decision making. The decisions may be trivial and routine or

basic and important, or both, but they require the support of communication both inflowing and outflowing." (p 11).

Sundstrom (1986) also notes similar functions for the office;

"Office workers keep records and files, conduct conferences and discussions, perform calculations, compose written text, and do other tasks involved in the handling of information and the making of decisions and plans." (p 26).

It is clear that decision making as viewed by Pile includes all the trivial and important decisions made in an organisation, be they the processing of an insurance claim or a major policy decision effecting the entire organisation. The view of Sundstrom shows the many aspects of the activities of the office worker which are part of their decision making. The first task of the office then, is to provide a setting which facilitates the decision making process. For example, the decision maker will require, at times, an environment in which he or she can concentrate, they will also require a quality of lighting which will allow them to be able to see what they are doing, and they will need space to store information.

Once the decisions are made they clearly need to be communicated. Communication requires access to individuals and groups, which in turn places demands on the environment. There need to be meeting places which are confidential. The location of individuals needs to be such that they are accessible, but also that they may control

the access people can have to them.

In addition to communication and decision making there are other factors which relate to the function of the office. Hopf (1931), for example, writes that;

"In the well planned office groups of clerical workers are brought together in large, open, unobstructed areas which strengthen esprit de corps.." (p 775).

While it is likely that Hopf considered esprit de corps as a facilitator of decision making, it is clear that the office has, since very early times, been required to engender psychological conditions required for that decision making. Thus in addition to the office providing basic physical supports, its role is seen as relating to theories of how work groups operate, and to function in complex and indirect ways.

The proposition that the environment relates to theories of the way in which organisations and individuals function brings into the discourse the role of the office in organisational theory. In the next section we will briefly examine the implications of various organisational theories for the office.

5.3 Organisational Theory and the Environment

Organisational theory provides indications of the purposes of the office. However, the physical settings in which the organisations exist are not given an explicit place in

organisational theory. Nonetheless it is possible to speculate and draw some implications from the general orientation of various theorists as to the significant factors of the environment in organisational functioning.

In the following sections a brief, chronologically ordered, outline of the major relevant organisational theories will be provided, and implications for the environment and its evaluation drawn. It will also be seen that while organisational theorists have ignored the physical environment, office designs have reflected the general ethos in which each of the theories have been proffered.

5.3.1 Classical Theories of Organisations

Toward the end of the last century and the beginning of the present, a number of independent writers presented separate works which have become known as classical organisational theory. This body of work does not represent an organised, unitary theory. What unifies the concepts and ideas of classical theory is the underlying assumptions and general paradigm of human and organisational functioning upon which they are based. Of the numerous contributors to this body of knowledge, Max Weber and Frederick Taylor are foremost.

Weber's theories were published in the latter part of the last century, but did not appear in English translation until 1947. Central to Weber's (1947) theory of organisations is the concept of bureaucracy. In essence,

Weber proposed that organisations could be classified in terms of the extent to which they fulfilled characteristics of his bureaucratic ideal. Sharma (1982) summarises these into seven ideal characteristics or dimensions; division of labour, hierarchy of authority, wide use of formal written documents, training, stable and exhaustive rules and regulations, impersonal (formal) interpersonal relations, and meritocratic advancement. Sundstrom (1986) reduces these further to hierarchy of authority and roles.

Taylor's (1911) theory of Scientific Management was concerned principally with motivation and the nature of work. The theory made no provision for human needs or potential. It was assumed that there is a single best and most efficient method of performance for each task. Additionally, it was argued that tasks could be reduced to minute elements. Individuals were considered to be intrinsically lazy, working only under supervision, and motivated purely by financial gain. When given the appropriate conditions people would work in a mechanistic manner.

While both of the above accounts are caricatures of what are very detailed theories, they do provide an adequate skeleton for our discussion. Additionally, while it can easily be seen that the foci of Weber and Taylor are very different, there is considerable common ground between the two writers. As Sharma (1982) argues; "Almost all the

concepts from scientific management were similar to those in Weber's bureaucratic model." (p 124). Similarly, implications for the environment and person-organisation relations which accrue from both theories are fundamentally common.

Perhaps the most important characteristics of the classical theories is their subjugation of the individual, and individual expression, and the sacrosanct primacy of the formal organisation. Sundstrom (1986) mentions three basic environmental implications which derive from the the classical theories. Firstly, "symbols of office" are seen to relate to Weber's theory. The form which such symbols take are many. However some which may be of importance are the various status markers which are in evidence in offices (Duffy, 1974; 1974a; Steele, 1986) including, for example, position in relation to a window, the direction faced in the office, the size of workspace or desk.

The second and third environmental implications drawn by Sundstrom (1986) are "economy of motion" and "visual accessibility". Both of these environmental considerations are seen as derivatives of scientific management. Economy of motion would require ready access to equipment and others with whom one needs contact. The Taylorist view that workers are intrinsically lazy implies the need for close supervision, which, of course, requires an office designed in such a way as to make this possible.

In addition to Sundstrom's propositions can be added the need to delineate space in accord with function. Not only does this relate to economy of motion, but also division of labour and departments. In addition to differentiating the various functional and hierarchical groups, their juxtaposition needs to be planned. The image of the organisation, and its primacy, may also be communicated to the individual worker via physical means.

It is worth noting that many of the functions of the office that are consequent to classical organisational theory are only considered from the organisation's perspective. They may be rather undesirable from the point of view of the individual worker.

The focus of Sundstrom's writing has been on what may be termed positive provision; it does not include features which, by implication, should be avoided. For example, official and formal channels of communication imply the need to prevent informal gatherings.

Examples of office designs which reflect the classical approach to organisations show how these ideas permeated design (Duffy, 1980) and office practice (Braverman 1974). Frank Lloyd Wright's Larkin building, built in 1904, demonstrates in horrific detail the the form an office could take when designed along the principles of scientific management.

Duffy (1980) gives a detailed description of the building

in which slogans espousing corporate values could be found on the walls. Desk layout was tight and rigid in planning and the seats pivoted from the desks allowing only minimal movement. Women and men were sharply segregated within the same office space and a supervisor could see all. Spatially the building expressed the unity of the organisation as well as its dominance. The cathedral like interior reinforced the dominance of the organisation over the individual.

A publication of the time is worth repeating in order to give an idea of the views held of the appropriate nature of buildings:

"The office, to some extent, should be an expression in physical form of the organisation of the business...that is, it should show the lines of authority, the separation of functions, and the direction of work through the different departments." (Schulze, 1919, p 95)

Empirical studies which have attempted to relate the spatial configuration and demarcation of an office to the structure of the organisation are rare. Indeed Sundstrom's comprehensive review of the literature on workplaces includes only one such study; the present author knows of no others.

In this study, Duffy (1974a) attempted to relate bureaucracy (tightness of membership bonds) and interaction (frequency and quality of communication) on the side of the organisation, with differentiation (variety amongst

workspaces) and subdivision (screening and partitioning of workspaces) of the environment. Duffy (1974) hypothesised that high degrees of bureaucracy would be associated with highly differentiated office space, and vice versa for nonbureaucratic organisations. Organisations with high levels of interaction would have low levels of subdivision, and vice versa. Each of these factors were measured on numerous scales.

In general Duffy's hypothesis was not supported. For example highly centralised (ie. bureaucratic) organisations were found to be low on subdivision and differentiation. There are several alternatives proposed to explain Duffy's results (see Sundstrom, 1986, for a lengthy discussion). However, it is clear that the model did not take the true complexity of organisations into account. This is a criticism which was also made of the classical approach in general.

5.3.2 Neo-Classical and Human Relations Approaches to Organisations

The neo-classicists and human relationists do not present such an integrated collective as the contributors to classical theory. Indeed the human relations school is often seen as distinct from the neo-classical theorists. However, the differences between the two approaches are a matter of focus. Moreover, neither approach provides an alternative to the classical theories, but rather represent

a refinement, elaboration, and expansion of the classical doctrine. For example, Vilmar (1973) refers to the human relations strategies as "pseudo-strategies", and Clegg and Dunkerly (1980) state that;

"The innovations of the 1960s did not, in fact, challenge Taylorist division of labour...they were neo-Taylorist rather than anti-Taylorist." (p 514).

In an attempt to discover optimal working conditions, in the vein of Taylorism and environmental determinism, a group of researchers conducted what have become known as the Hawthorne studies (Roethlisberger and Dickson, 1949). The studies are sufficiently well known as not to require repetition here. Their findings however provide an adequate summary of the major issues raised by this group of theorists and writers.

The conclusions of the Hawthorne experiments have been outlined by Sharma (1982): i) The workers define roles and establish norms which are not necessarily those of the formal organisation, ii) rewards other than financial guide workers behaviour, iii) workers act as collectives as well as individuals, iv) informal leaders emerge who can neutralise the power of the formal leader, v) communication needs to be two-way between ranks, and participation is important, vi) greater satisfaction improves organisational effectiveness, vii) management require social skills as well as technical ability, and viii) organisations need to satisfy higher, as well as lower level needs.

Of course it will be remembered that the notion of individuals acting as a group with shared goals and purposes was raised by Gould (1983) in relation to action paradigms. This argument should be borne in mind for later considerations of the evaluation model.

The issue of need satisfaction brings into the discussion the theories of Maslow (1943) and Herzberg (1966) which include a specific place for the environment. That these theories of motivation have been severely challenged and been proved inadequate is not of concern here. The important aspect of consideration is their implications for, and impact on, the design and use of the office environment.

In Sundstrom's (1986) review of workplaces, he specifies the actual or implied role afforded to the environment by these organisational theories as, in the case of Maslow, satisfying basic physiological and safety needs, and for Herzberg, being a potential dissatisfying element of the work context. Referring to Homans (1950) work on groups, Sundstrom (1986) views the environment as providing for the accessibility associated with patterns of interpersonal interaction by means of the proximity of individuals. It should be noted that many organisational psychologists (eg. Schein, 1980; Sharma, 1982) consider Homans to be an early systems theorist.

We have already seen that the design concept of

Burolandschaft came as a revolution in the design world. The design concept related directly to the new thinking in organisational and management theory. In relation to the neo-classical theories being but an extension of classical theory, Duffy (1974) states that, office landscaping;

"added to a basically Tayloristic concern with measuring work flow a number of ideas drawn from later schools of managerial thought. For the first time in office planning, attention was drawn to the distinction between the informal and the formal organisation." (p 115)

Attention in office planning, it was proposed, should not simply follow the organisational chart (Lorenzen and Jaeger, 1968) but also take into account the affective bonds which hold organisations together. There was also a new emphasis on communication rather than work flow (Duffy, 1974). Communication was not to be based on a one way supervisor to subordinate flow; communication was to travel across departmental boundaries, across status levels, often circumventing intermediary personnel.

Along with this less formal form of communication went the reduction in status distinctions (Duffy, 1980); the organisation was to become democratic and this was to be reflected in the office by equality of environment. As Duffy (1974) writes;

"If physical barriers come down, and desks are arranged loosely according to need not status in the manner of office landscaping, true cooperation towards a common goal is likely to be encouraged if not engendered" (p 115).

Additionally, there is a need to provide places for informal meetings. Such provision of course runs contrary to classical theory where such meetings were to be suppressed. Suppression of such behaviour could be achieved by not providing the environmental opportunity for its expression. Rather than using the environment to constrain employee preferred behaviour, the new approach aimed at channelling it into an organisationally useful form.

Duffy (1974) has noted that a reprehensible aspect of the burolandschaft movement was that all organisations should be equally participative and equally landscaped. This disregard for the uniqueness, or at least dissimilarity, between organisations brings us to the final organisational theories; systems and contingency theories.

5.3.3 Systems and Contingency Approaches to Organisations

As organisations and technology became more complex, an inevitable (Porter et al., 1975) reformation of organisational theory occurred and resulted in various systems theories of organisations. In some of these theories a specific place was given to the environment. This is perhaps most evident in the sociotechnical model (Trist et al. 1963) developed at the Tavistock Institute.

Sharma (1982) describes a system as;

"a grouping of parts that act as an entity rather than a conglomeration of individual parts. The behaviour of the entity is a joint function of the behaviours of the

individual parts and their interactions (interdependencies)." (p. 139)

The system, like a gestalt, is more than the sum of its parts. The total system, or organisation, consists of its parts, plus their interactions. As a system is composed of interacting parts it is also dynamic; in a state of flux. Further, systems are themselves part of other systems and are composed of sub-systems.

A central question of systems theory, and one which has yet to be answered, is what the constituent parts are, and how they are related. Organisational components seem to fall into five categories (Sharma, 1982); i) individuals, ii) formal organisation, iii) informal organisation, iv) status and roles, and v) physical environment of the work situation.

With regard to this fifth category, Sharma includes the environment in a similar way to that which has been seen for the other organisational approaches. He does add, however, that it affects;

"skills, motivations and perceptions of people ultimately leading to a particular efficiency level" (p 148).

It is clear that systems models take the environment beyond the simple cause and effect concepts of classical theory and architectural determinism, and closer to the recent models of environmental transaction.

The contingency models (eg. Kast and Rosenzweig, 1979) basically argue in the systems vein, but add to it the contention that there is no one universal best organisation or system. The appropriate organisational form is contingent upon many different factors, its goals, environment (economic, cultural, and other aspects of the wider environment) and so forth. From this perspective there is also, of course, no one best office design.

It is difficult to find a literature on design which relates to the systems theory of organisations, perhaps because of its relative recency. Sundstrom (1986) is quite brief and limited in his consideration of the importance of the office environment in the systems approach. It is merely noted that the role of the physical environment is as part of the technological side of an organisation, with the key being to fit the environment to the social system. This view is rather limited conceptually. Considering the environment to be confined to the technological side of an organisation is to put an emphasis on the basic supportive role of the environment. There are also social considerations, as the previous argument in relation to the referent facet of the GMS reveals. Specifically, peoples actions and goals in an organisation have a physical (technical) and social referent (socio).

To Sundstrom's argument can also be added the need for environmental flexibility; organisations are dynamic. A change in one aspect of the organisation is going to have

ramifications in other areas. These changes need to be absorbed. In order for the environment to absorb the change it must be flexible in design. Additionally any change in the environment needs to be carefully considered. For example, there may be political consequences of a change in environment. This can be seen when an organisation proposes a change in the environment which leads to negotiations with trade unions about compensation and environmental conditions.

It can be seen that the consequences of environmental change related to much wider considerations than direct cause and effect for performance; impact is felt throughout the organisation. Of course this is what would be expected from systems theory.

From the preceding discussion it is clear that the environment has a number of functions. From these the actual content of questions for an office evaluation can begin to be specified in that they provide the areas which may be of concern. For example, status and demarcation, formal and informal considerations, observation and privacy, cohesion and esprit de corps, lighting and heating.

Each of these areas of concern relate to the various facets of the GMS. In the next section we will consider the facets of place evaluation and their interpretation in relation to the existing literature on the physical elements of the

office environment which are tied to the objectives and roles we have discussed.

5.4 Facets of Office Evaluation

5.4.1 Level of Interaction

There are many sources of evidence to support the existence and validity of the level facet elements of building, office, and immediate workarea (or desk, workstation, workspace and so forth).

The study conducted by the Pilkington Research Unit (Manning, 1965) included much discussion focused on the demarcation of spaces within the office area in accord with status differences between workers. The results of the PRU study provide clear evidence that office workers experienced, evaluated, and conceptualised the office as consisting of smaller demarcated areas. Not only does this show that there is differentiation between office and work spaces, but also that there is a relationship between at least one aspect of environmental experience and organisational properties; status and hierarchy.

A study by Heidmets and Nitt (1982) in the USSR also provides direct evidence for the proposed levels of interaction. This study looked at the preferences of office workers for particular activity locations. The researchers differentiated five locations; personal workplace, place in the building, wash-room, special place/room on a floor, and

places outside the building.

Although the investigators proposed the above locations, they provide very little theoretical rationale for their choice; distinct levels are, however, evident, personal workplace and place within the building, for example. It is clear that some of their 'elements' could be classified into more than one of the categories being used by the present author. Their results, nonetheless, provide support for the basic principle of categorisation being used here. Additionally, the activity-place relations also support the hypothesis of objectives related evaluation.

The importance given to the distinction between the various levels of the office environment can also be seen from the work of Marans and Spreckelmeyer (1982; 1986) who, when describing their research results, write;

"One of the more general findings from both studies, and perhaps the most important, is that people's assessments of the larger environmental settings are influenced by their feelings about their immediate workplace" (1986, p 75).

The above not only provides evidence for a distinction between the immediate work area and other levels of the environment, but also shows them to be related, in that the assessment at one level influences assessment at another. This is, of course, contrary to the hypothesis presented here.

The differentiation of levels of the environment is

implicit in almost all office research. An example of this implicit differentiation can be found in the work of Ferguson and Weisman (1986). In their study they attempt, using path analysis, to show the factors which are related to satisfaction with the workspace. One of the important links in the causal paths of their model is the degree of openness of the workspace. The concept of openness is basically concerned with the extent to which the individual immediate work area is differentiated from the larger office space.

Recognising the implicit importance given to the differentiation of the workspace from the office as a whole leads us to find support for the differentiation from the majority of studies concerned with the office environment. Thus all those studies previously mentioned, which address the total office environment, could again be cited.

Previously a small number of studies which have attempted to uncover the more fundamental dimensions of the office environment were reviewed. From these studies there is also support for the elements of the level facet. Hedge (1982), for example, found factors related to "workspace" and "routes". The factor of routes is concerned with the building, and workspace with the immediate workarea. Hedge (1986) also found factors of "office conditions" and "workspace".

Of course the most direct justification for the

differentiation of levels of the office environment comes from the office studies by Donald (1983) in which a distinction was found empirically between the level of office and building.

It is also indicative of the distinction between the building, office, and workspace that there are professions concerned with each. Architects, for example, are concerned with the basic building design, at the level of the office, space planners and facilities managers are concerned with the general layout of spaces. Finally numerous groups have the immediate workarea as their concern, systems furniture designers, for instance.

In general it is clear that the distinction between different levels of the office environment is present in the majority of work concerned with the setting. It should be appreciated that these distinctions are fundamental in understanding activities within an organisation including, for example, group formation, individual privacy and interaction, and organisational communication. Therefore, from the organisation's perspective, understanding how the different levels are conceptualised is important. From the designer's point of view it is also important.

In designing an environment attempts are being made to produce a setting which facilitates the organisational and individual activities. In some instances this requires that levels of the environment are distinguished

psychologically. To date, however, with the exception of the previous office study by Donald (1983; 1985), no attempts have been made to discover whether these design intentions are actually fulfilled. Knowledge of the way in which levels are evaluated and conceptualised is of considerable importance to the design and use of offices.

5.4.2 Referent of Interaction

As has already been noted, the actual elements of each facet of the GMS need to be developed in relation to the particular environment being evaluated. The one possible exception to this appears to be the referent facet. In all published applications of the model, the elements of the referent facet have consisted of space, social and services. The consistent validation of the elements of the referent facet suggest that they are universal across settings.

It should be mentioned that, although the inclusion of only three elements in the questionnaire is highly unlikely to result in the research revealing additional elements, although it may indicate that they exist, the inclusion of the elements will not inevitably lead to them being recovered from the data as distinct areas or elements of evaluation; the results are not purely an artifact of the questionnaire, although they are, of course, constrained by it.

The implication of the universality of the referent

elements are two fold. Firstly they can be directly applied to the present setting, although the actual questions generated by them may be particular to the setting. Secondly, little advance, theoretically, would be achieved by their application once again, except perhaps as yet another replication. It does seem likely, however, that the facet may be expanded and explored further. Before considering this possibility, a brief review of literature justifying the original three referents in relation to the office will be given.

The most recent and comprehensive review of the literature concerned with work environments (Sundstrom, 1986) is organised in accordance with the three referent elements. There are chapters, for example, concerned with, lighting and windows, temperature and air, and noise. Other chapters are concerned with privacy, and communication and groups, each of which consider social and spatial aspects of the environment.

In Wineman's recent book (Wineman, 1986) there are chapters devoted to considerations of lighting (Ellis, 1986), open versus closed offices (Hedge, 1986), privacy (Sundstrom, 1986a) and status demarcation (Konar and Sundstrom, 1986). Each of these deal with distinct referent elements. Additionally, in the concluding chapter of the book, Wineman (1986a) focuses her discussion of the future directions for office research on the separate issues of

lighting, air quality, and office planning.

In a book addressing the health hazards faced by office workers, Craig (1981) finds it useful to distinguish between lighting, temperature and ventilation, and space. The sections concerned with such issues as sexual harassment seem to add a social element.

The separation of the various referent elements date back to the earliest office research. For example, the previously mentioned study by Duffy (1974) is concerned with the spatial layout of offices in relation to the organisation. Canter (1969) is concerned with office size, more recently, van Hoogdalem (1984) addresses the issue of translating organisational relations into spatial relations, and van Hoogdalem et al. (1985) are concerned with the use of floor plans in developing design guidelines. One of the first office research studies was by Langdon (1966a) who carried out a survey of office lighting, and one of the earliest studies of office heating was performed by Black (1964). Although the study of ambient conditions is still a distinct area it has increased in sophistication, as is shown by Ellis' (1986) study of the aesthetic and symbolic functions of lighting. Social considerations too have a long history. Wells, for example, carried out a very early sociometric study of offices (Wells, 1965).

It would be possible to list many more studies which

differentiate these aspects of the environment, several have indeed previously been cited, however it is, or at least should be, clear that the distinction is evident in the office research and design literature.

As the referent facet has been supported in numerous studies, it is advantageous to attempt to expand and develop the facet further. Such an attempt will be made in the present research. It is to this that we now turn.

5.4.2.1 A Socio-Spatial Referent

Previous studies which have applied the GMS, have been content to discover whether there is empirical support for the elements of each of the facets. However, this leaves the question as to whether it is possible to explore the components of the elements further. Additionally, the possibility of sub or secondary facets has not been considered. In the present study an attempt will be made to discover whether the items within an element category can be fruitfully explored, and whether further divisions within the referent facet exist. To examine these issues a socio-spatial element will be added to the referent facet. This element will be further investigated by considering the relationship of the items within it.

We may begin this short discussion by providing three example questions;

1. Are the people in your office friendly ?

2. Do you have sufficient storage space ?

3. Is your office crowded ?

Each of the above represent legitimate evaluatory questions. Questions 1 and 2 are however rather different from question 3. Both questions 1 and 2 are pure in terms of the referent from which they are drawn; social and spatial respectively. Question 3 refers to crowding. Crowding has both a social referent and a spatial component; at its simplest it involves the number of people in relation to the amount of space.

From this it can be seen that while there are pure social and pure spatial aspects of the environment, there are also components which have a socio-spatial characteristic.

There is considerable evidence to suggest that the socio-spatial issues are of the greatest importance in office research and design. One of the most heavily researched areas in the field is the socio-spatial phenomenon of privacy (eg. Brookes and Kaplan, 1972; Ferguson and Weisman, 1986; Hedge, 1982; 1986; Justa and Golan, 1977; Sundstrom, 1986; Sundstrom, Herbert and Brown, 1982; Sundstrom et al., 1982; Szilagyi and Holland, 1977). Also as Hedge's factor analytic studies (Hedge, 1982; 1986) reveal, privacy to be an underlying dimension of office evaluations.

In a widely cited volume Altman (1975) integrated many areas of environmental psychology into one theoretical

model dealing with privacy and associated issues. All of these 'associated issues' have a socio-spatial component. Amongst these can be found such phenomena as crowding, isolation, and territoriality. Each of these have been the concern of office research, and the concept of the nonterritorial office (Allen and Gerstberger, 1973) has caused much discussion.

The design concept of Burolandschaft is, in essence, based on socio-spatial considerations. Also, however, the design is concerned with communications. If one considers that communication is, fundamentally, the transmission of information between individuals or groups, then one sees that it has a distinct social component. The basic rationale of burolandschaft is that one should locate individuals in such a way as to improve communication via their proximity.

It is clear from these relatively few examples that socio-spatial considerations are of prime importance. In the pilot stage of the research, therefore, numerous questions relating to various aspects of privacy are included. If the results produce fruitful and meaningful insights, the socio-spatial issue will be expanded and explored further, and the potential for the inclusion of a sub-facet considered.

5.4.3 Focus of Interaction

The focus facet is problematic. We have previously seen that research which has applied the GMS has suggested that there are two categories of foci. The focus which is relevant in any particular study is a function of the place being evaluated.

The office environment has both formal and informal qualities derived from the nature of work and organisations. It is widely recognised that organisations have formal and informal components (eg. Schein, 1980; Sharma, 1982). The less formal aspects of life in the office is also shown by research into organisational climate and culture (eg. Campbell et al. 1975), as well as being implicit in many other areas. We have also seen that one of the important distinguishing features between classical and neo-classical organisational theories is the recognition of the importance of informal aspects of the organisation for both the organisation and the individual.

This has also been reflected in considerations by environmental psychologists. Heidmats and Nitt (1982), for example, go as far as to suggest that the office environment is a 'social club', as well as being a place of work. Also, as technology advances, it has been argued that it will eventually be unnecessary for offices to exist as people may work at home using electronic communications. In countering this it can be argued that the office is more than a place of work, it is also a place for meeting people

and socialising.

The above characteristics of the office led Donald (1983) to include items which allowed for both general/particular and central/ancillary foci to emerge. The results of the study failed to support either of the previous categories of focus. Indeed no focus was found to be central; the issue thus remained unresolved.

It may be suggested, based upon the preceding discussion, that a focus facet may include elements of work and well-being. The work element allows questions directed towards formal characteristics to be asked. The well-being element permits one to address the issue of non-work related components of the environment.

In the majority of discussions of the office environment, it is consistently stated that the interest of research is in both productivity (work) and well-being (eg. Sundstrom, 1966; 1987; Wineman, 1986). Additionally, the two elements have been considered separately in specific research projects (eg. Mercer, 1979). Again this suggests that the two elements are worthy of investigation in terms of them being the focus for evaluations by the office users. It should be noted that the possible distinction between what a researcher perceives as a valid differentiation, and how a user actually evaluates the environment, is an important one, and a matter for empirical validation.

The importance of this facet in understanding the nature of office use and evaluation and, to an extent, the nature of people in organisations is considerable. For example if it is found that well-being is central to peoples evaluations, it suggests that evaluation studies which place a premium on productivity are not addressing the most important issues from the perspective of the individual worker. If the distinction is not upheld empirically, this also has wide implications. For example, it implies that the formal and informal aspects of the environment of offices are integrated rather than separate issues, and the separation of the two elements in office research is inappropriate.

5.5 A Mapping Sentence for Office Evaluation

The three facets above provide the mapping sentence shown in table 5.1. In terms of specific hypotheses, it is being argued that, individuals will distinguish between the building, office, and immediate work area in their evaluations. Further, the differentiation of these levels will be ordered, with each being independent.

The structure of the evaluations will also show a three way categorisation of the referents of the office; social, spatial, and services. Additionally, it will be possible to discern a socio-spatial element. These elements will be qualitatively related and, moreover, be present at each level of the environment. Additional, meaningful, insights into the nature of socio-spatial aspects of the environment

will be shown by the items of that element.

Finally, the focus of evaluations will be in terms of assessment in relation to work and in relation to general well-being. Again the focus will be present at each environmental level. The focus will modify the referent and thus, in terms of their spatial representation be located on the same plane of SSA space.

Table 5.1
Mapping Sentence for Office Evaluation

The extent to which person (x) is satisfied with the

Referent	of the	Level	
(R1 Social)		(L1 Building)	
(R2 Service)		(L2 Office)	
(R3 Space)		(L3 Desk/Immediate)	
(R4 Socio-Spatial)		(Work Area)	
			Very Satisfied
for their Focus			
	(F1 Work)	is----->	to
	(F2 Well-being)		
			Very Dissatisfied

The above mapping sentence produces 24 structuples. From these structuples the evaluation questionnaire shown in appendix 4 was constructed for the pilot study. The actual content of each question has a clear basis in the issues

and concerns generated by the role of the environment in organisational theory, and previous office research.

5.6 Summary

In this chapter it has been seen that the primary functions of the office are concerned with communication and decision making. A consideration of the environment in relation to organisational theory has shown numerous additional roles for the environment. From the research literature on office design a three facet mapping sentence for office evaluation has been designed which conforms to the GMS. The possibility of expanding on the GMS has been noted, and attempts to achieve this are to be part of the present thesis. Finally, a pilot questionnaire has been developed from the mapping sentence and a review of the relevant literature.

It was noted earlier in the thesis that factors other than environmental evaluation will be examined. In order that the main theme of the present research will not be obscured, the rationale for the inclusion of various other issues will be addressed in chapter 7.

CHAPTER 6

Pilot Study Part 1: Environmental Evaluation

6.1. Introduction

The research reported in the present thesis has as its primary concern the structure of people's evaluations of their office environment. In this chapter we will consider a pilot study designed to test and explore a number of issues, related to this central theme, which have been described in the preceding pages. The actual pilot study consists of two parts. The second part of the study was concerned with people's perceptions of their organisation. For reasons of continuity that part of the study will be considered in the next chapter.

6.2 The Questionnaire

The questionnaire, generated from the mapping sentence described in chapter 5, is presented in appendix 4, and contains 52 environmental evaluation questions. A further 33 questions relating to the organisation were included in the questionnaire. These questions are presented in appendix 5 and will be discussed in chapter 7. Responses to the questions were made on a 7-point Likert type rating scale. The response categories for the environmental evaluation questions are ordered from "Very Satisfied" (1) to "Very Dissatisfied" (7). The first page of the questionnaire contained instructions. Space was also

provided for general comments.

6.3 Data Collection Site

Considerable problems were being encountered at this stage in the research in obtaining commitment from organisations to participate in the study. It was consequently decided that the pilot study should be conducted within an organisation which afforded relatively easy access; a university.

The use of university offices was not considered optimal for a number of reasons. Firstly, the administrative and departmental offices of a university tend to be smaller than those sought for the main study. Secondly, university offices are typically located in many different buildings. Thirdly, the functions of university offices are different to those of many other organisations in that people who do not work in the offices often use them. Additionally, many facilities usually contained in an office building are centralised on a campus, and located in particular buildings designed for the purpose.

Despite the above reservations, a university was used as it was thought preferable that a sub-optimal setting was surveyed for the pilot research as this would allow the use of an additional organisation in the main part of the study. The ready access also allowed the possibility of carrying out the pilot study rapidly while negotiations

with other organisations were in progress. Additionally, if, as is hypothesised, the basic model is relatively universal it should be of some validity in most contexts. Finally, it has to be accepted that applied research, especially in such an area as this, inevitably has a considerable component of compromise.

Permission to carry out the pilot study was sought from the University of Surrey. There were two principal reasons for contacting this particular university. Firstly it is a university with which the author has had contact for a number of years, and secondly, the university took part in a previous study of a similar nature (Donald, 1983). Permission was readily granted.

6.4 Questionnaire Distribution

Sixty questionnaires were distributed throughout the administrative and departmental offices of the University of Surrey. All offices contained a minimum of four people. The author returned to collect the questionnaires on the second and third days following distribution. Forty completed questionnaires were returned.

Although a 66% completion rate is not particularly high, the data collection coincided with the beginning of a new academic year. Consequently the participants were extremely busy at that time.

6.5 Data Analysis and Results

All environmental evaluation items were analysed using Smallest Space Analysis (SSA) (See appendix 2). The original association coefficients were calculated using the Pearson product moment correlation procedure. The coefficient of alienation for the resultant SSA solution was 0.21, which is an acceptable stress level.

It should be remembered that during the pilot stage, especially given the constraints of the sample, one is seeking underlying trends, rather than perfectly clear cut partitioning of the SSA space. In the following sections the evidence for each of the proposed facets is presented.

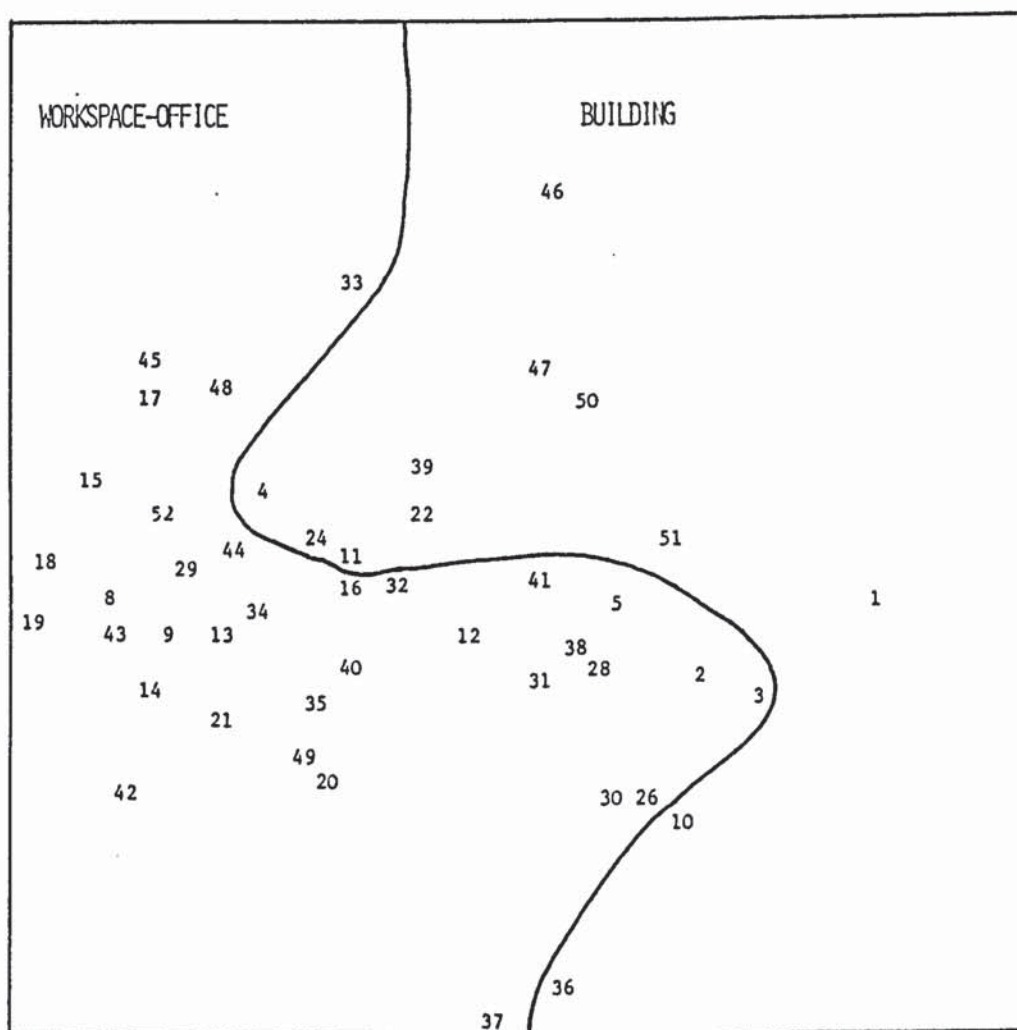
6.5.1 Level Facet

Validation of the level facet and its elements was not a major concern of the pilot study as the facet had previously been tested in the office context with generally supportive results (cf. Donald, 1983; 1985). However, as the questionnaire itself also required testing, a regional partitioning for the level facet was nonetheless sought.

The projection of the SSA space shown in figure 6.1a provides some support for the level facet. To the right of the partition line dissecting the plot can be found those items constructed using the building element of the level facet. To the left are found items related to the office and immediate area/desk. As with previous studies conducted

Figure 6.1a

Projection of the SSA of the Environmental Pilot
Questionnaire Showing Partitioning of the
Space for the Level Facet



by Donald (1983) no partition between the elements immediate work area and office are evident. Given the nature of the offices, for example the absence of any partitioning, this finding was not a great surprise. However it still leaves open to question whether any office workers make the office/immediate area distinction in their evaluations.

Most research projects using the facet approach are concerned with the general structure of a domain. In common with, for example, factor analysis, there is little concern for individual items which do not act, empirically, in accord with the researcher's original hypothesis. While this practice is acceptable, the apparent mislocation of individual items can provide useful insights into the nature of the phenomenon being studied. Throughout the research reported here, attention will be paid to mislocated items which further our understanding of the domain of evaluation.

A number of items are found in regions contrary to their hypothesised location in relation to the level facet. Specifically, item 1 (amount of light in the office) is found in the building region, and items 20 (location of other departments in the building) and 38 (extent to which you have chance encounters with people around the building...) were located in the office/immediate area region.

It is rather difficult to find adequate explanations for the mislocation of these three items. However it does seem that the conceptual and experiential distinction between different environmental levels is relatively weak. It was hypothesised that the levels would be revealed by relatively straight partition lines dividing the plane of the SSA space. The partition line shown in figure 6.1a is far from straight. Such a partitioning suggests a relatively weak distinction in the participants conceptualisation and evaluation of the levels.

While the unusual qualities of the campus buildings may account to a great extent for the form of the partition line, it is also possible that this feature is due to a weakness in the questionnaire. Thus, in general, it can be concluded that while the pilot study supported the level facet, close attention should be paid to the future formulation of items in relation to this facet.

6.5.2 Referent Facet

In relation to the referent facet there are two basic aims of the pilot study. The first is to discover whether there is evidence for a fourth distinct element; socio-spatial. The second aim is to discover whether it is possible to gain further insights into the nature of the socio-spatial element by an examination of particular items.

The SSA space which partitions most clearly in accord with

the elements of the referent facet is shown in figure 6.1b. It can be seen that four principal regions have been distinguished; services, social-spatial, social, and space. The socio-spatial region is further sub-divided.

6.5.2.1 Services

The first region, services, contains all the service items from the questionnaire with the exception of those which address the issue of heating in the office (5 and 28). These two items are located in the next region to the left (Socio-spatial).

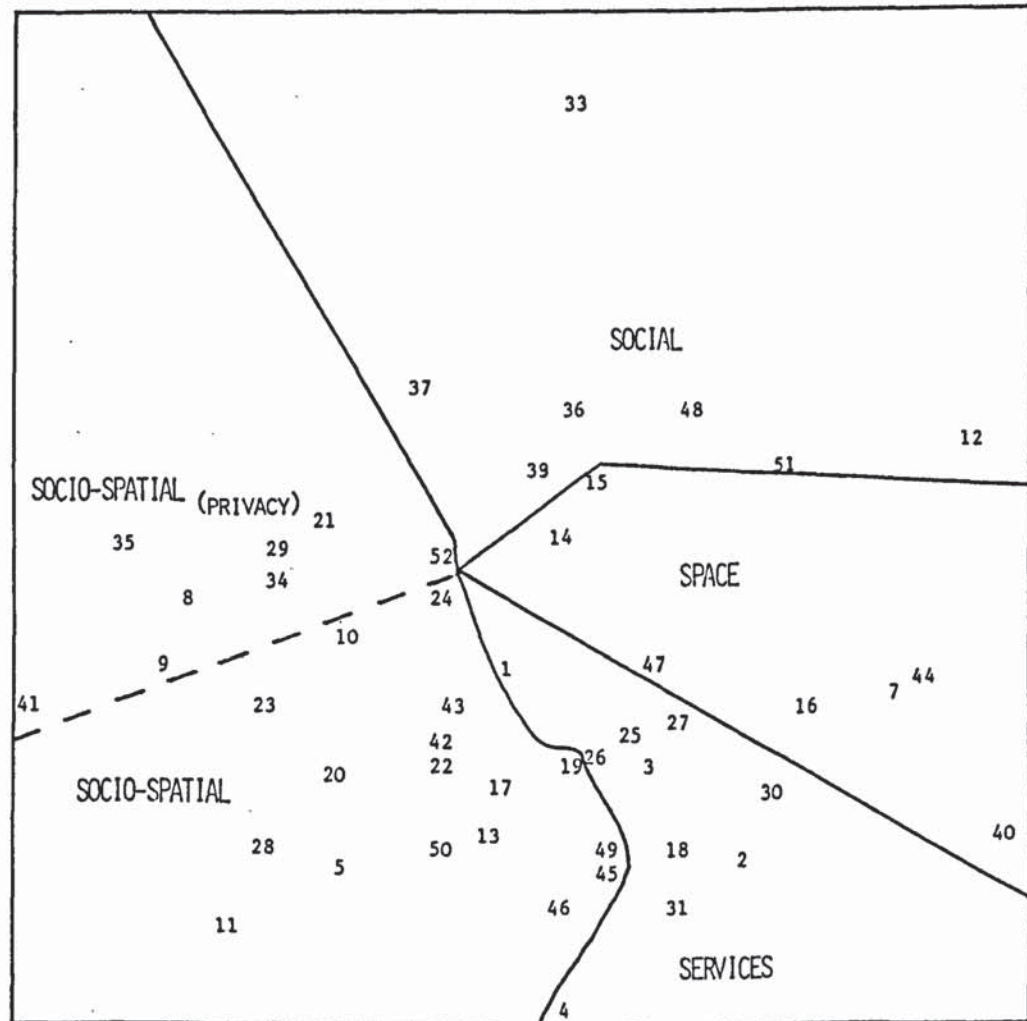
6.5.2.2 Socio-Spatial

A second region, containing items concerned with social-spatial aspects of the evaluation is evident. The region is sub-divided, with a sub-region for issues related to privacy. This region is very strong providing much encouraging and useful information. Included in the region are items which address privacy directly, for example, "visual privacy at your desk" (21 and 34), and "amount of privacy in your office" (9).

Additionally, items which are part of the socio-spatial domain, but which do not include the word privacy, for example, "ability to hold confidential conversations" (8), and "ease with which you can sit at your desk without others watching you" (29) are located in this region. This clearly shows that the participants were answering the

Figure 6.1b

Projection of the SSA of the Environmental Pilot
Questionnaire Showing Partitioning of the
Space for the Referent Facet



questions in relation to their conceptualisation of the situation and their experience, rather than simply responding to a particular word; privacy

From the results it can be seen that privacy is a component of socio-spatial aspects of the environment. The content of this domain helps us to understand the nature of privacy, and of socio-spatial considerations in the office in general. Additionally, it is worth noting that the region corresponds to the factors of privacy and, to an extent, disturbances found by Hedge (1982; 1986). The advantage of the present study is that it shows, more clearly, the relationship of this aspect of office evaluation to other components of the domain.

It has been argued (cf. Altman, 1975) that privacy may be conceived of as a continuum with opposite poles. At one end of the continuum would be a lack of privacy, for example, inability to hold private conversations, and at the other extreme would be an excess of privacy; isolation. In relation to this argument the question was raised as to whether these two experiences were in fact part of a related experience, or quite distinct issues. This problem is clarified by reference to item 41 which asks about the extent to which the participant is satisfied with the degree of isolation at their desk. From the location of this item in the same region as the privacy items, evidence is gained which supports the notion that isolation is

indeed an aspect of privacy, however it would appear the privacy is actually part of a the wider socio-spatial domain.

The second socio-spatial sub-region again provides some useful insights into office workers' conceptualisations of various aspects of their environment. Items 23 and 24 are concerned with the provision of "meeting places". Meetings are social interactions within particular spatial loci. Items 11 and 20 address the issue of the "location of others" and "availability of people you need to talk to". Again these are socio-spatial aspects of the environment. Another spatial question with a social component, and one which also relates to the organisation, is item 10 ("the ease with which you can tell the status and role of people in the building by their physical surroundings"). Again, status can be related to the amount of space an individual is given. The argument also applies to item 45 ("demarcation of work areas").

Moving toward the right of the region an item (42) dealing with satisfaction with levels of crowding can be found. This is an interesting discovery as crowding is considered to be part of the privacy domain (cf. Altman, 1975). The results here show that, at least from the point of view of evaluation, it is a qualitatively different aspect of the persons experience. It should be cautioned, however, that the present results are based on a relatively small sample, and, therefore, care must be taken when considering single

items.

Finally, of the explicable socio-spatial items, a noise related question is also found in this region. Again it would seem that while noise is something that may be produced by other people, the extent to which it is a consequence of physical environment conditions is also contingent upon space.

6.5.2.3 Social

Moving clockwise to the next region, a partitioned area containing items relating to social considerations is found. Items in this region include, for example, questions 39 ("the extent to which members of different departments mix socially"), 37 (the attitude of people toward you"), 33 ("friendliness of people in your office"), and 36 ("the extent to which you get on with people in the building").

6.5.2.4 Space

The remaining region contains spatial items. These items address the issue of space in relation to amount and location, and are not directly linked to social issues. Some of the items in these regions, however, may not be so obviously spatial. One can observe items which relate clearly to space; questions 14 ("amount of space at desk"), 15 ("amount of filing space at your desk"), and 16 ("the position of your desk"). These three items provide the key to the interpretation of the region as spatial and give

clues as to the way in which the other less obviously spatial items are conceptualised by the office workers.

Amongst the items for which a spatial component is not quite as transparent is question 47 ("provision of refreshment facilities in the building"). The provision of refreshment facilities on the university campus is to be found in buildings dedicated to this purpose, and not in the administrative or departmental buildings. This in itself makes the item a little ambiguous. Additionally provision of the facility has numerous connotations. The question could, for example, refer to the quality of the catering. However, it is likely that the item is interpreted as the provision of a space for refreshments.

A further item found in this spatial region asks the extent to which the participants physical surroundings reflect their status (40). A number of environmental features are associated with status distinctions. One of the principal features is the amount of space, floor and desk, a person has (eg. Steele, 1986). Indeed there exist in various organisations recommendations of desk size and office space in relation to rank. Thus while this item could conceivably have been located in a social-spatial region as it is a form of social communication, its actual location on the plot is understandable.

The inclusion of item 7 ("level of visual distraction while working at your desk") in the spatial region is

interesting. It was originally thought that "distractions" may be part of the privacy concept. However it is clear from these results that it is, in fact, a spatial component.

6.5.3 Focus Facet

It will be recalled that the focus facet was hypothesised as consisting of two elements, satisfaction with the environment for work and for comfort and well-being. It was further argued that the elements of the focus would be found on the same plane of the multidimensional SSA space as the referent and would be ordered.

The first 24 items of the questionnaire were concerned with satisfaction in relation to work. Items 25 to 52 were concerned with the environment in relation to comfort and well-being. An inspection of the projection of the SSA showing the referent reveals that the work/comfort distinction is not evident. Thus the hypothesis is not supported. Further, no other projection of the SSA space revealed a distinction between the two elements.

The lack of support for the elements of this facet is a little disappointing, however it does reveal important information about the evaluations and experience of individuals in relation to their work environment. The results show that the components of a person's evaluations and conceptualisations of the environment are integrated

with none of the elements being more central than any of the others. The implication of this is that while those involved in the study of the office environment, the researchers, may distinguish between the two areas of work and well-being, the actual office users evaluate the environment in a more unitary form.

The results obtained leave open the question of what the focus of office evaluation is. In order to answer the question of focus it is necessary to consider the plot shown in figure 6.1b in more detail.

The first aspect of the plot which is clear is that the items of no one particular referent are more central than those of the other referents.

The most central item of the plot is concerned with the degree of verbal privacy the individual experiences at the desk, item 52. This is an interesting finding from a number of perspectives. The factor analytic studies previously cited all show privacy to be a dimension of relevance, and other studies have argued that it is a central issue, or of central importance to office workers in their evaluations. The present study takes this further showing that this is in fact the case. However, while previous studies argue the importance of privacy considerations as a whole, they tend to skate over the multivariate complexity of the issue in relation to various components of privacy and in relation to other aspects of the setting.

While we can see from the results here that privacy is a distinct component, and that one particular aspect of privacy is central, items referring to other components of phenomenon are peripheral. The same characteristic can be observed in relation to lighting for example, which many designers have argued is central to office work. Again, not all aspects of lighting are central to environmental experience.

Previous studies (Canter and Rees, 1982; Donald, 1985; Kenny and Canter, 1981) have suggested two types focus which may possibly apply to the office context. As the focus hypothesised in the present study has not been supported, it is worth considering the plot in order to discover whether either of these foci apply to this setting. The two possible foci are; general/specific components of the environment, and central/ancillary to the goals of the user.

Considering the specific location of items, there is support for the notion that a central/peripheral focus in relation to the goals of the individual is appropriate. In the space region we find item 14 to be most central. This item is concerned with the amount of space a person has at their desk. The item dealing with the position of the desk, 16, is further toward the periphery of the space, and further toward the edge of the plot still, are items concerned with personalisation of the work area, 44, and

the extent to which the persons work space reflects their status, 40. Other referents could be considered, but there seems sufficient evidence here to suggest the focus. The other possibility that items at the centre are those which refer to general aspects of the evaluation has no supportive evidence.

A final important point remains to be made with regard to the centrality of items in figure 6.1b. The independence of the level in relation to the focus is shown by no one element from the level facet being found at either the centre or periphery of the plot. This is an important finding as writers and designers have placed different emphases on different levels of the environment.

The model proposed by Marans and Spreckelmeyer (1982; 1986) provides an example of the importance of the present findings. In their study and theory it was argued that one level of the environment is more central, and that designers should concentrate on achieving satisfaction at that particular level. This, however, is incorrect according to the results shown here. Emphasis or greater weighting should be give to those items which are central in focus. These include items from all levels.

6.6 Conclusions

The first general conclusion is that the pilot study has been successful. The evidence for the level facet was a little disappointing. However, the results in relation to

this facet were, under the circumstances of the study, not unexpected, and are of little cause for concern given the previous evidence.

As a point of interest, the pilot study was conducted in the same environment as a previous office evaluation (Donald, 1983). The earlier study used a similar model but a different questionnaire. The results of that study were, essentially, the same as those presented here. This suggests that the model is consistent, even though the actual data collection instrument may vary. Although these studies are only pilot research, this does represent the first time the GMS has been applied to the same environment on two separate occasions.

Considering the referent facet at a general level, there is considerable support for the elements of the facet, including the additional element of socio-spatial, which includes a further sub-division for the sub-element of privacy. Additionally, the nature of the relationships between the elements is qualitative (circular and unordered). That a privacy region is found is in keeping with factor analytical studies (eg. Hedge 1986). However, a greater understanding of the concept, and its relationship to other socio-spatial issues, is achieved by using the present procedures

One of the most significant findings of the study is with regard to the focus of the evaluations. Methodologically

the brief discussion of this facet has shown how the use of the present technique has allowed the identification of central aspects of the evaluation for each of the referent elements simultaneously. The result shows the either/or approach to the specification of those elements which may be considered central is inappropriate. This clearly demonstrates the utility of the multiple classification principle inherent in the facet approach.

The results also proved valuable in relation to the theoretical question of which is most important, the building, office or workstation. In answering this question advances in understanding the office environment have been made.

Generally, the pilot study supported the hypotheses presented earlier in the thesis. In relation to the previous research conducted in the same area by Donald (1983; 1985), the work has added significantly. The pilot study was designed as a method for clarifying issues and developing the questionnaire; this it has done. As a result a facet has been deleted. Additionally, the study has paved the way for proposing an additional facet. It is to this we now turn.

6.7 An Additional Facet

Previously it was noted that the present research would attempt to develop the purposive model further by

clarifying and expanding the elements of the referent facet by adding a socio-spatial element. As this element is likely to be the one most strongly related to, and relevant for, the organisation, it holds the greatest potential for exploring the environment-organisation relationship. Here an additional sub-facet of the socio-spatial referent will be considered.

The pilot study furthered the development of the model by showing that the phenomenon of privacy could be explored within the referent element. From the preceding discussion and review of research it is clear that privacy is only one socio-spatial issue amongst many. Others include, for instance, communication, status, cohesion, and space demarcation.

While all of these aspects of organisational and individual experience and process may be considered separately, an important question is whether there is some underlying conceptual unit, or facet, which may be used to incorporate them. In developing this potential facet the concept of privacy, which has already been explored, is of use.

Privacy is one aspect of social interaction regulation which relates to the environment. Part of the phenomenon of privacy is the ability to separate ones self from others. When one can not achieve a desired level of privacy, one experiences crowding; if too much privacy is achieved the experience is that of isolation. It is evident that a

distinction is being made between the objectives of the individual to be a separate being, and to be a social being; a member of a group.

It can be suggested from this that there is potentially a facet with at least two elements; distinct individual/self, and member of a group. Within an organisation there is likely to be third element, the organisation itself. In the remainder of this section further evidence for this facet will be considered.

In an organisation an individual has a need to be distinct within a department or group, and to be able to regulate interaction. Simultaneously it is necessary for the individual to be a member of a group for both their psychological welfare, and in order to perform tasks. As was observed previously, people go to work for personal and social reasons, as well as to work, and may experience stress when alienated from the group. The importance of being involved as a member of a group at work, rather than distinct from it, is shown in much of the research concerned with involvement, which will be considered in the next chapter. Additionally, the recognition that people act as members of groups is one of the central components of neo-classical organisational theory.

The distinction between the individual, work group, and organisation is fundamental to many studies of organisational functioning. Argyris (1964), for example,

considers the problem of integrating the individual and organisation as a central problem of organisational psychology, and Porter et al. (1975), in their text on organisational behaviour, include major sections concerned with "individuals, organisations, and their interaction" and "the development of individual-organization relationships". Indeed, one may define an organisation as a superordinate group of integrated units (Sharma, 1982). However, the units are themselves distinct.

In a review of research on organisational development, White and Mitchell (1976) propose three facets for the classification of studies in the field. Two of the three facets relate to the distinction between different social units. The first facet they propose is "recipient of change". This includes the elements of "The individual", "The subgroup", and "The total organization". White and Mitchell's second facet is concerned with the relationships which are involved in organisational change, and consists of the elements; "Intrapersonal", "Interpersonal", "Intragroup", "Intergroup", and "Organizational". Each of these social relationships are likely to be related to the physical environment. It should be pointed out that while White and Mitchell's five elements are applicable to the present study, here the three more superordinate elements of individual, group, and organisation are to be applied.

In considering the distinction between the individual and group, the works of Goffman are of interest. The concept of

front and back stage behaviour found in Goffman's (eg. 1959; 1961) writing reveals the distinction between the individual as an interacting part of a group, and the person as distinct from the interaction. Goffman places much emphasis on what may be termed time-space, and in doing so highlights the importance of the environment. In discussing Goffman's (1974) frame analysis, Giddens (1987) notes that;

"The architecture of locales is very significant for encounters, because it focuses specific types of available co-presence and influences the spacing of contacts undertaken." (p 120)

Goffman also makes observations about the nature of the social setting in relation to environments and activities. As Giddens (1987) relates;

"More formalized settings of interaction are those likely to be most closely linked with defined back regions ...(and) 'involvement shields' behind which activities that would otherwise be disapproved of can be carried on. All organizations in which formalized role relations are called for have areas ... which allow such shelter." (Giddens, 1987, p 121)

Finally, in more recent writing, Goffman (1981) has argued that when in the public or social domain individuals behave in such a way as to demonstrate their agency by providing signs of their control in situations where that control lapses briefly. Again, this demonstrates the importance of the environment, especially in formal organisations.

It is worth noting that the importance of the environment

in social and group relations is not only made by sociologists such as Goffman and Giddens, but also increasingly by social psychologists. The psychology of situations provides many good examples of this (eg. Argyle et al., 1981; Canter, 1984; Furnham, 1984).

The distinction between the individual and the larger social collective of which they are a member can be found in general environmental psychology. Nitt and Lehtsaar (1984), for example, propose a conceptual model for understanding person-environment relationships. The model includes two levels; the individual and social unit. The importance of the individual/group dichotomy is also revealed in work on offices.

Marans and Spreckelmeyer (1982; 1986) point to the need to consider the purposes of the group and individual in office evaluations. Additionally, Sundstrom, in his recent reviews of research on office design (Sundstrom, 1986; 1987), applies a structure to his writings which relate to the facet being developed here. Indeed, in a review of Sundstrom's book Donald (1987a) suggests that there is an implicit theory in the organisation of the work.

In the preface to his book Sundstrom (1986) describes its structure thus:

"the book is planned around an analytical framework on the influences of the work environment. The framework includes three units of analysis, which differ in size and scale: individual workers, interpersonal relations, and organisations." (p xii)

It is also noted in a later publication by Sundstrom (1987) that;

"an understanding of the relationships between people and the environment calls for a distinction among levels of analysis: individuals, interpersonal relationships, and organisations...the critical facets of the physical environment differ as a function of the level of analysis." (p 734).

It is perhaps worth noting that Sundstrom uses the term "facet" in its non-technical form. As we will see later, it is an argument of the present thesis that each unit relates, in fact, to all facets of the physical environment. However, if one considers Sundstrom's work a little more closely it can be seen that the use of the units of analysis by Sundstrom are a little different to those here; the difference lies in a weakness to be found in Sundstrom's (1986) conceptualisations which are revealed in his definitions of the units of analysis. The individual is defined as;

"a person who works in an organisation, analytically separate from his social context." (p 3)

and

"Interpersonal relationship refers to any transient or lasting bond between individuals, either job related or friendly. An important type of interpersonal relationship manifests as group (sic)" (p 3)

In the present discussion the group is taken as the unit of analysis rather than the interpersonal relationships of

which group is a consequence. Interrelationships are seen as a process which links the units of analysis. Thus each unit of individual, group, and organisation, relates to each facet of the environment, rather than interpersonal relations as a unit which only relates to socio-spatial facets. Having noted this, it should be pointed out that the study will, however, only consider this aspect of evaluation in relation to the socio-spatial referent.

In Sundstrom's discussion, the individual is considered distinct from his social context. The present conceptualisation also holds the individual to be distinct, however, the distinctiveness comes in part from the nature of the interpersonal relationships, in that the separation of self from group is interpersonal. Thus for the present author, interpersonal relations not only results in group, but also in the distinctiveness of the individual.

The group is a social unit. In the present thesis two social units at the group level are proposed. The first is the department of which an individual is a member. The second group is the organisation. Organisations are composed of numerous groups or departments. Sundstrom touches on this when he describes an organisation as including;

"a collection of people working in concert towards a common goal...by this definition members of an organisation comprise a group with a complex and differentiated social structure" (p 3)

The notion of a group being a subunit of a larger unit, and an organisation being a group composed of subunits, is consistent with systems theories of organisations. Taking the organisation as a group, one can hypothesise that the relationship between the individual and the department is similar to that which exists between the individual and the organisation. Further, however, it can be argued that the same relationship applies between the department and the organisation.

It is necessary to specify how these three units relate to one another conceptually in terms of the hypothesis regarding environmental evaluation. Here, in keeping with the general emphasis of the study, we will concentrate on socio-spatial considerations.

The individual exists as a distinct entity. He or she can evaluate the environment in terms of the extent to which it facilitates this objective and experience of distinctiveness. The individual also has the objective of being a member of a group. He or she can therefore evaluate the environment in terms of the extent to which it facilitates his or her experience of group membership. The group membership is in terms of the department and/or organisation. The individual can also evaluate the extent to which the environment facilitates the group objectives of distinctiveness from the organisation, as well as the group objective of being a coherent unit. He or she may also evaluate the extent to which the department is part of

the organisation. To summarise there three elements:

Element 1. Individual or self: Individual as distinct.

Element 2. Department: individual as a member of the department, the department as distinct from the organisation, and the department as a unit which allows interaction with the organisation.

Element 3. Organisation: Individual as a member of the organisation, groups as part of the organisation, and the organisation as a coherent, functioning unit.

In addition to the hypothesis that the environment can facilitate the objectives of the individual in terms of his or her relationship to the two groups, there is a second implicit hypothesis which is that the individual is able to evaluate the environment from the group perspective; a projective evaluation. For example, the person may evaluate the extent to which the environment facilitates his or her experience of being a member of the department. In addition, he or she can evaluate the extent to which the environment facilitates the integration of the group (department) within the larger social unit (the organisation).

The individual is thus making evaluations from different perspectives; as an individual and as a group member for the group. It can thus be suggested different perspectives; as an individual and as a group member for

the group. It can thus be suggested that individuals have "multiple perspectives" or "existencies". The action perspective which we have discussed previously supports this propositions. Gould (1983), for example, has argued that goals and purposes which guide behaviour may be those of a collective, a group, or the individual. If this is the case the individual must be aware of the group purposes, and moreover, be able to evaluate the extent to which the group purposes are being facilitated by the environment.

The final consideration with regard to this additional component of the model of evaluation is the relationship between the elements of the facet, and between this facet and the other facets of the model.

The elements may be either qualitative or quantitative in terms of their relationship to one another. If the elements are qualitatively differentiated, it can be expected that they will form circular regions in the space. If they are quantitatively ordered one can expect the regions to be parallel across the space, or radiating from the centre of the space in a similar manner to that proposed for the focus facet.

In relation to other facets of the model, they could play an axial role; a similar role to the level facet. They may form regions similar to the referent, or finally they may moderate the referent facet.

In the latter case the organisational unit would form the focus of the model. There are a number of implications which would ensue from such a structure. For example, if the evaluations from the perspective of the individual were found to be central, and those concerned with the organisation peripheral, it could be concluded that, in terms of office environments, the distinctiveness of the individual is central to their activities in the office. This hypothesis is one which ensues from studies which assume that privacy is central to office users. It is also the structure which White and Mitchell (1976) proposed for their "relationships" facet.

A circular structure would suggest that each unit is distinct, but that they are qualitatively differentiated. Assuming that items constructed from each element are found in the centre of the plots, and also toward the edge, the circular structure would imply that no one unit or perspective is more central than the other.

Given that the facet has been developed from an attempt to explore and refine the referent facet further, it is clear that the hypothesis here is that the elements are qualitatively differentiated, and that no one is more central to the evaluations than the others.

The present thesis will consider the unit facet in relation to the overall model including all elements of the referent. It is hypothesised that the three referent

elements will form the usual circular pattern. Additionally, however, it is hypothesised that the socio-spatial region will be sub-divided into regions which accord with the unit facet.

The data drawn from the socio-spatial referent will also be analysed separately. By focusing on the single referent element, the hypothesis implies that a projection of the SSA space will contain circularly arranged regions with partitions for each element of the organisational unit facet. By using only one referent element it will also be possible to reduce the complexity of the model, and thereby facilitate an understanding of this new aspect of the model.

While in the present study this facet is only being considered in relation to the socio-spatial referent element, and thus acts as a sub-facet, it seems likely that it is a facet in its own right, and could be combined with all of the referent elements. This hypothesis will not be tested here as to do so would require a substantial increase in the number of items included in the questionnaire.

6.8 Revised Mapping Sentence for Office Evaluation

The addition of this facet results in the mapping sentence shown in table 6.1.

Table 6.1

Revised Mapping Sentence for the Evaluation of Offices

The extent to which person (x) considers that the

Organisational Unit	Referent
(U1. Individual/Self)	(R1. Socio-Spatial)
(U2. Department)	(R2. Service)
(U3. Organisation)	(R3. Spatial)

objectives are facilitated by the design of the

Level		Helps a great deal
(L1. Immediate area)		
(L2. Office)	is ----->	to
(L3. Building)		Hinders a great deal

It can be seen from table 6.1 that the focus facet has not been included in the mapping sentence. From the preceding discussions, however, it is clear that the hypothesis is that the objectives and conditions specified by each particular item will relate to a focus which is the extent to which they are central/ancillary to the individuals experience, conceptualisation and evaluations of the environment. The reason the focus has not been included in the mapping sentence is that the items are not classified a priori in relation to the facet. In not imposing an a priori classification it is possible to observe those aspects of the environment-action which are most central. Future research may then utilise the results to develop the specifics of the a priori classification.

A final related issue which may require explanation is the change in the common range of the mapping sentence. In the pilot study the common range was specified in terms of satisfaction. In the present study it is in terms of the extent to which the environment facilitates particular objectives. The rationale for this change is that when a focus is in terms of general/specific characteristics of the environment, the common range is usually specified in terms of satisfaction with those features (Canter and Rees, 1982). However when the focus is in relation to the objectives, the common range is specified in terms of the extent to which those objectives are facilitated (Canter and Kenny, 1981).

The structures from the mapping sentence were interpreted in terms of specific questions. The environmental evaluation section of the final questionnaire consists of 41 questions and can be found in appendix 6.

The questions are answered using a five point Likert type rating scale. The values of the scale run from "Hinders a great deal" (1) to "Helps a great deal" (5).

6.9 Summary

In the present chapter the results of the environmental evaluation pilot study have been presented. The research supported the hypotheses presented in the previous chapter. In addition to validation of the GMS in the office context, an additional referent element concerned with socio-spatial

considerations was revealed. It was further shown that within this element it is possible to specify sub-elements. From this a sub-facet of organisational unit was proposed which includes three elements; individual, department, and organisation. It has further been hypothesised that empirically the elements of this facet will subdivide the regions of SSA space containing the referent facet.

The focus of work, and comfort, proposed in the previous mapping sentence was found to be invalid. The evidence suggested that the focus is likely to be in terms of the extent to which the environmental aspects are central or peripheral to the individuals objectives and evaluations.

CHAPTER 7

Pilot Study Part 2: External Domains

7.1 Introduction

At numerous points throughout the thesis the importance of descriptive models has been stressed. In constructing such a model the principal concern has been with the internal structure of the domain of office evaluation. A secondary aim of the present thesis has been specified as an exploration of the relationship between evaluations of the environment and a number of external variables. This secondary aim has two purposes. The first goal is to investigate the relationships in the hope that they will further our understanding of the relationship between the environment and both the individual, and the organisation. A second motive is to demonstrate the utility of the present approach to model construction by showing how descriptive models may be fruitfully used in the development of subsequent process type models such as that proposed by Narans and Spreckelmeyer (1982; 1986).

In this chapter the development of parts of the questionnaire aimed at measuring the external domains will be reported. The first part of the chapter deals with the development of a questionnaire to measure workers' perceptions of their organisations. The next section describes the piloting of the questionnaire and the consequent results. In the final sections of the chapter we

will consider the development of the final measures to be employed in the thesis. We begin the chapter with a brief discussion of the rationale for the inclusion of external variables or domains.

7.2 Evaluations and Systems/Contingency Theory of Organisations

The systems and contingency approaches to organisational theory suggest that people's evaluations of their environment will be a function of various components of the system. The most obvious component of the system which will bear upon people's evaluations is the physical environment; evaluations of the environment will depend upon the the actual objective physical conditions which exist. However, given the systems perspective, the direct relationship between the physical environment and evaluations is only a small part of the system. In addition to the physical conditions, the activities of the individual will also be important to the evaluations; the appropriateness of particular physical conditions is contingent on the goals of the individual, which in turn is dependent upon their position or role in the organisation.

Much research has considered the role related purposes an individual has for being in an environment, and their relationship to evaluations of the environment. The concept of environmental role (Canter, 1977; Canter and Walker, 1980; Donald, 1983; 1987) has been introduced in order to

explain some of the differences in evaluations and fundamental environmental conceptualisations. Donald (1983), for example, showed that a person's role-related activities in an organisation result in different evaluations of very similar environmental conditions. In these cases it appeared that the need for communication with a variety of other individuals was the important factor in the evaluations. Sundstrom (1986) has shown that a person's evaluations of the degree of privacy they have in an office is a function of their role in the organisation. Similar results have been shown from the work of other researchers (eg. Zalesny et al., 1985).

From a systemic perspective, one would expect there to be many other factors which are associated with differences in people's evaluations of their environment. Few factors other than roles and activities have, however, thus far been investigated.

The previously cited study by Duffy (1974a) is one of the few research projects which has attempted to look at organisational factors in relation to the environment, although, of course, it was not an evaluation study. Implicit in the early work of Duffy (1974) is the contention that the objective form of an organisation is likely to be associated with a particular objective physical form. This argument is against the contingency perspective which argues that there is no one appropriate physical condition; appropriateness is always contingent on

a number of factors. One could still, however, argue that an evaluation of an environment would be a function of the congruence between the organisation and the environment. There is a problem with this conceptualisation however.

Evaluations are based upon people's perceptions of their environment. A comparison between perceptions of the environment and the objective conditions of an organisation is likely to show only indirect relationships as there remains the question of the extent to which the objective conditions of the organisations are related to perceptions of it. More appropriate, therefore, would be a comparison between perception of the environment and perceptions of the organisation.

Katz and Kahn (1978), who propose a systems model of organisations, have argued that peoples perceptions of an organisation, in the form of its organisational climate, reflects, among other things, the physical layout of the organisation (p 50). If it is the case that organisational climate is influenced by office layout, it also seems likely that evaluations of the physical environment are related to organisational climate; perception of the organisation.

There are also likely to be other relationships which exist in an organisational system. Narayanan and Nath (1984) have shown, for example, the influence of group cohesion on the successful introduction of "flexitime" into

an organisation, and note that "with relatively few exceptions,...the moderating influence of the social system has gone undocumented." (p 274). In this study it was argued that there are a number of variables which moderate the outcome of the introduction of a change in a system. Likewise, it can be argued that the evaluations of an environment are likely to be moderated by other variables.

We have already seen that Katz and Kahn (1978) have argued that a relationship may exist between organisational climate and the environment. Narayanan and Nath (1984) have shown that cohesion is an important moderating variable in relation to other conditions in an organisation. If cohesion is an important variable in organisations, it is likely that it will have a relationship to environmental evaluations; this possibility will be investigated at a later stage of the thesis.

Marans and Spreckelmeyer's (1982; 1986) conceptual model for evaluating work environments proposes a number of relationships between various components of the organisational system. Factors included in the model are the objective and perceived characteristics of the users job. As we have seen this area has been relatively well researched. Also included are the actual physical conditions in which the person works; again a well researched area. Additionally, however, they include personal characteristics and organisational context. While

the inclusion of these two components suggests agreement with the proposition that evaluations of the environment are related to the organisational context, in this case as it is perceived, Marans and Spreckelmeyer do not adequately test the relationships.

In looking at organisational context, Marans and Spreckelmeyer simply compared evaluations of the environments of different organisations. The actual characteristics of the organisations were, in no adequate sense, measured. The same criticism is made of their measurement of employee characteristics. Not only does this lead to the necessity to study the aspects in an improved manner, but also helps to show how the use of descriptive models firstly allows a more full understanding to be achieved, but also by its very nature, forces the researcher to be more precise and rigorous in his or her conceptualisation.

It is worth pointing out that many early environmental psychologists carrying out research into office evaluations, noted the importance of factors other than objective physical conditions in the formation of people's evaluations. Amongst these factors were included, pay, kind of work, age, sex, status, previous environmental experience, and socio-cultural considerations (Broadly, 1975). Moreover, it was the realisation that the objective physical environment is but one factor in evaluations which began the erosion of environmental determinism.

From the preceding discussion a number of areas of possible study are evident. Those considered here will be organisational perceptions, cohesion, and worker characteristics. The latter of these are discussed at the end of this chapter. Organisational perception is discussed in the following section.

7.3 Organisational Perception

The principal external domain to be related to environmental evaluations is organisational perception. The rationale for this is that, firstly, the relationship has never previously been researched, and secondly, it is a major domain in terms of the context being studied.

In order to investigate organisational perceptions a second facet model for the domain of organisational perceptions will be developed. The development of the model is important and necessary for several reasons.

Firstly, there are numerous advantages which accrue from the development of a facet model for evaluation. These advantages, which have previously been discussed, apply equally to the field of organisational perception. Also, the production of this type of model is likely to facilitate the comparison of the two domains of evaluation and organisational perception as they are both amenable to similar analysis methods. Finally, no previous research has attempted to relate two distinct faceted models or domains.

The present study therefore makes a contribution to several areas.

Although there are various formalisations of organisational perception, there are at present no structural or descriptive models available in the organisational psychology literature. The first stage of the research is then, to develop the basic facets for the domain. In order to achieve this, it was decided that the pilot study be exploratory and as open as possible, thus allowing greater flexibility in the development of the facets. The specification of questions to be included in the pilot study was derived from an initial review of the relevant areas of organisational psychology. The most clearly relevant area is organisational climate.

7.3.1 Organisational Climate

The concept of organisational climate or culture has received considerable attention from organisational psychologists. Although there is some disagreement with regard to the appropriate conceptualisation of organisational climate, there is general agreement that its focus of concern is with people's perceptions of their organisations. This, of course, makes the concept directly relevant for our present purpose.

The centrality of perception in the concept of climate is clearly shown by the various definitions of the term.

Porter et al. (1975) argue that:

"At its simplest, the term refers to the typical or characteristic day-to-day properties of a particular work environment--its nature as perceived and felt by those who work in it" (p 456)

They later add that it is "a set of customs and typical patterns of ways of doing things" (p 489).

Using the similar term of organisational culture, Robbins (1986) notes that:

"organisational culture is a descriptive term. It is concerned with how employees perceive (the various characteristics of the organisation), not whether they like them or not." (p 431).

That the concept of organisational climate is one of perception is important for its validity. It has been argued, for example, that organisational climate is merely another way of conceptualising job satisfaction (Johannsson, 1973) and is thus redundant. Payne et al. (1976), however, point out that while there may be some overlap between the two concepts, job satisfaction is an affective response, while organisational climate is descriptive. Further, the focus of climate is at the organisational or departmental (Payne and Pugh, 1978) level rather than more micro level of the job.

It is clear from this brief discussion that the concept of organisational climate is directly relevant to present considerations. The next issue in need of attention is what the actual constituents of organisational climate are.

7.3.2 Constituents of Organisational Climate

In addition to the above considerations of organisational climate, it is necessary to specify those aspects of organisational activity which are relevant to it. A comprehensive review of studies of organisational climate by Campbell et al. (1970) revealed that there are four main aspects of the domain. A later review by Campbell et al. (1975) identified five elements. Robbins (1986) extended this number to seven. The most authoritative lists of the elements of organisational climate are, however, those provided by Campbell and his colleagues.

The 1970 review of organisational climate by Campbell et al. identified the following four constituents;

1. Individual autonomy, which refers to the freedom of the worker and their responsibility in decision making,
2. The degree of structure imposed on work positions. That is the degree of specification of tasks and supervision,
3. Reward orientation either in terms of individual satisfaction or company achievement,
4. The consideration and warmth especially from supervisors.

In the 1975 review Campbell et al. suggested, but did not include, a fifth element; cooperative interpersonal

relations among peers.

7.4 Pilot Questionnaire to Measure Organisational Perception

Taking the above works on organisational climate, a 33 item questionnaire was developed which addressed all the elements of the domain with the exception of reward orientation. This latter aspect was thought to be of less relevance than the other four. At this point no formal mapping sentence was produced.

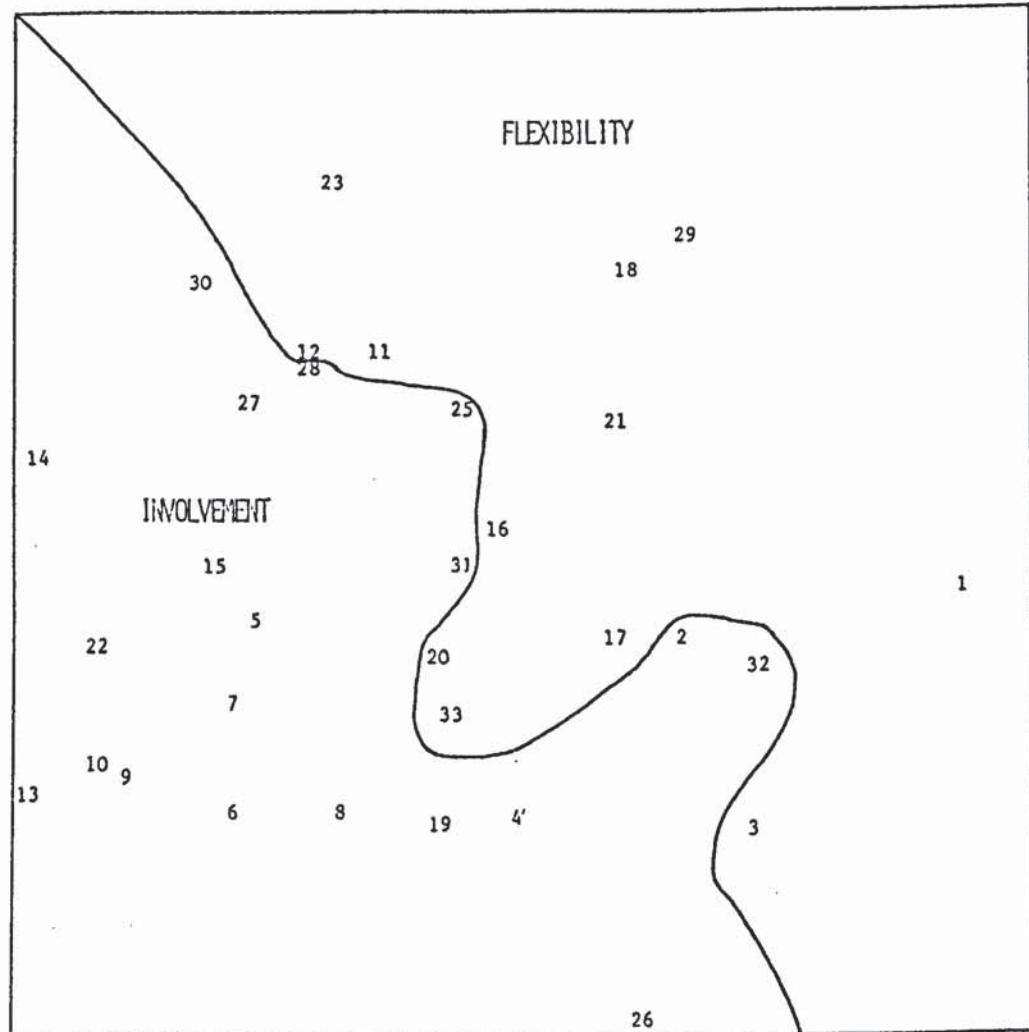
The questionnaire asked the participants to rate the extent to which a particular feature was evident in their organisation. The responses were made by way of a 7-point Likert type rating scale running from 1 (Never) to 7 (Always). The questionnaire itself is shown in appendix 5. The organisational perception questionnaire was combined with the environmental evaluation questionnaire and piloted at the same time using the same participants.

7.5 Results

The data from the organisational perception questionnaire were subjected to SSA. An acceptable coefficient of alienation of .21 was achieved. Only one of the SSA plots revealed any clear and interpretable regions. When considering the plot, shown in figure 7.1, it should be remembered that as no facets of organisational perception were prespecified, the results are likely to be less clear than would have otherwise been expected.

Figure 7.1

Projection of the SSA of the Organisational
Perception Pilot Questionnaire



The projection of the SSA space has been partitioned into two distinct regions. The upper area of the space consists of items which may be conceptualised as being concerned with flexibility. Examples of items included in this region are question 1, people have clearly defined roles and positions, question 11, the official designation of people to whom problems should be addressed, and item 18, the specification of the physical environment according to status.

The lower region of the SSA plot includes items which are interpreted as being concerned with involvement. Examples of questions forming this region include, item 7, you are asked to participate in decisions, question 22, most of your friendships are with people in your office, and question 4, people at the top of your organisation are isolated.

From the above results, the "mode" facet of organisational perception may be hypothesised. The facet contains two elements; flexibility and involvement.

At this point some clarification as to the present area of interest should be made. This part of the thesis is concerned with people's perceptions of the organisation, and not with their attitude toward their organisation or job. This distinction is important, and attention has been drawn to it in order to avoid any possible confusion in

relation to the involvement element.

The above conceptualisation may be clarified by a brief consideration of the areas in which the concept of involvement has been used in organisational psychology. Etzioni (1961), for example, has discussed the involvement which an organisation can elicit from an individual. In this form involvement is by the individual in the organisation, and not the organisation's involvement in them. Similarly, the term involvement has had wide currency in the organisational literature to describe a person's psychological relationship to their job (eg. Jans, 1985; Kanungo, 1979; 1981; 1982; Rabinowitz, 1981; Rabinowitz and Hall, 1977). Again, this conceptualisation is concerned with the involvement of the individual in his or her work. Here we are concerned with people's perceptions of the extent to which the organisation involves them, or is involved in them, and the extent to which they perceive the organisation to be flexible in relation to them.

7.6 Further Facets of Organisational Perception

Although there is only evidence for one facet from the results of the pilot study, it can be expected that additional facets exist. These facets were sought from a reconsideration of the literature on organisational climate and the interests of the evaluation study.

When discussing the differences between the concepts of organisational climate and job satisfaction Payne and Pugh

(1978) argued that;

"climate is a 'molar' concept applying to the organisation as a whole, or some definable department or sub-system within it" (p 370).

The statement clearly shows that there may be more than one unit of analysis when considering organisational climate, and that there may be a facet which includes departments and work groups. In effect, this implies that each sub-system of the organisation has its own climate. In terms of a model of organisational perception, one can specify subunits for the organisation, and hypothesise that people perceive each unit as distinct.

Studies have demonstrated that different departments within an organisation have different perceptions of organisational climate (cf. Stern, 1970). One implication from this is that people may be describing organisational climate in relation to the particular department, rather than the organisation as a whole. If it is the case that different parts, or units, of the organisation are perceived differently to the organisation as a whole, there are important implications for organisational psychology.

The development of the office evaluation mapping sentence included an additional facet consisting of the elements of organisation, department, and individual/self. The inclusion of this facet also suggests that the addition of an "organisational unit" facet to the organisational

perception mapping sentence would be useful.

Thus a second facet can be added to the organisational perception mapping sentence; organisational unit. This facet consists of two elements; organisation and department. Naturally other subunits could be added. However, two are sufficient for present purposes, and the inclusion of other subunits would need to be specified in relation to the form of particular organisations and activities. If empirical support is found for the department/organisation distinction it will have a number of important implications for organisational theory. These will be considered in the final discussions of the thesis.

Although the two facets above are sufficient for present purposes, in the interest of general theoretical development a third can be added. A department or organisation may be involved in, or flexible toward, an individual in relation to a number of areas of organisational life. The department may, for example, involve the individual in the design of his or her physical environment, but not in general organisational decisions.

These types of difference suggest that a third facet is useful. The facet therefore includes the areas of organisational life to which involvement or flexibility refer. The elements which have been selected for this facet attempt to cover those areas thought to be of importance in organisational life. Others may be considered more

relevant, however, the principal interest here is to consider the first two facets of the domain. The reason for adding a third facet is essentially for the development of theory in general, rather than specifically for the present thesis. The inclusion of this facet will, at least, reveal whether or not it is a valid facet. It would then be for future research to specify the particular elements in accord with the specific objectives of that research.

Combining the three facets results in the mapping sentence for people's perceptions of their organisation, shown in table 7.1.

Table 7.1

Mapping Sentence for Organisational Perception

The extent to which person (x) perceives the

Organisational Unit	to be	Mode	them
(U1. Organisation)		(M1. Involved in)	
(U2. Department)		(M2. Flexible toward)	

in the area of Organisational Life Area

(01. Well-being/Welfare)	
(02. Communication)	
(03. Environment)	
(04. Work)	
(05. Social)	

Very High

is -----> to .

Very Low

From the above mapping sentence it is possible to generate 20 different structuples. From these structuples the first 30 questions contained in the organisational section of the final questionnaire, shown in appendix 7, were formulated. The actual questions take the form of statements. Participants were required to indicate the extent to which they agreed or disagreed with the statements by means of a 5 point Likert type rating scale, running from "Strongly Disagree" (1) to "Strongly Agree" (5).

7.7 Departmental Cohesion

In addition to the organisational perception questions, a further four items were added to this section of the questionnaire in order to measure departmental cohesion which has been shown to be an important component of the organisational system. While these items are, to an extent, related to organisational perception, they were not generated directly from the mapping sentence, and were not to be analysed along with the perception items.

A mapping sentence was not developed for the domain of cohesion. The content of the questions was taken more directly from the literature on organisational cohesion. This work will be briefly reviewed in the next section.

7.7.1 The Concept of Cohesion

The definition of the concept of cohesion has been rather

confused (Evans and Jarvis, 1980; Tziner, 1982). The comments made by recent contributors to the field reveal striking parallels between the study of cohesion and that of environmental evaluation in terms of the inadequacies of the two fields. A brief consideration of the criticisms of cohesion studies is useful for an understanding of the domain, as well as helping one to understand further why the development of descriptive models is important. Drescher et al. (1985), for example, have argued that;

"varying measurement methodologies often make it difficult to compare across studies that employ similar variables and almost impossible to integrate conclusions about cohesion and different variables." (p 5-6)

and Burlingame et al., (1984) have contended that;

"Without clearly articulated measurement parameters to compare process variables, the explanatory power across process studies is seriously compromised because the parameters of the different conceptual boxes being investigated are left unstated." (p 443)

If one considers the process model of, for example, Marans and Spreckelmeyer (1982) in office evaluation, it is clear that the same criticisms hold. It should also be apparent that the GMS and the office evaluation and organisational perception mapping sentences define the measurement parameters of the main body of the research presented in this thesis.

Finally, Burlingame et al. (1984) argue that the development of a framework for small group research, similar to that of the periodic table in chemistry, would

clarify and greatly improve the field of study. This analogy was also drawn by Donald (1983), who argued that the purposive model, and the use of facet theory, is, potentially, one way of producing such a framework or paradigm.

Although the study of cohesion is part of the research presented here, it is not the intention of this research to clarify the conceptual meaning of cohesion, but to simply discover whether there is a relationship between office evaluations and cohesion. However, given the lack of conceptual clarity, which is noted in the above writings, it is necessary to specify what is being studied in terms of the existing conceptualisations and distinctions made by contributors to the field.

One of the first widely accepted definitions of cohesion was provided by Festinger et al. (1950) who stated that cohesion is, "the total field of forces which act on members to remain in the group." (p 164). The problem with this definition is, firstly, that it requires the identification and measurement of "the total field of forces". Secondly, it necessitates an understanding of the way in which the forces combine (Evans and Jarvis, 1980). Finally, the fact that there are forces keeping an individual in a particular group does not necessarily mean that they wish to be a member. As a consequence of these problems, a more useful approach was taken by Libo (1953)

who distinguished between cohesion and attraction-to-group.

Methodologically the above distinction presents problems. Cohesion was, and often is, viewed as the sum of the group members attraction to the group. This, of course, assumes that the whole is merely a sum of its individual parts. It seems more likely that, in reality, the whole represents more of a gestalt.

Due to these problems van Bergen and Koekebakker (1959) argued that attraction to the group and cohesion should be considered to be separate concepts. This contention has more recently been reiterated by Evans and Jarvis (1980) who propose that the concepts be separated and independently investigated. Of the two concepts, cohesion and attraction-to-group, Ven Bergen and Koekebakker (1959) suggested that attraction-to-group is the most useful.

The distinction between the two concepts is not recognised universally. Cartwright and Zander (1960), in their influential and comprehensive review of group dynamics, for example, failed to make the distinction. This was also the case in Cartwright's later review (Cartwright, 1968). As Cartwright's definitions are widely accepted and used, many studies continue to be made which ignore the conceptual and methodological problems (eg. Narayanan and Nath, 1984).

In the present study, it is not the intention to assess the level of cohesion of any one group, but rather to consider individuals' feelings and perceptions. The problem of

summing the responses is not of concern. This focus also implies that the issue addressed here may more usefully be considered attraction-to-group.

In his discussion of the field, Libo (1953) argued that the best measure of attraction-to-group is the individual's decision, as shown by their actual behaviour, to remain a member of the group when forced to make a choice. Verbal statements regarding such a decision are considered the next most appropriate measure (Evans and Jarvis, 1980). With regard to the present study, there are likely to be pressures, for example financial, keeping the individual in a group. If people were not attracted to the group they are likely to have left the organisation in the absence of "coercive" pressure. As a consequence a verbal statement in relation to a hypothetical proposition would seem most appropriate. Of course, in an artificial, experimental context, behaviour could be observed in preference to verbal statements.

It has already been noted that the forces acting on a member to remain in a group may be irresistible; membership may not be voluntary. It is therefore possible that a group could be composed of members who experience considerable force to be a member, but who may also be alienated from the group. It can also be added that attraction-to-group may be an outcome of the "total field of forces", but be confined to those forces which are voluntary.

Evans and Jarvis (1980) have defined attraction-to-group as an "individual's desire to identify with and be an accepted member of the group." (p 366). Operationalisations of the concept offered by Evans and Jarvis (1980) include assessments of the individuals feelings of acceptance, and desire for continued membership of the group.

In a study of the influence of cohesion on the introduction of flexitime into an organisation, Narayanan and Nath (1984) take the responses to two questions as an index of group cohesion. The first question, "How do you feel concerning your work group ?" includes the potential response of, "I do not feel I really belong". The second question asked, "If you had a chance to do the same kind of work for the same pay in another group, how would you feel about moving ?" Both of these questions are adapted from the work of Seashore (1954). They also accord with the work of Libo (1953), and the respected contributions made by Evans and Jarvis (1980). Consequently, versions of these two questions can usefully be included in the present study, and can be found in the organisational perception section of the questionnaire; questions 31 and 32.

An additional aspect of cohesion which has been considered is the sharing of interests and goals by group members. Evans and Jarvis (1980) argue that different factors enter into the development of cohesion and attraction-to-group, amongst these are shared goals and concerns. The sharing of

goals, as a part of cohesion, is also found in the work of many authors investigating the processes associated with the achievement of task objectives (eg. Anderson, 1975; Carron, 1982; Homans, 1950; Lewin, 1948).

Carron (1982), in relation to sports teams, has contended that, in addition to attraction-to-group, measures should also reflect the goals the group is striving to achieve. Additionally, in the organisational and industrial context, there has been work which has looked at the relationship between cohesion and productivity in terms of shared organisational goals (eg. Schriesheim, 1980; Stogdill, 1972). Given the relationship between cohesion and productivity, a relationship between office evaluation and cohesion may imply an indirect productivity-environment relationship.

Both Carron (1982) and Yukelson et al. (1984) have argued that while attraction-to-group is important, it often underestimates cohesion. As a result of these studies and arguments, a further two questions were added to the measure of cohesion. These additional items are questions 33 and 34 of the organisational perception section of the questionnaire, and measure shared goals and interests.

Thus the final part of the organisational perception section of the questionnaire contains four questions for the measurement of the individual's feelings of attraction to the department, and perceptions of the department's

cohesiveness. This part of the questionnaire will be referred to as "cohesion" although it is not a measure of the total department's cohesion, the scores are not summed, but is a measure of the individual's feelings and perception.

7.8 Work Orientation

The final part of the questionnaire aimed at addressing the individual's work orientation; their general approach to life at work. Rather than looking at the multifaceted distinctions considered in relation to organisational perception, this section of the questionnaire was to be more limited. The only distinction to be made is between orientations in terms of involvement and flexibility. In essence the section is concerned with the extent to which the individual is flexible in their approach to work, and the extent to which they prefer to be involved in life at work. In keeping with the rest of the questionnaire, the orientation section aims at eliciting descriptions of the way in which people prefer to approach life at work, rather than an assessment of the extent to which their desires are fulfilled.

The model of office evaluation proposed by Marans and Spreckelmeyer (1982; 1986) which has been described previously, and mentioned on many occasions throughout the thesis, includes the component of personal characteristics. By personal characteristics Marans and Spreckelmeyer in

fact refer to the organisation for which the individual works, and the classification of the job they perform. In using this scheme they are in keeping with many researchers in the field who have used similar forms of classification.

The use of job characteristics is not in itself problematic. However, it could be argued that organisation and job characteristics are not personal characteristics, as Marans and Spreckelmeyer suggest, but are in fact role characteristics. The difference between personal and role characteristics is important. Had Marans and Spreckelmeyer been more stringent conceptually, the distinction would have been made.

It is not the intention to dwell on this issue at any great length, however, as the issue of the difference between personal characteristics and role is important, some brief discussion must be given to it. To begin it is useful to have a definition of role. Israel (1972) describes the concept thus;

"Man has certain positions within the social system and related to those positions are normative expectations concerning the individual's behaviour and concerning relevant attributes. Positions are independent of a specific occupant. The same is true of the expectancies directed towards a position; they are defined as the role of the incumbent of a position." (p 140).

While there may be variety in the definition of the concept of role, all agree that roles are independent of the occupant. If we consider job characteristics to be role related, then one can suggest that the relationship between

the role and the evaluations is, to an extent, independent of the individual. Personal characteristics are brought to the role, but the role itself is different from these characteristics.

The difference between role and personal characteristics has important implications, and this discussion is not merely a matter of the author being overly fastidious. If, for example, a particular environment is evaluated negatively by a person, it may be decided that changes should not be made to the environment as another individual may be more positive with regard to it. If the negative evaluation is due to the personal characteristics of that person, the decision, albeit unfortunate for the individual concerned, may be correct. However, if the negative evaluation is a result of an incompatibility between the role, perhaps job characteristics, and the environment, the decision would, in all probability, be wrong, as whoever occupies the role will make a similar evaluation. Even this trivial example serves sufficiently to demonstrate the need for basic conceptual care on the part of the researchers.

In the research reported here, personal characteristics will be included and be taken to mean the characteristics of an individual and not the role occupied by them. The personal characteristics which will be the focus are the person's personal orientation towards their work and work context.

As with the notion of organisational perception, the concept of worker involvement orientation touches on a number of areas of organisational psychology, the closest of which is the concept of job involvement. While the two areas are linked, it is necessary to delineate the area of interest of the present thesis, from that which exists in organisational psychology, in order to avoid confusion. In the following pages theories and research on involvement, some of which has briefly been touched on previously, will be discussed.

7.8.1 Job Involvement

The extent to which issues addressed here overlap with those of job involvement depends upon the definition of job involvement which has been applied by the researcher with whom one is making comparisons.

Numerous writers, following the work of Allport (1947), have considered job involvement in terms of ego involvement. Rabinowitz and Hall (1977), after reviewing much of the literature on job involvement, noted that two widely used definitions are, the psychological importance of work to the person's identity, and the extent to which performance at work affects the individual's self-esteem. That these two definitions are so widely used is due, to a great extent, to the majority of researchers in the field using measures developed by Lodahl and Kejner (1965), who define involvement as, "the degree to which a person is

identified psychologically with his work, or the importance of work in his total self image." (p 24), and "the degree to which a person's work performance affects his self esteem." (p 25).

Kanungo (1981; 1984) has severely criticised the work on job involvement arguing that the field is confused, and the concept heavy in "excess meaning". In defining job involvement Kanungo (1982) states that "involvement either in the context of a particular job or with work in general, can be viewed as a cognitive belief state of psychological identification." (p 342). While Kanungo criticises previous work, his basic perspective is fundamentally similar to that of those he criticises.

Using Kanungo's definition of involvement, it is possible to distinguish it from the approach being taken here. Kanungo, and those who share his general view, may be thought of as being concerned with job identification. The potential for confusion between work orientation and involvement as a part of it, can be reduced by keeping in mind the difference between "identification" and "involvement". Additionally in the above instances job involvement is likely to lead to a particular orientation, rather than being the orientation itself.

An additional aspect of Kanungo's definition is the distinction which is made between identification with one's job, and with work in general. In the present study no

distinction between these two aspects is being made.

Saleh and Hosek (1976) developed a job involvement 'scale based on a review of the measures used in many previous studies. A factor analysis of the data derived from the scales resulted in three factors; cognitive, conative, and instrumental. From this they concluded that job involvement is the degree to which a person identifies with their job, considers their performance important for their self worth, and finally, the factor most relevant to our present concerns, the extent to which they actively participate in their job.

Saleh (1981) notes that active participation is dependent upon beliefs and situational variables, and thus upon job involvement, and is not a part of the concept itself. It is therefore suggested that the behavioural component of job involvement should "refer to the person's intentions to participate and to perform various behaviors which reflect his feelings and cognitions." (p 23).

The above aspect of Saleh's multivariate definition of job involvement concurs, to an extent, with the concept being used here. Thus in terms of work orientation, we are addressing this one part, or factor, of the conceptualisation of job involvement.

7.8.2 Organisational Commitment

A second concept which may be thought to have some connection with the notion of orientation is organisational commitment (Porter et al., 1974), which Kanungo argues, has been confused with job involvement, but which should be considered as a separate issue (Kanungo 1982).

In common with job involvement, organisational commitment has been defined in numerous ways. Kanungo (1982) considers commitment to be " a general attitude toward an organisation as a whole." (p 342). Porter et al. (1974) argue that there are three components of organisational commitment; a strong belief and acceptance of the organisational goals and values, a willingness to exert considerable effort on behalf of the organisation, and a strong desire to remain in the organisation. Luthans et al. (1985), using Porter et al.'s perspective, state that an "employee who is highly committed to an organisation intends to stay with it and work hard toward its goals." (p 213). Taking these descriptions of organisational commitment one can discern only a little overlap between the concept of organisational commitment and the concept of orientation being used in the present thesis. However there are several other definitions which do bring the two concepts closer together.

Steers (1977) defines organisational commitment as the strength of an individual's identification with, and involvement in, a particular organisation. Steers'

definition makes a distinction, drawn previously by the present author, between identification with, and involvement in, an object. Buchanan (1974) provides a similar definition in which he includes loyalty to, identification with, and involvement in, an organisation as part of the domain of organisational commitment.

Factors such as loyalty and involvement in relation to the organisation are aspects of the present orientation concept. Thus there are some points at which work orientation and organisational commitment meet, but due to the inclusion of the concept of identification in the domain of organisational commitment the two concepts are not exactly the same.

Thus, in conclusion, it can be seen that work orientation overlaps with job involvement and organisational commitment, but is distinguishable due to its lack of concern with identification.

Taking the two basic elements of work orientation 30 questions were constructed to measure the individuals approach to their work context. These 30 questions can be found in appendix 8. Responses to these questions were made using the same 5 point Likert type scale as was used for the organisational perception questionnaire. The rating scales were, in all cases, changed from a 7 to a 5 point scale following the pilot study. This was due to evidence that the extremes of the 7 point scale were not being used.

7.9 Additional Questions

A number of questions in addition to those discussed above were included in the questionnaire. The inclusion of these questions was as a matter of interest and was for use in later research; they were not to be the concern of the present research. The full questionnaire including all items has been included in appendix 9 in order that the reader may observe the actual questionnaire completed by the respondents. It should be mentioned that the actual questionnaire took the form of a booklet, and was reduced to half the size of that shown in the appendix.

7.10 Summary

In this chapter the development of a pilot organisational perception questionnaire based on the concept of organisational climate has been described. The results of the pilot study revealed a facet including the elements of involvement and flexibility. To this were added two additional facets. Of these two, the organisational unit facet, consisting of the elements of department and organisation, is of concern in relation to environmental evaluation.

In addition to the organisational perception questions, four questions were derived from the relevant literature in order to measure feelings of departmental cohesion. Finally a questionnaire to measure work orientation was developed. Questions covering each of these three areas were included

along with the environmental evaluation questions in the final questionnaire. A number of other questions were added to those described above, but they are not considered part of the thesis.

CHAPTER 8

Participating Organisations and Data Collection

8.1 Introduction

It had originally been intended that organisations would be systematically selected according to a number of characteristics; size, type of office occupied, whether in the private or public sector, and type of work performed. From the response of the organisations invited to participate, it rapidly became apparent however, that such systematic selection was not going to be possible. The basic failure to obtain organisations willing to participate not only helps to explain the paucity of research of the type presented here, but also produced some useful insights into the problems, and their aetiology, of applied research.

In this chapter the process of obtaining the participating organisations will be related, along with the data collection procedures used. In the first sections the problem of obtaining organisations willing to participate will be described.

8.2 Contacting the Organisations

The names and telephone numbers of more than sixty organisations were obtained from business directories and Yellow Pages. Telephone contact was then made with the organisations in order to obtain the name of either the

office or personnel manager. The names of these individuals were sought so as to make it possible to address correspondence to them personally and, as a consequence it was hoped, improve the likelihood of securing a more positive response to the invitation to participate.

In some instances the author's initial call was directed to the appropriate individual or department within the organisation. The person to whom the call was directed was given a brief explanation of the study. They were then told that an explanation of the study, along with a sample questionnaire, could be sent to them. In most cases the organisation agreed that this was the appropriate way in which to proceed. In a small number of cases the organisation simply stated that they operated a policy of not taking part in such studies. Contact with these organisations was then, obviously, terminated. All other organisations were sent a letter.

The letter itself (appendix 10) explained the nature or content of the research and that it would be confidential. They were also told that the study was being conducted by the university and that a report of the findings would be available to them.

Following the letter, telephone contact was made with the organisations in order to take the matter further. The response of the organisation at this point was either a refusal or, for those who had not already received one, a

request for a copy of the questionnaire. Often a verbal refusal was followed by a letter stating similar. The reasons given for the refusal to participate were not always the same in the letter and during the telephone conversation. Following the remaining organisations receipt of the questionnaire they were again contacted by telephone. In all cases the organisations declined to take part.

8.2.1 Reasons for Refusal to Participate

There is very little applied research which has considered the relationship between the office environment and the organisation which it houses; there is no research which attempts to look at workers' perceptions of the organisation in relation to their evaluations of the office. The response by the organisations which were invited to participate in the present study are interesting in that they provide clues as to why this may be the case.

A number of organisations declined the offer to participate simply because they had a blanket policy of not taking part in such research. Of the remainder of organisations, the reasons given for not participating were varied and often inconsistent.

One of the first organisations contacted agreed, during a telephone call, to participate in the research. They requested a copy of the questionnaire as a "formality". Having received a questionnaire they declined to take part.

A letter sent explaining the reasons for not participating in the research, stated that they were already involved in a similar project. However, an "off the record" conversation with a member of the organisation revealed that concern had been expressed that an environmental evaluation may cause unrest amongst their employees as it was known that they were very dissatisfied with their work environment. Other organisations expressed, although never in writing, similar fears in relation to other parts of the questionnaire.

These responses are interesting in that they reveal a belief, which appears to be wide spread, that provided one ignores a situation, problems will not have consequences, and more worrying, that research will create, rather than solve, problems for an organisation. It also suggests a problem in sampling in applied research in that, organisations will only participate when it is believed that the workers are satisfied. This problem also extends to another aspect of research; the actual content of the research. For example, on several occasions organisations suggested that they would participate if the questions about the organisation were deleted. Together these problems suggest that not only may samples be biased, but also, that many crucial questions can not be asked or researched.

The above is not reported as a criticism of the

organisations' refusals to participate. It is noted as a matter of interest, and because it provides some insights into the lay imagination with regard to the consequences of research. The problem is of sufficient importance to be worthy of study in its own right.

Finally, it is also worth mentioning that many of the organisations asked for details of the results of the research as they thought the study would be of value to them.

8.2.2 The Participating Organisations

The problem of participation was finally overcome when the author was invited to distribute his questionnaire throughout four organisations where a study of the health effects of environmental conditions was being conducted.

There were two potential problems which could have arisen from collecting data in these organisations. Firstly, the participants had been taking part in the health study over a relatively long period of time, hence their commitment to research. As a consequence of this, their responses to the questionnaire could have been coloured by their belief that it was concerned with health issues. However, it was clear that the respondents viewed the service aspects of their environment to be relevant to health problems. The present study focuses on socio-spatial considerations and, therefore, it seems unlikely that the use of this particular sample is problematic.

The second problem was that a health questionnaire was being distributed at the same time as the present questionnaire. As it was thought impractical and undesirable that people should complete both questionnaires the potential sample was drastically reduced. However, under the circumstances it was thought that a reduced sample was preferable to none at all. Additionally, while the sample from each organisation may be reduced, the total sample is sufficiently large as to allow generalisable conclusions to be drawn by analysing the sample as a whole.

The principal concern of the thesis is with generalisable models and relationships regardless of the particular objective conditions which give rise to them. As a consequence, descriptions of the actual organisations and environments in which the participants worked is not of major importance. Nonetheless, some brief details of the buildings and organisations in which data was collected is given appendix 11 as a matter of general interest. As some of the organisations were housed in more than one building, the four different contexts in which data were collected will be referred to as Site's 1 to 4.

8.3 Data Collection

The questionnaires were distributed throughout the organisations personally by the author. Individuals who occupied open plan offices and were not taking part in the

health project were invited to take part in the study. Participants were randomly selected. Every third person in each office was chosen. None of the participants took part in the environmental health survey. Prior to being given the questionnaire the participants were told that the study was not concerned with health issues, and that it was a general evaluation of the office environment. They were also told that there was an interest in the way people perceive their organisations. It was emphasised that the study was independent of the organisation and that all responses would be completely confidential.

Participants were then given a copy of a questionnaire and a postage paid envelope addressed to the author. They were asked to return the completed questionnaires within the following five days. A number of questionnaires were returned to the author while at the site, the majority, however, were returned by post within the specified time.

It was necessary to explain the purposes of the study to each individual so as to minimise the potential influence of a belief that the questionnaire was concerned with environmental health. The time taken to explain the study also, unfortunately, resulted in a reduction in the possible number of participants who could be invited to take part in the study. The return of questionnaires by post was also thought to be likely to reduce the number of responses. However, given the time necessary to complete the questionnaire, it was felt that it was unreasonable to

expect all the respondents to complete them during the day at work.

8.4 Sample Size

After removing questionnaires which were substantially incomplete or spoiled, the following sample sizes were obtained from each collection site and utilised in the study.

Site 1 n=36

Site 2 n=45

Site 3 n=73

Site 4 n=62

Total Sample size =216

The actual number of of questionnaires distributed at each site were:

Site 1 58

Site 2 81

Site 3 120

Site 4 109

In each case the sample size reflects, approximately, a 60% response rate.

CHAPTER 9

Results 1: Multivariate Model of Office Evaluations

9.1 Introduction

The results of the study cover a number of areas and issues. Each of these are considered in separate chapters. The aim of the first stage of the analysis, presented in this chapter, is to establish the overall multivariate structure of the model of office evaluations. For this model, all evaluation questions, and the full sample of participants, are included in the analysis. Obtaining a full model of office evaluations allows comparisons between the present research and that conducted previously.

The focus of the research is on the socio-spatial referent of the evaluations. The results of the analysis of these items will also be presented in this chapter, in relation to the full sample, and each site separately. This latter analysis is, in effect, a check on the consistency of the model.

The full data set is used to establish the model as it allows the utilisation of the maximum number of individuals, and thereby reduces the likely effects of idiosyncratic responses which may distort the correlationally based structure. Using all available data also has the advantage of producing a more universal, less site specific, model as it is not subject to the unique characteristics of any one building or organisation. The

model also provides a basis for the construction of scales for subsequent analysis.

9.2 The Questionnaire and the Domain of Evaluation

The first stage in developing an overall model is to establish the extent to which the items of the research instrument address a single coherent domain. In order to discover the degree to which this is the case, it is necessary to examine the inter-item correlation matrix so as to discern whether there are any large negative correlations between items, which may suggest that they are not part of the same domain, and therefore should be removed from the analysis. Before considering the analysis itself, it is worth discussing the rationale for it.

As the principal methodological base for the present thesis is derived from the work of Guttman, it is appropriate that the argument given by Guttman for seeking a positive matrix of correlations should be considered.

Assuming that an evaluation is a statement of attitude (Donald, 1983; Kenny, 1983), one can consider Guttman's, so called, first law of attitude, in which he states that:

"if any two items are selected from the universe of attitude items towards a given object, and if the population observed is not selected artificially, then the population regressions between these two items, will be monotone and with a positive or zero sign." (Gratch, 1973. p 36)

In addition to the above conditions, the items must be

napped into a common range and have the same directional meaning.

What Guttman is arguing is basically rather simple; if one is assessing an attitude toward a particular object, in this case a person's office environment, then all the attitude items referring to that object should be positively correlated. If this is the case then one is in a position to argue that the items are a part of the same domain.

The issue is more complex in practice than the above implies. Firstly, there is a question as to how large the negative correlation between two items must be before one can conclude that they belong to different domains. The size of a negative correlation may be a function of the sample size. Therefore, one must be rather careful about making decisions based on relatively small sample sizes. This cautionary note, of course, provides a further reason why the analysis of the entire data set is desirable.

One method of addressing the issue of the size of the negative correlations is to apply a test of statistical significance to the correlation coefficient. This, however, raises the question of the level of statistical significance which is to be accepted. Additionally, there is the question of, how many items must an item correlate negatively with, before it is considered to be drawn from a different domain.

It is clear that one can not simply remove an item if it is negatively correlated with a small number of other items of a questionnaire. In order to assess the extent to which items are all of the same domain one can recast the problem in terms of the internal consistency of the questionnaire. In doing this one is continuing the basic theme of Guttman's arguments, but drawing on standard psychometric notions of reliability. In essence, the two approaches are addressing the same issue; the extent to which the items are measuring the same thing. In order to assess the internal consistency of a set of items the most appropriate, and widely accepted analysis is Cronbach's coefficient alpha (Cronbach, 1951).

9.2.1 The Correlation Matrix

Pearson Product moment correlation coefficients were calculated between all 41 environmental evaluation items using data from 216 participants. The lower tri-angular matrix is shown in appendix 12. Inspection of the correaltion matrix reveals 43 negative correlations between the full set of items. As there are 820 correlations in the lower triangular matrix of 41 items, this is not a very substantial number. Additionally, none of the items correlate negatively with item 41, a general evaluation question.

Of the 43 negative correlations, the largest negative value

is only -0.12. This is between item 13 and items 4 and 5 ($P < 0.05$). As those items which do have a statistically significant negative correlation only do so with one or two items, it would not be justifiable to remove them. It can be concluded, therefore, that all items are drawn from the same domain.

9.2.2 Internal Consistency of the Questionnaire

The final analysis to be conducted was the calculation of the coefficient alpha to test the internal consistency, and thus reliability, of the items. The standardised alpha coefficient resulting from the analysis is 0.90498. Even though the magnitude of the alpha coefficient is, to some extent, a function of the number of items, the more items the higher the alpha value is likely to be, a coefficient of .9 is high. Thus the environmental evaluation items of the questionnaire have a high degree of internal consistency.

With regard to acceptable levels of alpha as a standard of reliability, Nunnally, in his authoritative text on psychometrics, states that:

"In the early stages of research on...hypothesised measures of a construct...reliabilities of .60 or .50 will suffice...For basic research it can be argued that increasing reliabilities beyond .80 is often wasteful...In those applied settings where important decisions are made with respect to test scores, a reliability of .90 is the minimum that should be tolerated, and a reliability of .95 should be considered the desirable standard." (Nunnally, 1967. p 226)

The applied research Nunnally is discussing here is, for example, the placement of school children according to IQ test scores. Of course, the basic research being reported here is not going to be used for such crucial decision making. Therefore a level .5 and above is acceptable.

In order to discover whether the internal consistency of the items would be increased by the deletion of specific items, the alpha coefficient for the set of items, following the deletion of each individual item, was calculated. The results of this analysis, shown in appendix 13, reveal that no significant increase in the internal consistency of the questionnaire would be gained by deleting any one of the items.

In conclusion, it can be said that the items of the evaluation section of the questionnaire are drawn from the same domain and are highly reliable in terms of their internal consistency. Having established this we can now turn to the actual structure of the evaluations.

9.3 Full Structure of Office Evaluation

In this section the results of the analysis to determine the overall structure of the office evaluations are presented. The results are based on the analysis of all the environmental evaluation questions using the data from all of the completed questionnaires. In order to achieve this the data were subjected to Smallest Space Analysis (SSA). The SSA solution has an acceptable coefficient of

alienation of 0.19. The support for each facet will be discussed in the following sub-sections.

9.3.1 Level of Interaction

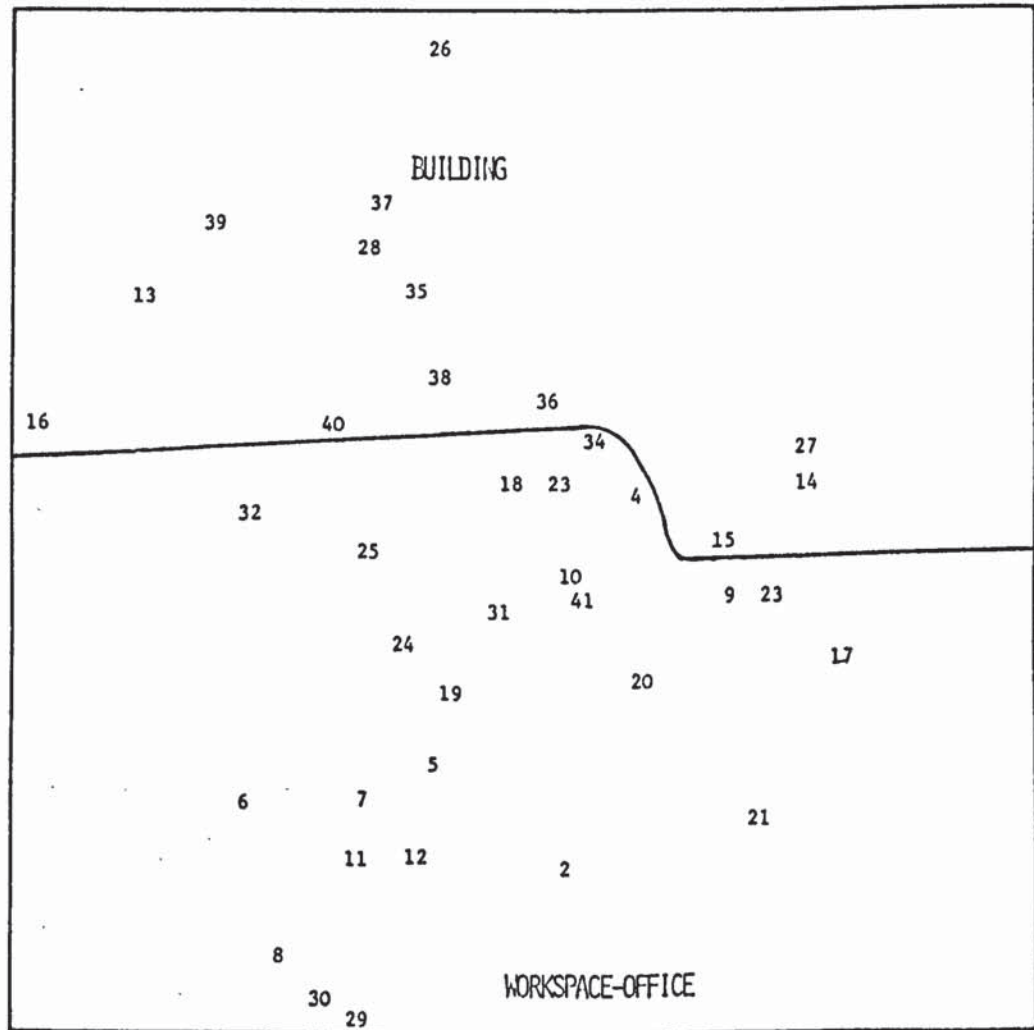
The projection of the SSA plot shown in figure 9.1a is that which most clearly partitions in accord with the elements of the level facet. The uppermost region contains all those items concerned with the building as a whole. In the lower region can be found the items addressing the office and the immediate workarea. No partition between these latter two elements is evident.

The parallel partitioning of the space supports the hypothesis that the level of interaction is ordered in terms of the workers' evaluations, and that each level is independent of the other.

The the lack of an evaluatory distinction between "office" and "immediate workarea" follows previous research of this nature on office evaluations. However, as has previously been noted, the distinction between the two levels may be dependent upon environmental characteristics such as partitions, which were not present in the majority of offices included in the study. In fact, of the sample of 216, only 28 people reported having partitions, of any sort, on three or more sides of their workspace.

Figure 9.1a

Projection of the SSA of the Full Set of Environmental
Evaluation Items Showing Partitioning of the Space
for the Level Facet



9.3.2 Referent of Interaction

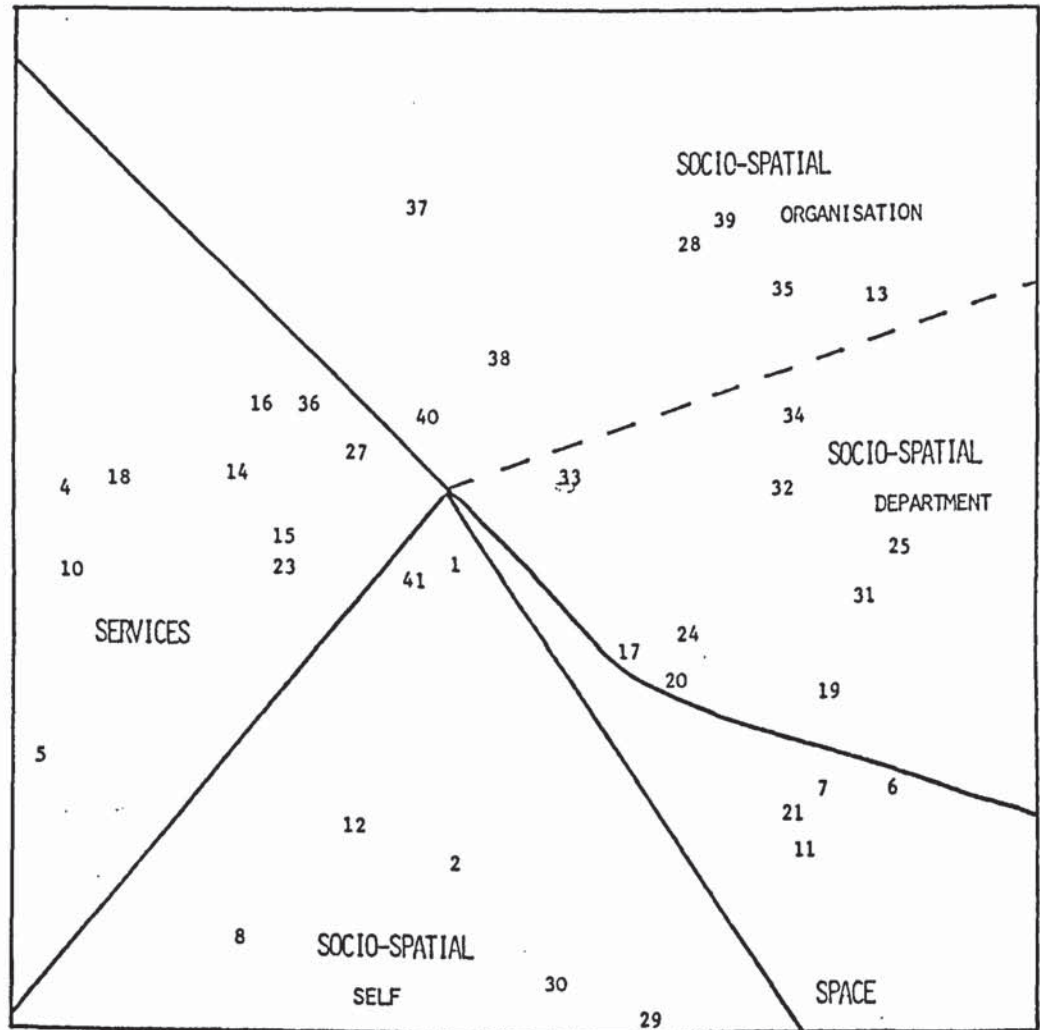
The partitioning of the SSA space in relation to the referent facet is shown in figure 9.1b. The space is partitioned into four principal and clear regions.

The first region contains all those items addressing service factors such as heating, ventilation, and lighting.

A second region includes the items dealing with storage and filing space; space without a social implication. Two items, 21 ("How helpful is the design and layout of your office in making your department or section distinct within the organisation") and 25 ("How helpful is the location of space for filing papers that people in your department generally need access to for their work"), appear to be misplaced with regard to this region. Item 21 was expected to be found in the socio-spatial region, and item 25 was expected to be located in the space region. It could be argued, however, that as item 25, concerned with access to papers for members of the department as a whole, is located in the socio-spatial-department region the important aspect of the question is its reference to the department. It is also possible to suggest that in interpreting question 21, emphasis has been placed on the spatial separation of the department in purely physical terms. Whatever the interpretation and explanation given to the mislocation of these items, it should be noted that it is rare to find all items, without exception, in the

Figure 9.1b

Projection of the SSA of the Full Set of Environmental
Evaluation Items Showing the Partitioning of the
Space for the Referent Facet



"correct" region, indeed the mislocation of only two items is in fact encouraging and a matter of little concern.

Moving clockwise from the space region, one can find the first of the socio-spatial regions. In this area of the space are contained items which may be thought of as being basically concerned with the differentiation of the individual or self from, or in relation to, others and the organisation.

Two items found in this region were expected to be located elsewhere. Items 29 and 30 refer to the extent to which the participant's workspace helps others to recognise their role in the organisation, and the extent to which the participant's workspaces reflects their status. It was originally thought that these two questions referred to the organisation, rather than distinguishing the individual from the organisation. To some extent this may be true. However, and this is most clearly shown by item 29, the questions refer to the extent to which the environment of the individual facilitates the ability of others to distinguish them from the whole organisation. In the light of this, the items were reclassified in future analysis.

The final major region, clockwise from the services area, is again concerned with the socio-spatial referent. In this instance, however, the items are concerned with the group/department, and organisation. We will return to the subdivision of this region in a moment.

To summarise the results in relation to the referent facet, there is support for the tripartite socio-spatial, services, and space distinction. However there is greater complexity, in that the socio-spatial element is found in two regions. The regions of the socio-spatial element relate directly to the sub-facet added at the end of the environmental evaluation pilot study; organisational unit. It is to this sub-facet we turn next.

9.3.3 Organisational Unit

The three elements of the organisational unit facet, individual/self, department, and organisation, are found on the same projection of the SSA space as the referent facet which is shown in figure 9.1b. The arrangement of the elements of the organisational unit facet is a little unexpected, and is rather interesting.

It was hypothesised that organisational unit represents a secondary or sub-facet of the socio-spatial element of the referent facet. This hypothesis directs that one would expect the elements of the sub-facet to sub-divide the region of the SSA space formed by the socio-spatial element, in accord with the elements of the organisational unit sub-facet. The results shown in figure 9.1b give some support for this.

In the socio-spatial region at the bottom of the plot are, as we have noted, the items derived from the organisational

unit element of individual/self. The second socio-spatial region is sub-divided according to the remaining two elements of the organisational unit sub-facet. The division between these two elements is shown by the dotted line.

The first sub-region is essentially concerned with the organisation, for example "helping people to feel part of the organisation" (38), "prevent feeling a small and insignificant part of the organisation" (40) and the provision of meeting places (eg. 13).

The second sub-region includes items which refer to the interaction and integration of the organisation and department. Items included here are, for instance, "access of others to your department" (34), "help others enter the office without feeling that they are intruding" (32), and so forth.

Moving further around the second sub-region of the space, one finds items concerned with the integration of the individual and the department, for example, "feeling part of the group" (17), and "the layout of space at your desk gives access to people want to talk to you" (19).

The space has been divided into two regions, organisation and department. However, it can be seen, from the position of the items, that the two areas are not clearly distinct in that there is no clear cut off between the regions; the regions merge one within the other. For example, at the

border line between the two sub-regions are items concerned with the integrative relationship between the organisation and the department. The further one moves into the departmental region, the more concerned the items become with the distinctness of the department from the organisation, and the existence of the department as a cohesive entity. Also, as we move in this direction we find items concerned with the integration of the individual within the department. Thus it can be seen that the difference between the elements is progressive rather than clear cut. To this extent, the boundary lines are, to a degree, arbitrary.

There are additional items to which it is worth bringing attention. The distinction between the elements of the organisational unit was also applied to some of the service questions. This was done as a matter of interest for future theory development. However, item 36, "how much does the lighting around the building help to create an environment which gives people the impression of an efficient and successful organisation", is found to be the closest of the service items to the organisation sub-region. Similarly the service item 27 is concerned with the organisation, and is also found in the same part of the space. Thus while the original hypothesis regarding the organisational unit was made in relation to the socio-spatial referent, the results indicate that the distinction may be present for all referents. This suggests that the organisational unit sub-

facet is, in fact, a primary facet.

The clear distinction between the department/organisation elements and the self element, suggests a more fundamental differentiation of the socio-spatial aspects of the evaluation which can, basically, be viewed as a self/others division.

There are important theoretical issues and implications which accrue from these results. We will return to this aspect of the study for further discussion later in the thesis. For now, we will turn to the final facet of the model; the focus.

9.3.4 Focus of Interaction

The results in relation to the focus are interesting from a number of perspectives. Firstly it can be interpreted in relation to the tripartite environmental referent. At the centre of the plot can be found item 1 (private conversations at one's desk). This, of course, is very similar to the most central item in the pilot study. The result therefore provides replication and further support for the previous results, and the hypothesis that the focus is central/peripheral to the goals of the individual at work.

If we disregard the partitioning of the referent facet and concentrate on the socio-spatial element, the focus can be interpreted in relation to the organisational unit sub-

facet. Toward the centre of the plot there are items which address such issues as feeling part of the work group, or organisation, which are aspects related to integration and cohesion. In the outer area are found items concerned with meeting and communication. Thus, it may be proposed that a focus of cohesion and communication exists in relation to the organisational unit. Such a focus was not previously hypothesised. As a consequence of the lack of such a hypothesis it is not possible to fully investigate the viability of this focus.

It is clear, from the above discussions, that we have gone beyond a simple dualistic consideration of the environment and organisation, and that we are now addressing them as an integrated whole. The model is, however, rather complex. At present we have a mixture of referents and the sub-facet of organisational unit. In order to clarify and explore the model further, it is helpful to simplify it by removing the influence of the space and service elements of the referent facet. As the socio-spatial element is the one of most importance for understanding the relationships under consideration, it is reasonable that this be the element kept for further analysis. Deleting the service and space elements has the effect of removing the referent facet, and allows the organisational unit sub facet to play a more primary role. This procedure should make it possible to address the complexities of the relationship between the organisation and the environment.

9.4 Reduced Model of Office Evaluations

The items constructed from structuples which include the space and service elements of the referent facet were deleted from further analysis. Item 1, which refers to privacy at the desk, was also removed. While this item is socio-spatial, it was deleted because it showed little variance (0.6), and because it had been consistently found to be the central item. By removing the item, it allows the possibility of other central items being identified. The removal of these items resulted in 23 questions remaining for the analysis. It is worth mentioning that the alpha coefficient for these 23 items is 0.85.

The data were again subjected to SSA. The solution, shown in figures 9.2a and 9.2b below, achieved a coefficient of alienation of 0.15; an acceptable stress level. The result of the partitioning of the SSA space for each facet is shown below.

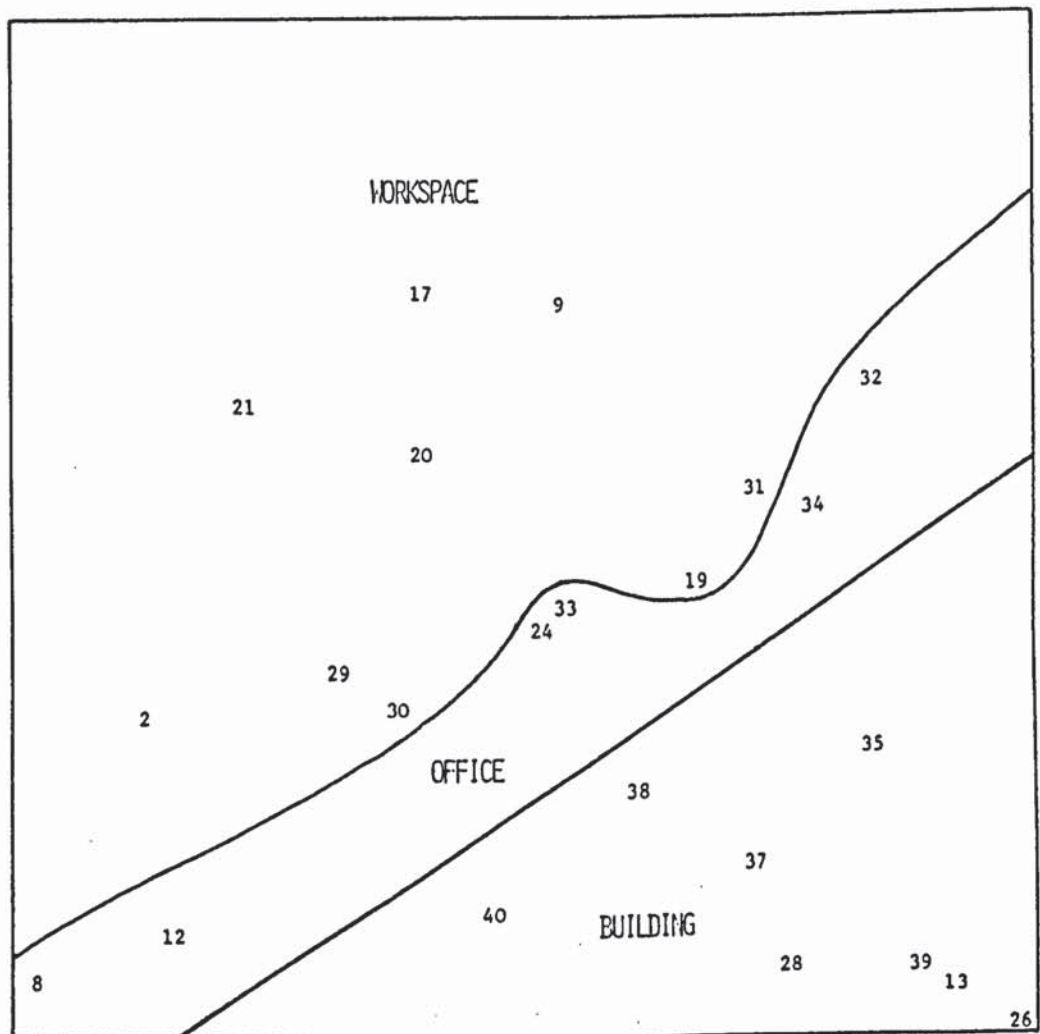
9.4.1 Level of Interaction

The SSA projection most clearly supporting the elements of the level facet is shown in figure 9.2a. The space is partitioned into three regions; workspace/desk, office, and building.

There are numerous features of this projection of the SSA which are worthy of consideration. The first and, in

Figure 9.2a

Projection of the SSA of the Socio-Spatial Items of the
Environmental Evaluation Showing Partitioning
of the Space for the Level Facet



relation to previous results, most important aspect of the partitioning is the presence of separate regions for the workarea and the office. Never before has this type of analysis of office evaluation data shown there to be a distinction between the workarea of the individual and the office as a whole.

A close inspection of the plot shows that the discrimination between the two levels is not perfect. For example, items 20 and 21 refer to the office and are in the workarea region. However, with the exception of these two items, the regions are clear.

Before considering some of the specific items, it is worth briefly discussing why, using the same sample as for the previous analysis, there should now be a distinction between two elements which was not previously evident. The most obvious explanation is that while the distinction between the workarea and office is relevant and valid when considering socio-spatial components of the office environment, it does not hold for the service aspects. For example, lighting in the office may be so closely related to the lighting at the desk, that no differentiation between the two elements is evident. This argument also applies to heating and ventilation. However the workspace, as it is under the jurisdiction of the individual, is a place which the individual considers to be, spatially and socially, his or her own; it is seen as distinct from the

rest of the office, which is the domain of others. When the service items are included it is possible that they hide the partitioning of the two regions.

The location of particular items in relation to the partition or border lines between the regions is also of interest. For instance, item 31 is a question referring to the space around the individual's desk for allowing access of others to them. This item can be seen to be located close to the office region. Items 8 and 19, which are also concerned with the facilitation of intradepartmental interaction, are similarly located. This activity related blurring of the workspace/office distinction also explains why the partition line dividing the two regions is not straight.

The partition lines do not cut horizontally or vertically across the SSA space. This would be expected if the level was completely independent of the organisational unit. As the partitioning is across the space at an angle, it would seem that the level is not fully orthogonal to the organisational unit. In order to understand why this should be the case it is necessary to turn to the organisational unit facet.

9.4.2 Organisational Unit

Figure 9.2b shows the projection of the SSA space partitioned for the elements of the organisational unit facet. Three clear regions are evident, and in accord with

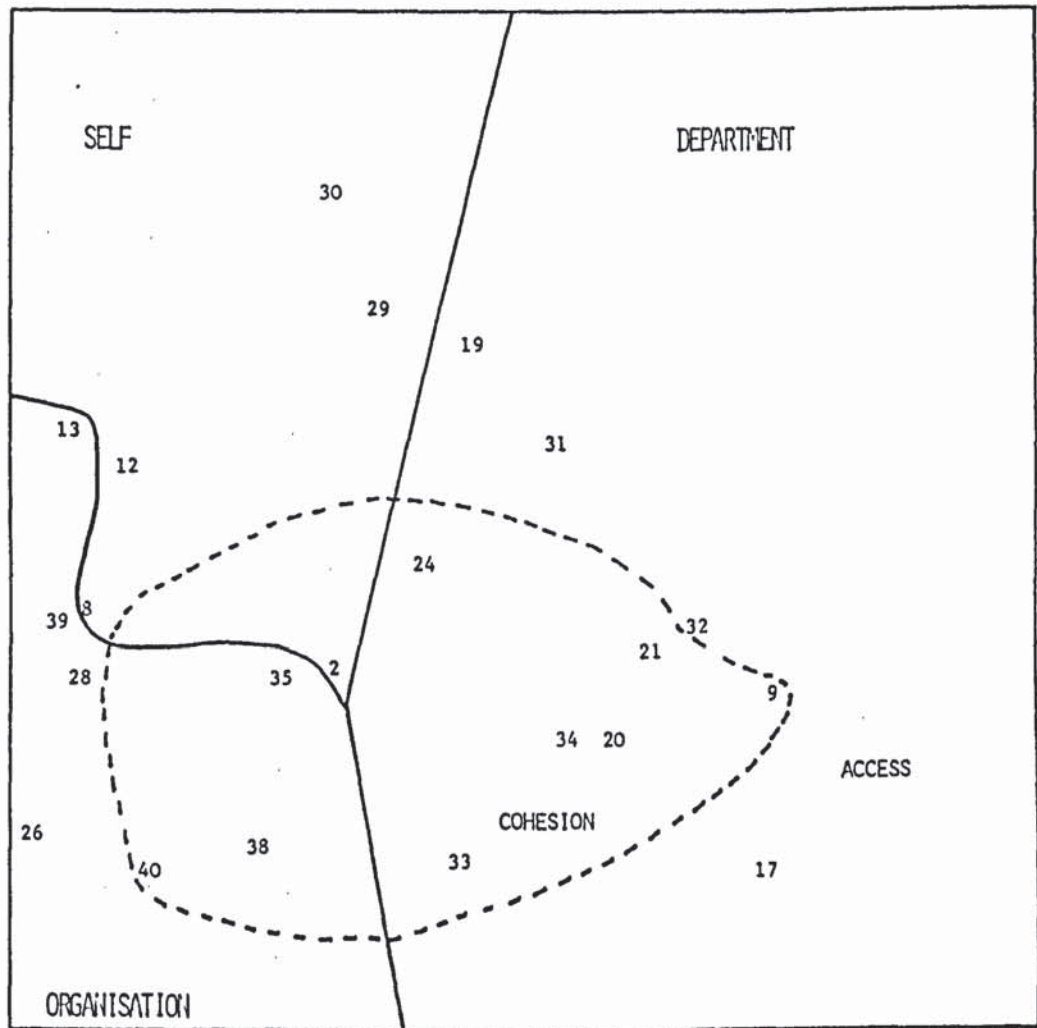
the elements of the facet. As was suggested by the previous analysis, the elements are qualitatively ordered and arranged around the plot as wedges in the space. The items found at the boundaries of the regions show them to conceptually, or experientially, merge, as was the case when the full set of environmental items was analysed.

The first region, self, contains those items dealing directly with the individual as a distinct entity in relation to their work group and organisation, For example, the desk as the individual's own distinct space (2). As one moves around the region, items can be found which have an increasingly close conceptual relationship with the items of the next region. The detail with which this can be observed suggests that the facet is very strong in that it taps small and subtle relationships.

The second region, department/work group, is conceptually a little more complex; it contains items referring directly to the department, but also questions apparently concerned with the individual. It should be understood, however, that the items refer to the individual as a part of the group; not isolated from it. Again the space can be seen to merge conceptually and experientially with its neighbouring region; for example, items referring to a positive interaction between the group and the organisation, such as question 33, which asks about the extent to which the

Figure 9.2b

Projection of the SSA of the Socio-Spatial Items of the Environmental Evaluation Showing Partitioning of the Space for the Organisational Unit Facet



environment helps the department fit as part of the organisation, and item 34, which is concerned with facilitating access to the group for members of other departments.

The final region contains items concerned with the general unity and cohesion of the organisation, and the evaluation of the environment in relation to making people feel part of the organisation. Again, one finds items referring to a positive relationship between two elements, self and organisation, at the edge of the regions. For example, item 8, "to what extent does the design of your office help you feel that you are able to control the amount of access people can have to you", and question 13, which asks about the provision of coffee areas so that the individual can meet with others in the organisation, are on the self/organisation boundary.

The final point to be made with regard to this facet is in relation to the partitioning of the level facet. It has been suggested that while there is a degree of orthogonality between the elements of the two facets, it is clear that organisational issues are related more closely with the building as a whole, than, for example, the individual workspace. The overlap between the element items of each facet is not complete, however it is sufficiently strong to "distort" the structure. In relation to a general model, the important question is whether there is an

inevitable relationship between the respective elements of the two facets; it seems unlikely that there is. While some overlap may be expected, the particular items used in the questionnaire perhaps emphasise this. More research would, of course, be needed to answer this question fully.

9.4.3 Focus of Interaction

Thus far the focus has been referred to as the degree of centrality of a particular aspect of the environment to the work life of those making the evaluations. However, the previous analysis suggested that there is a more conceptually refined interpretation which can be used to describe the focus.

In general, from figure 9.2a, it would seem that at the centre of the department and organisation regions, are items concerned with cohesion, and at the periphery those concerned with access and meeting. For the self region there is a similar, though less clear tendency, with the individual's desk as a distinct place (ie. not integrated) at the centre, and access at the periphery. Items 29 and 30 are unclear in relation to their focus interpretation.

It should be emphasised that these elements of the focus facet were not included in the mapping sentence. As a result one should be cautious in accepting this interpretation. Further research clearly needs to address this important issue.

The next step in the analysis is to discover whether this model is consistent across the separate buildings and organisations from which the participants were drawn. In effect, the next stage is to check whether the structure is robust.

9.5 Structure of Evaluations for Individual Sites

The aim of the thesis is to develop a model of evaluation which is not specific to any particular building or organisation. Consequently, the analysis thus far has been concerned with the total sample drawn from all four collection sites. If the model is a general model, however, it should be possible to recover a similar empirical structure from the data collected at each site. If this is possible it will firstly show the model's validity, and secondly, highlight the potential of the model for revealing differences within the general structure which are specific to particular places and organisations. In order to test this, the socio-spatial evaluation data from each site was analysed separately. In the following sections we will consider the results of this analysis.

9.5.1 Site 1

The data from the 36 participants drawn from Site 1 were subjected to SSA. Figures 9.3a and 9.3b show the SSA plots which most clearly show support for the elements of the proposed facets of evaluation. The coefficient of alienation for this solution is acceptable at .21.

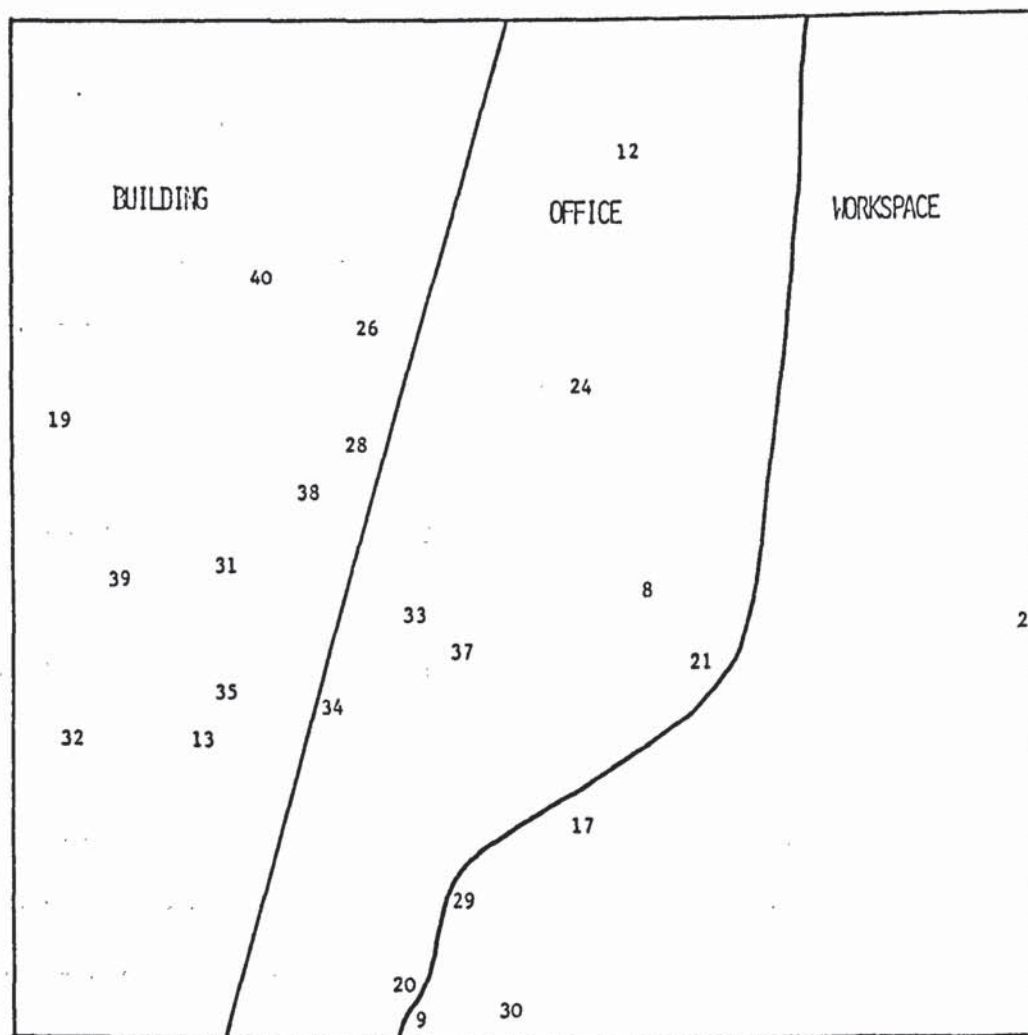
9.5.1.1 Level of Interaction

Figure 9.3a reveals a tripartite distinction between the workspace, office, and building in the workers' evaluations. Four items are apparently mislocated; 19, 31, 32, and 37. Items 32 and 37 ask about the extent to which the office facilitates the access of people from other departments, and the extent to which the building helps inter-departmental communication. It is conceivable that these items are found in their location as they are, in essence, concerned with the lack of a boundary between the office and building. This explanation also finds support from the location of these items close to the boundary lines of the regions.

The location of items 19 and 31 are a little more difficult to justify. Both of these questions refer to the desk, and are found in the building region. The only possible explanation is that they are concerned with access to the individual, and are again, therefore, referring to the lack of boundaries. This explanation is, however, a little weak. It should be realised, of course, that with so few participant the mislocation of items is more likely.

Figure 9.3a

Projection of the SSA of the Socio-Spatial Items of the
Environmental Evaluation Showing Partitioning of the
Space for the Level Facet (Site 1)



9.5.1.2 Organisational Unit

The three elements of the organisational unit facet are shown to be supported by the partitioning of the SSA space shown in figure 9.3b. Only one item on the plot appears to be located in a region other than that hypothesised; item 21, which refers to the extent to which the design of the office helps to create the feeling that the department is distinct within the organisation. One would have expected to find this item located in the department region near to the boundary with the organisation region.

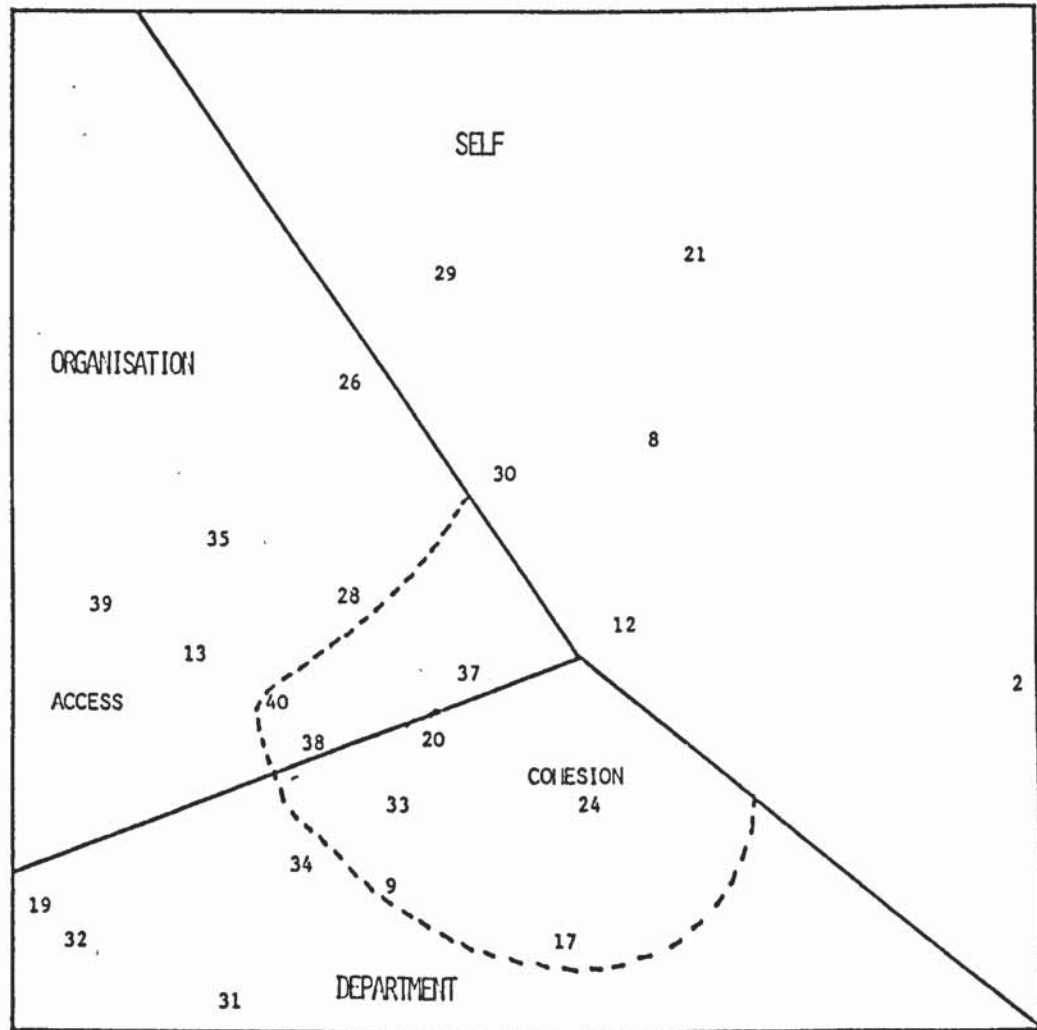
9.5.1.3 Focus of Interaction

It has been noted that the elements of the focus facet were not specified a priori in relation to the organisational unit facet. As a consequence, a good deal of care needs to be exercised in considering the focus facet.

An inspection of the plot showing the organisational unit partitioning reveals some interesting features with regard to the most central items. The three most central questions, when drawing one from each of the organisational unit regions, are 12, 20, and 37. Thus for evaluation in terms of the organisational element a communication item is central, for the individual being able to work without distraction is at the centre, and in relation to the department, it is cohesion which is found to be most central.

Figure 9.3b

Projection of the SSA of the Socio-Spatial Items of the Environmental Evaluation Showing Partitioning of the Space for the Organisational Unit Facet (Site 1)



However, if one considers the elements of organisation and department, the majority of the central items are concerned with cohesion. The outer area contains items addressing access and meetings. The focus has been partitioned on figure 9.3b by the dotted line. That a focus has emerged without prior specification is important for future evaluations which may consider access and cohesion more closely.

9.5.2 Site 2

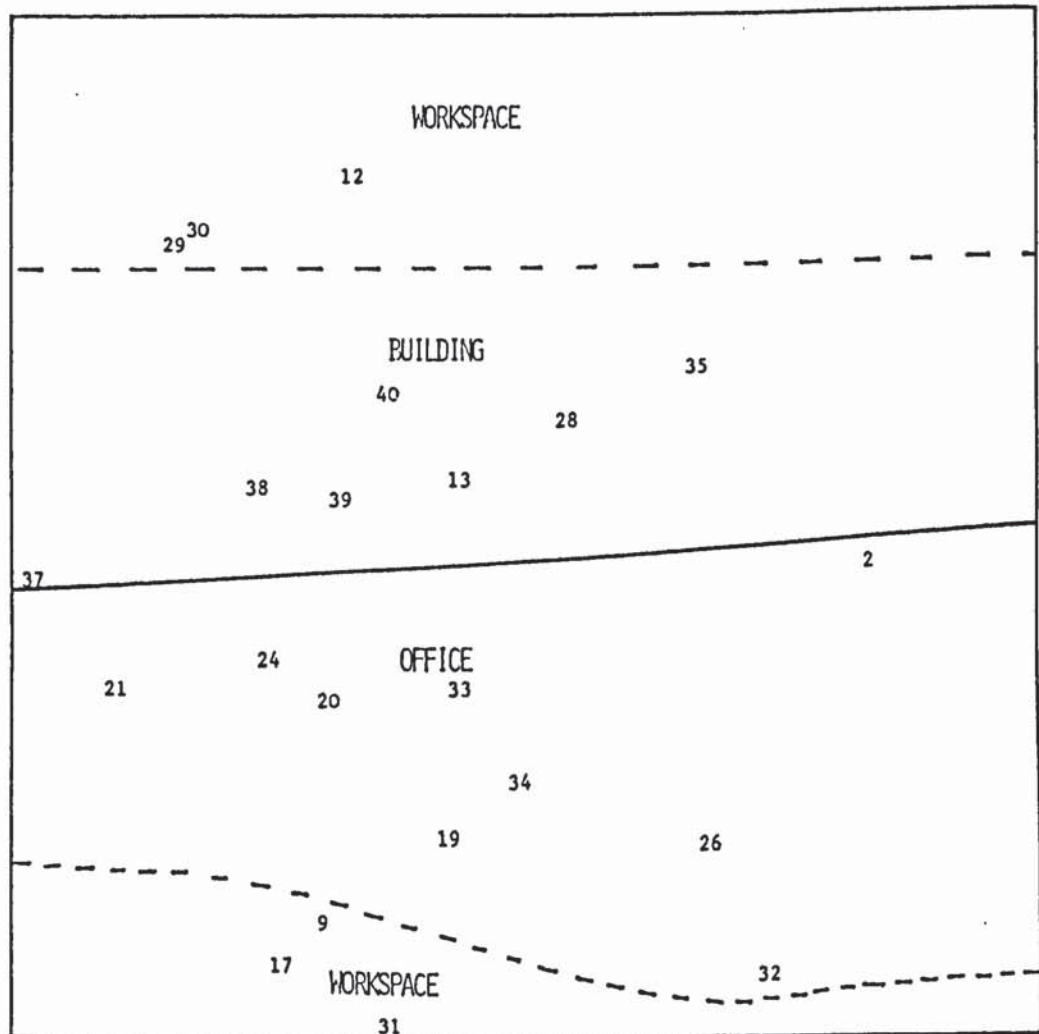
The data from Site 2 was collected from two buildings housing the same organisation. While it would have been preferable to analyse the data from each building separately, the small sample size prohibited this. Nonetheless the results, to a large extent, support the model of evaluations. The coefficient of alienation is .20 for this SSA solution.

9.5.2.1 Level of Interaction

The SSA plot presented in figure 9.4a is partitioned in accord with the elements of the level facet. It can be seen that there are two principal regions. The uppermost region contains items dealing with the building. The lower region contains items concerned with both the office and workspace elements. There is some indication that there is a distinction between these two elements. However, the

Figure 9.4a

Projection of the SSA of the Socio-Spatial Items of the
Environmental Evaluation Showing Partitioning of the
Space for the Level Facet (Site 2)



evidence is only suggestive in that a number of the desk items are mislocated. The workspace region has been demarcated by a dotted line. Thus, generally, the workers' evaluations differ from those of Site 1 in that only a weak evaluatory distinction between the immediate workarea and the office as a whole is present.

A second feature of the plot is that three items which refer to the office or workspace are located above the building region. The apparent mislocation of three items is usually not particularly problematic in relation to the model as a whole. The clear grouping of these items in an apparent region of their own is worth closer consideration.

There are several possible explanations for why these items are located as they are. Firstly there is the possibility that the projection showing this view of the cylindrex structure is not an "elevation", and represents some form of distortion. If one examines the correlations between various items, it becomes quite clear that this is not the case. Taking item 12 as an example, the item correlates with item 40, at the top of the plot, with a coefficient of 0.6, however, it has a correlation of -0.12 with the item at the bottom of the plot (31), and -.03 with item 17, also at the lower extreme. From these few examples it is apparent that the representation is correct, and that these three items do represent an anomaly in relation to the hypothesis.

The second explanation is quite simply that the workers do not make as clear a distinction between the building and the office as those evaluating other buildings. This is a credible explanation given the design of building occupied by majority of the people in this organisation. Unfortunately no photographs of the buildings are available, however the impression gained while within the building is that the offices merge within one another and form a singular space; the offices of Site 2 are more "open" than the open offices of the other sites.

This, of course, is a subjective interpretation. Unfortunately it was not anticipated that there would not be a distinction between the building and other levels, and therefore no objective data on this was collected. Having made this point, it should still be remembered that only three mislocated items are being referred to here.

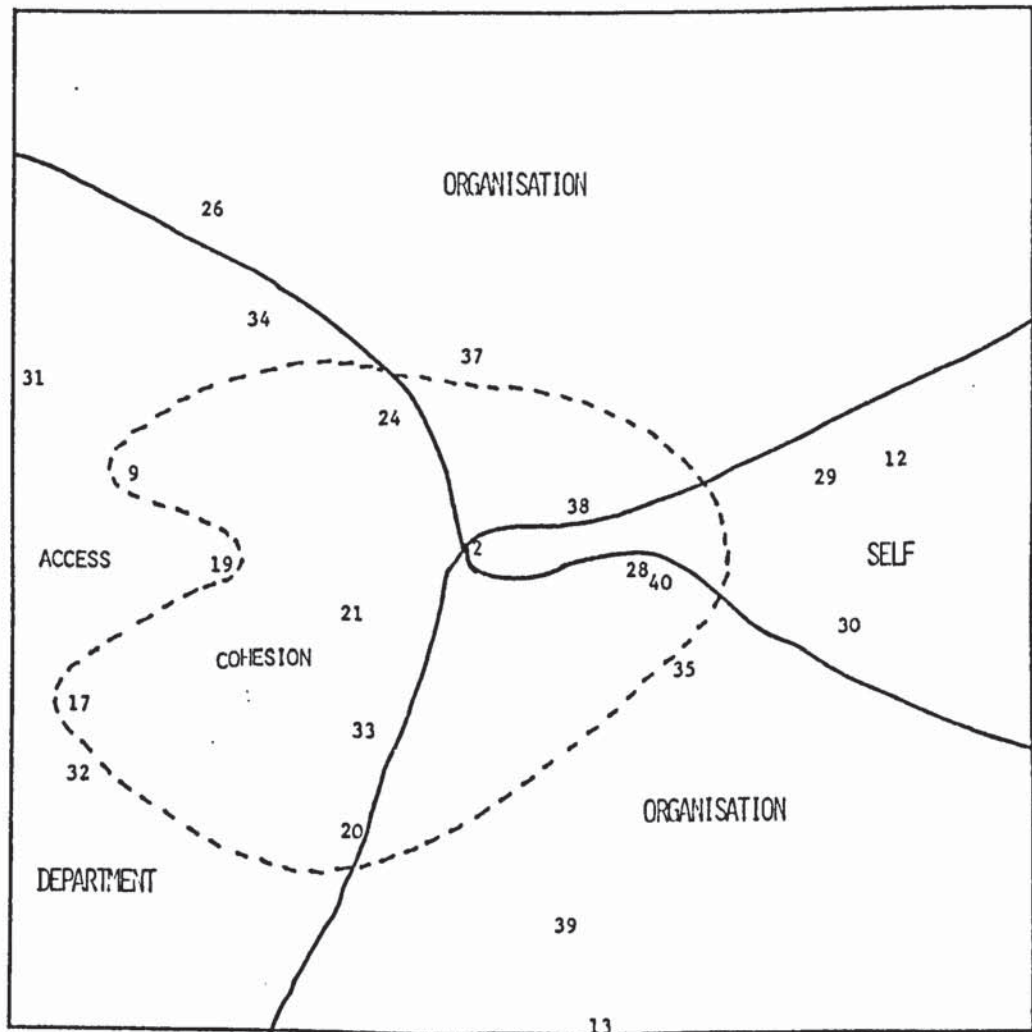
9.5.2.2 Organisational Unit

The plot showing the partitioning for the Organisational Unit elements, figure 9.4b, also shows some divergence from the general model of evaluation which is being established. The principal discrepancy in the plot is that there are two separate regions for the organisation element. The other two regions appear as hypothesised.

The juxtaposition of the two organisation regions in the manner shown in figure 9.4b, would suggest that the items

Figure 9.4b

Projection of the SSA of the Socio-Spatial Items of the Environmental Evaluation Showing Partitioning of the Space for the Organisational Unit Facet (Site 2)



located in each region are distinct in terms of some other aspect of their conceptual content. However an inspection of the items show this not to be the case.

One can speculate as to other reasons for these rather curious results. One interesting possibility is in relation to the level facet. If it is the case that the workers are not discriminating between the building, which is most strongly associated with evaluations in terms of the organisation, and the office, most strongly associated with the individual and department, then this may also lead to, or at least be reflected in, the ambiguous distinctions made between the organisation and departmental perspectives on evaluations of the environment. Given the available data it is difficult to provide definite empirical support for this argument, however, if this is the case then it has wide-ranging implications for both organisational functioning and office design.

9.5.2.3 Focus of Interaction

The focus for Site 2 again shows a tendency for the cohesion related items to be located more centrally. If one conceptualises item 2, which refers to the extent to which the participant's workspace is distinct, as being an inverse of cohesion, then the item is still concerned with the phenomenon. Thus for all three elements cohesion is most central. A dotted line has been drawn onto figure 9.4b to show the focus.

9.5.3 Site 3

The third data set was also collected from participants occupying two separate buildings. The results of the SSA, which again had an acceptable coefficient of alienation of .17, are shown in figures 9.5a and 9.5b.

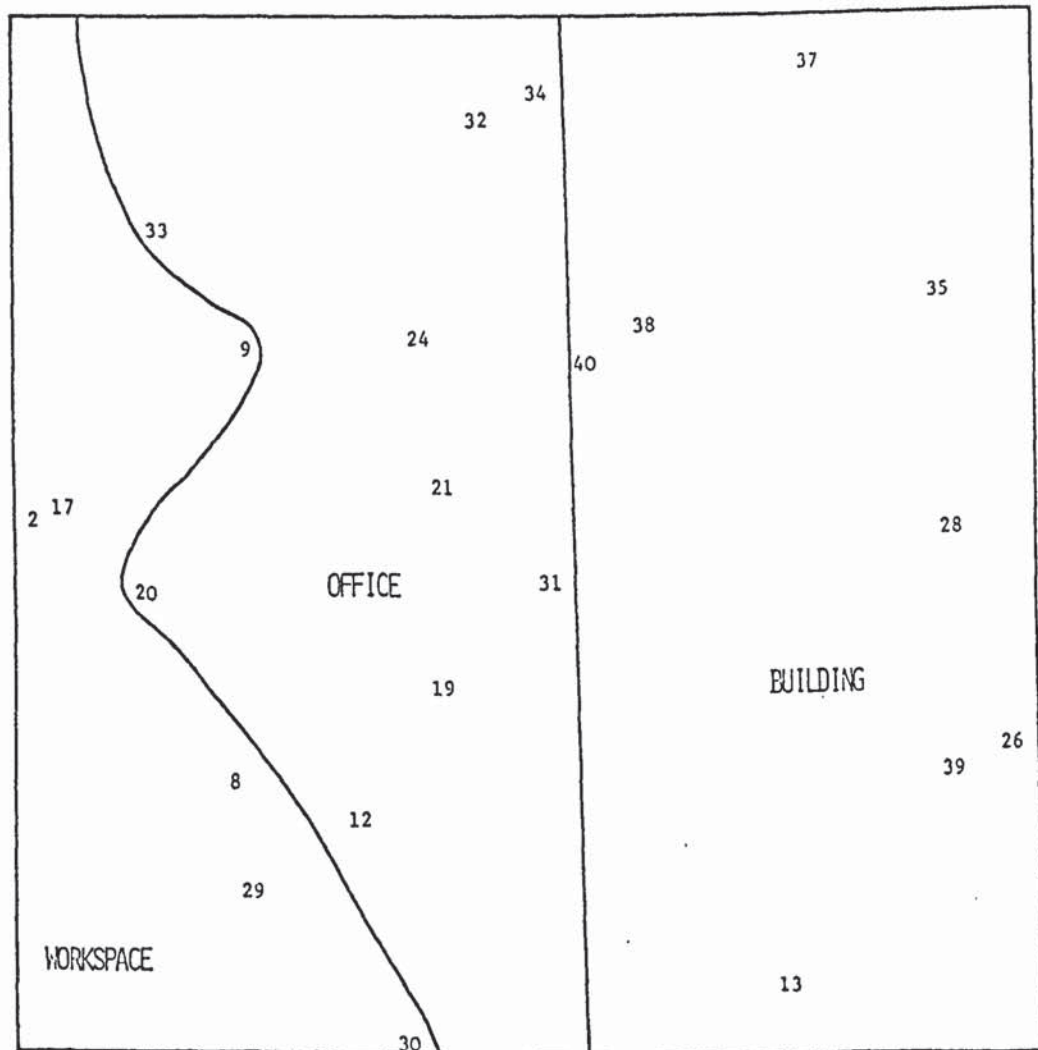
9.5.3.1 Level of Interaction

The projection of the SSA space shown in figure 9.5a reveals three distinct regions. The region on the right of the plot contains all items concerned with the building, next to that can be found those questions dealing with the office and finally a workspace region. Again the partitioning between the office and building is strong. However the distinction between the office and the desk is less clear cut, and two of the desk items are located in the office region. The actual content of these items, 19 and 31, are concerned with interaction between the individual and others, which helps explain their location. Despite these two items the regions are sufficiently clear in their support of the distinction between the levels.

The strength of the office/building distinction, again, perhaps reflects the actual nature of the offices being evaluated. The office spaces in these buildings were more cellularised group offices. From this, and the discussion of the previous site, it would seem that the model, while

Figure 9.5a

Projection of the SSA of the Socio-Spatial Items of the
Environmental Evaluation Showing Partitioning of the
Space for the Level Facet (Site 3)



remaining essentially consistent, is sensitive enough to reflect differences due to the physical parameters of the office designs.

9.5.3.2 Organisational Unit

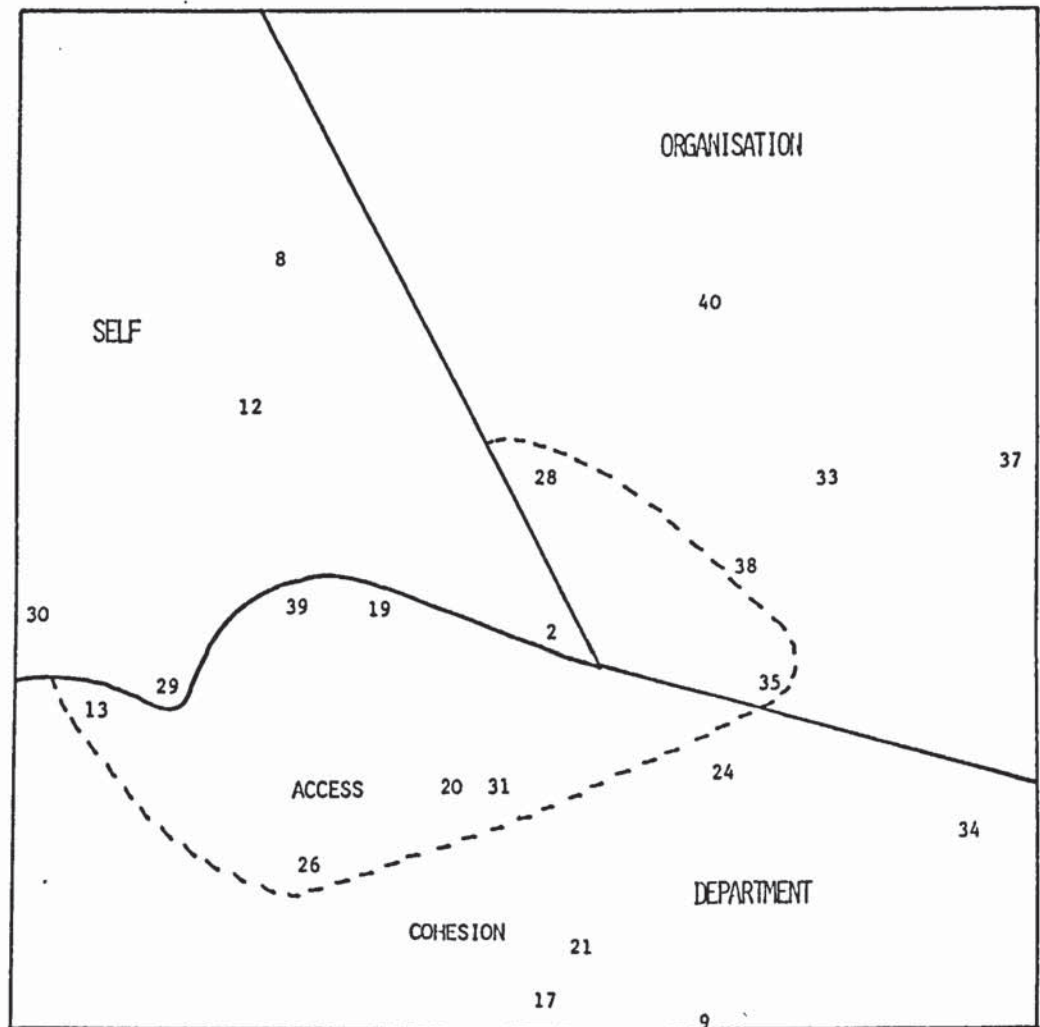
The plot presented in figure 9.5b shows the three separate elements of the organisational unit facet. While the results generally support the proposed facet, three items are mislocated; 13, 26 and 39. All three items are concerned with the organisation element. Item 13 is located almost in the self region. Given the content of the question, "To what extent does the provision of rest rooms, coffee areas, and so forth in the building help you to meet people you work with", this location is understandable; items 26 and 39 refer to other people meeting in the organisation. These questions could have been interpreted in terms of others in the department. However, with these exceptions there is, again, considerable support for the model.

9.5.3.3 Focus of Interaction

The focus of the evaluations of Site three tends to be the inverse of that found for the previous two Sites. Excluding the individual/self element, most of the cohesion items can be found in the periphery of the space, with those concerned with access and meetings being more central. The

Figure 9.5b

Projection of the SSA of the Socio-Spatial Items of the Environmental Evaluation Showing Partitioning of the Space for the Organisational Unit Facet (Site 3)



focus has been demarcated by the circular dotted line on figure 9.5b.

While the pattern is the inverse of that previously found, the results are consistent in that a distinction is found between the two groups of items.

9.5.4 Site 4

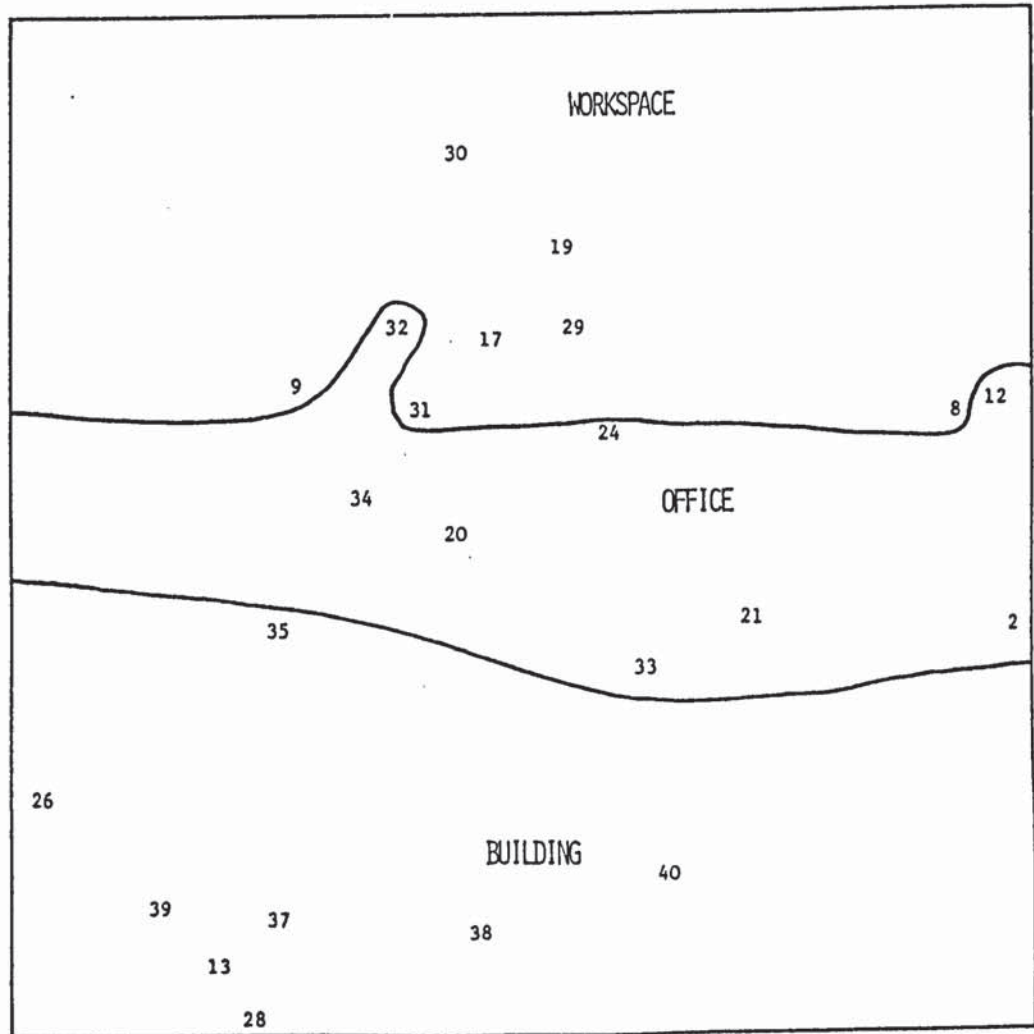
The plots of the final SSA of the evaluation data is shown in figures 9.6a and 9.6b. The coefficient of alienation for this solution is 0.13.

9.5.4.1 Level of Interaction

Figure 9.6a shows the plane of the SSA space which partitions in accord with the elements of the level facet. It is clear that there is strong support for an evaluatory distinction between the building as a whole and the office/workspace. The division between office and workspace is also present. However, while the distinction is sufficiently clear as to be supportive of the hypothesis, it is less clear cut than that for the building and office. It can also be seen that the three levels are ordered and independent.

Figure 9.5a

Projection of the SSA of the Socio-Spatial Items of the
Environmental Evaluation Showing Partitioning of the
Space for the Level Facet (Site 4)



9.5.4.2 Organisational Unit

The SSA plot showing the organisational unit facet is presented in figure 9.6b. It can be seen that the plot accords with the three elements of the facet and portrays them as being qualitatively ordered. Only one item is apparently mislocated; 40 (building prevents people feeling like small and insignificant parts of the organisation). Thus there is almost total agreement with the proposed structure.

9.5.4.3 Focus of Interaction

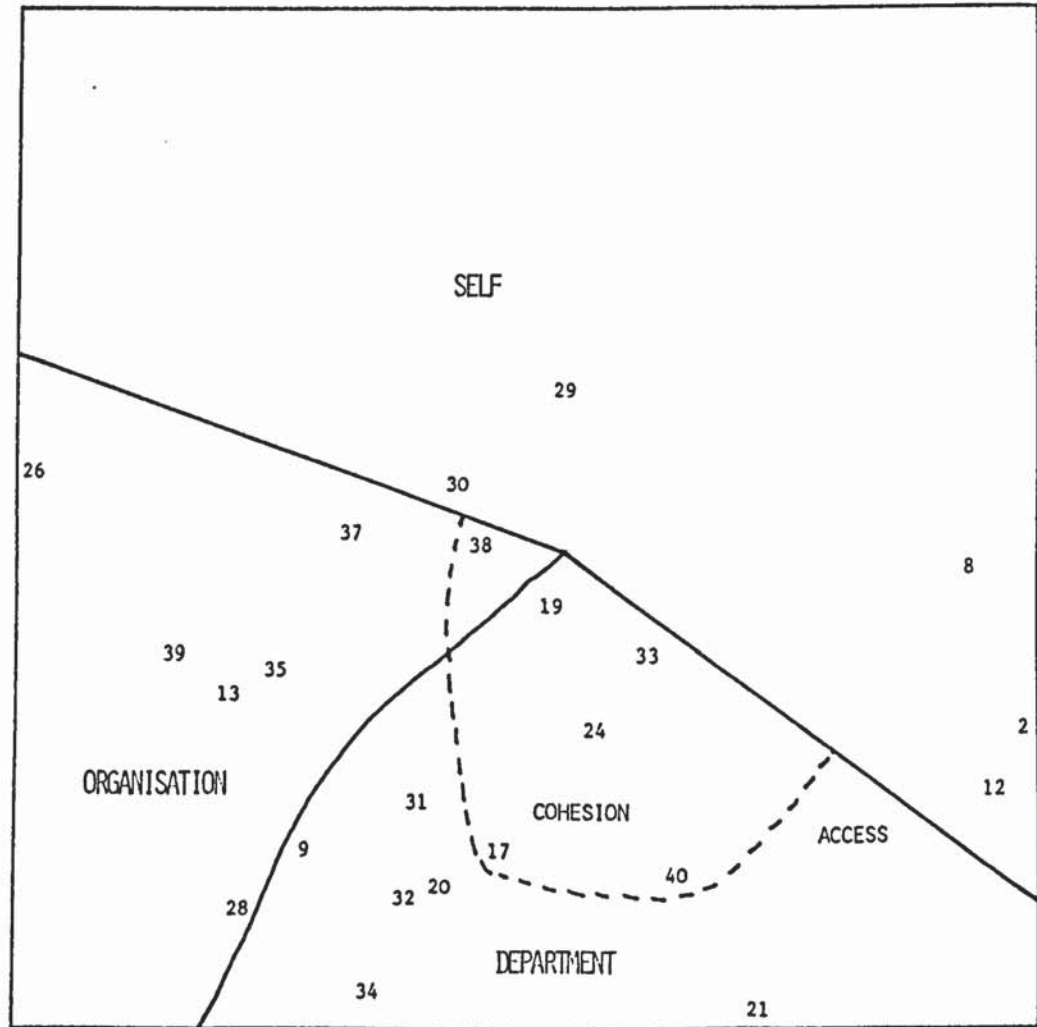
The focus, shown by the dotted circular partition line on figure 9.6b, is in keeping with the previous results. There is a tendency for the cohesion items to be located more centrally than those concerned with access and meeting. Again, this applies to the department and organisation elements.

9.5.5 Conclusion of Individual Site Analysis

In conclusion to this section it can be said that generally all data collected at different Sites support the model of office evaluation which has been proposed. There are some differences between the collection sites both in terms of the strength of support for the three elements of the level facet, and in relation to the the focus of the evaluations. In one case the referent showed two regions for the

Figure 9.5b

Projection of the SSA of the Socio-Spatial Items of the
Environmental Evaluation Showing Partitioning of the
Space for the Organisational Unit Facet (Site 4)



organisation rather than one. However, the model does appear to be extremely strong.

Those differences which do exist appear to, at least in part, relate to design differences. This is especially seen in the case of Site 2. These results, therefore, suggest that the systematic collection of objective measures of the physical parameters of the environment, for comparison with differences in the structure of office evaluations, may be worthwhile.

One of the most interesting features is the focus. While only three out of the four Sites show the same location of the regions, with the third site showing the inverse, the regions are rather consistent. In this study a focus was not specified in relation to the organisational unit. It is therefore even more encouraging that a consistent and interpretable focus has emerged. As will be seen in the discussion, this has a number of implications.

9.6 Summary

In relation to the complete model of office evaluations, the results support the elements of each facet except the level of interaction.

The results of the analysis of the socio-spatial items support the facets proposed previously, and provide a coherent and more detailed model of office evaluations than has previously been achieved. It may be concluded that

office workers, at least those of the present sample, evaluate the desk/workspace, office, and building as discrete and separate levels of the environment, although this does seem to be affected by the design of the office and building. Furthermore, the socio-spatial environment is evaluated from the perspective of, and in relation to, the individual, work-group, and organisation simultaneously. The relationship between each of these is qualitative. The focus suggested by the results is one of cohesion and access. Additionally, whatever the focus, it can be seen that an item from each of the unit elements is located in the centre of the radex. Such a result shows that no one unit is more central than the others.

CHAPTER 10

Results 2: Individual Evaluation Profiles

10.1 Introduction

Having clearly established a strong model of office evaluations, and shown that the evaluations of each Site have a similar structure, the next stage is to consider the building evaluations in more detail. Already new and important aspects of evaluation have been established, theoretically enriching the field of office evaluation. There remains, however, the question of the ways in which the individual evaluations differ. By identifying these differences, and the groups to which they apply, the potential exists for discovering how they relate to the external domains which will be considered in the next chapter.

In this chapter, the results of analysis aims to discover the ways in which individuals' evaluations differ, and the principal items which differentiate between them.

10.2 Qualitative and Quantitative Difference Between Evaluations

Individuals' evaluations of the environment can differ in two basic ways. First, there may be quantitative differences; the total score an individual gives an environment in their evaluation of it. Just as importantly, however, there are also qualitative differences between

people's evaluations. At each quantitative level of evaluation there will be differences between individuals which are qualitative. In such a circumstance, people can be said to be equally satisfied with their environment, but they may still be different in that the values given to different aspects of the environment are not the same; they merely sum to the same total.

Previous research by Donald (1983) found that office evaluations could be qualitatively differentiated in terms of a social-spatial dimension. In the present research this finding has been built upon by examining the various aspects of the socio-spatial referent of the office. The aim of the present chapter is to consider the quantitative and qualitative differences of these newly established aspects of evaluation.

3 Partial Order Scalogram Analysis

One analysis method which has been shown to be appropriate for the study of qualitative and quantitative relationships in data within the facet framework is Partial Order Scalogram Analysis (POSA or POSAC). A description of this procedure is given in appendix 2. Basically, however, the analysis provides two types of information. Firstly, it gives a total score for an individual's profile of responses to particular items. Secondly, it allows one to observe qualitative differences between people who may have the same overall total score, but who are, nonetheless,

different in terms of the composition or quality of their evaluations. The procedure assists in the identification of the basic qualitative dimension differentiating between evaluations.

The first step in using POSA to study numerous items is, usually, to reduce the number of variables for analysis. While it would be possible to include all the items previously considered in the SSA, the inclusion of large numbers of variables makes interpretation of the POSA difficult. Additionally, as one is attempting to reduce the evaluations to their most fundamental discriminatory dimensions, it is useful to include the essential aspects of the original items, but in a reduced form.

There are several ways in which items can be selected for inclusion in the POSA. One may select a sample of items considered to be representative of the domain being studied. One problem with this procedure is that the specific content of the items may confuse the more fundamental dimensions.

An alternative approach is to derive scores calculated from the responses to the full item set in order to produce subscales which can then be used in the analysis. The latter course was taken in the present study.

A relatively simple strategy for the calculation of subscales within the facet framework was developed for evaluations by Donald (1983); it has since been applied

successfully to other areas (eg. Canter and Donald, 1985, Ziebland, 1985). The same method is adopted here.

In essence a score is derived for each facet element which has been validated by the SSA. This is simply achieved by finding the mean score of all items with an element in common. For example;

Department	Build/Dept+Build/Dept+Office/Dept+Desk/Dept...
Element =	-----
Score	3

The above hypothetical calculation would result in a score for the organisational unit element of Department.

In calculating these element scores, the focus facet was not included. The reason for this is that while a focus is evident from the SSAs, the original items of the questionnaire were not specified in terms of a focus. Thus, only the scores for the elements of building, office, desk, organisation, department/group, and self were calculated.

10.4 Composition of Facet Element Scores

Each of the new items representing one element were calculated by following the above procedure. The new items, and those questionnaire items from which they are composed, are as follows:

Element 1. Organisation

Environmental questions, 13, 26, 28, 33, 35, 37, 38, 39, and 40.

Element 2. Department/Work group

Environmental questions, 9, 17, 19, 20, 21, 24, 31, 32, and 34.

Element 3. Self

Environmental questions, 2, 8, 12, 29, and 30.

Element 4. Building

Environmental questions, 13, 26, 28, 35, 37, 38, 39, and 40.

Element 5. Office

Environmental questions, 12, 20, 21, 24, 32, 33, and 34.

Element 6. Desk/Individual workspace

Environmental questions, 2, 8, 9, 17, 19, 29, 30, and 31.

There is one problem with the computation of the element scores as shown above. An inspection of those items of which each element score is composed reveals a close relationship between the items forming the elements of the building and organisation.

The items composing the building and organisation elements are the same with the exception of item 33, which is present in calculating the organisation score, but is not used to derive a score for the building. Thus the two scores will only differ in terms of one component item.

The above is an unfortunate problem, the cause of which is the reclassification of items 29 and 30. These two items were originally conceived of as belonging to the level

element of desk, and the organisational unit element of organisation. If this conceptualisation had remained, there would have been three items differentiating between the element scores. However, the results of the SSAs presented above, lead to these items being included in the self category. The rationale for this has been given previously.

While the problem described is unfortunate, and one which future research may rectify, its consequences are not too limiting in terms of future analysis. The principal implication is that one should be cautious in drawing conclusions.

One final point is worth mentioning before going on to consider the analysis of the elements. In uncovering the underlying dimensions of a partial order scalogram it is often helpful to dichotomise the scores on the items being analysed. Such a procedure allows one to reveal structures which may not be so apparent when including the full range of available scores. In the present research it was decided, however, to initially use the full five point scale on which the judgments were made. At a later stage the scores will be dichotomised in order to facilitate the analysis of the evaluations in relation to the external variables.

10.5 Internal Consistency of the Element Scores.

The validity of the elements has already been shown by the SSAs. The first stage in the analysis is thus to establish the internal consistency, or reliability, of the element items by calculating alpha coefficients for each. Table 10.1 shows the alpha coefficients for the sets of items composing each "scale". Both alpha and the standardised alpha are shown.

Table 10.1.
Alpha Coefficients for Each Element Scale

Element	Alpha	Standardised Alpha
Organisation	0.73744	0.74376
Department	0.66357	0.67733
Self	0.50487	0.50582
Building	0.72345	0.72964
Office	0.72259	0.72433
Desk	0.61329	0.62267

Within the criteria for acceptable levels of alpha, specified by Nunnally (1967) and described above, all element score are acceptably, in terms of present research, reliable or internally consistent. The lowest alpha coefficient is that achieved for the element "self". There are several explanations for this. Firstly, while all the

items of a scale calculated in such a way all share a common element, they may also differ in terms of other components of the structure of which they are composed. Secondly, as has previously been mentioned, the value of alpha is likely to increase with the number of items included in the scale, assuming that they are drawn from the same domain. Finally, within an individual there may be greater variation in the evaluation of aspects of the environment which are closer to the individual. Nonetheless the item scales represent adequate measures of each element for exploratory research.

The resultant data was subjected to POSAC (Partial Order Scalogram Analysis with base Coordinates) using the Hebrew University Data Analysis Package (HUDAP). The results of this analysis are shown in the following sections.

10.6 POSAC of Element Scores

The POSAC output provides a space diagram on which are located points representing the individuals making the evaluations. In addition, there is an item diagram for each item included in the analysis; in this case there are six items each representing an element. The item diagrams are those of interest here, therefore the space diagrams will not be included.

Each item diagram contains the scores which the participants awarded that particular element of the

environment in their evaluations. The scores are located as points in the space. The actual points show the values awarded that item. The actual location of the scores on each plot is derived from the participant's full profile. As this is the case, the points, or individuals, retain the same position on each plot. Interpretation of the plots is achieved by partitioning the space diagrams such that each region contains profiles or individuals with the same value on that item. The direction of the partition lines reveals the role played by the item in structuring the partial order scalogram.

As was noted, the POSAC has two axes. The joint axis runs from top right to bottom left of the plots. This axis simply represents the sum of people's scores on the items; it is a quantitative (joint) axis. The second axis runs from top left to bottom right of the diagram and represents the qualitative (lateral) axis. It is the qualitative axis, along which people with the same joint score but with different compositions of that score are located, that one is attempting to define by use of POSAC.

The partitioning of the item diagrams reveals the role played by the item in structuring the partial order of the evaluation, and in particular, in defining the lateral, qualitative axis. It is the item diagrams which may be partitioned vertically or horizontally which differentiate qualitatively between profiles. It should be pointed out that such items are orthogonal, independent from one

another. Other types of partitioning (see appendix 2) reveal items playing other minor roles.

The analysis in this chapter follows that presented previously, in that the partial order structure of the evaluations will first be established for the full data set. Following this, the data from each Site will be analysed separately in order to establish the generality and consistency of the results.

10.7 POSAC of the Full Data Set

Figures 10.1a to 10.1f show the plots for each of the six items (elements). The partitioning of the plots reveals the role each item plays in structuring the partial order of the evaluations. It should be noted that the partition lines should be as straight as possible.

The plot shown in figure 10.1a is for item (element) 1, the organisation. It can be seen that the partitioning of the space is horizontal. The horizontal partitioning reveals the organisation to be one of the elements of the evaluation which define the qualitative axis differentiating between participants.

The second plot, shown in figure 10.1b, shows that there is no clear partitioning of the space possible for the department element. The element therefore plays no systematic role in the POSA.

Figure 10.1a POSAC Item Diagram of the Environmental Evaluation Element of Organisation (All Subjects)

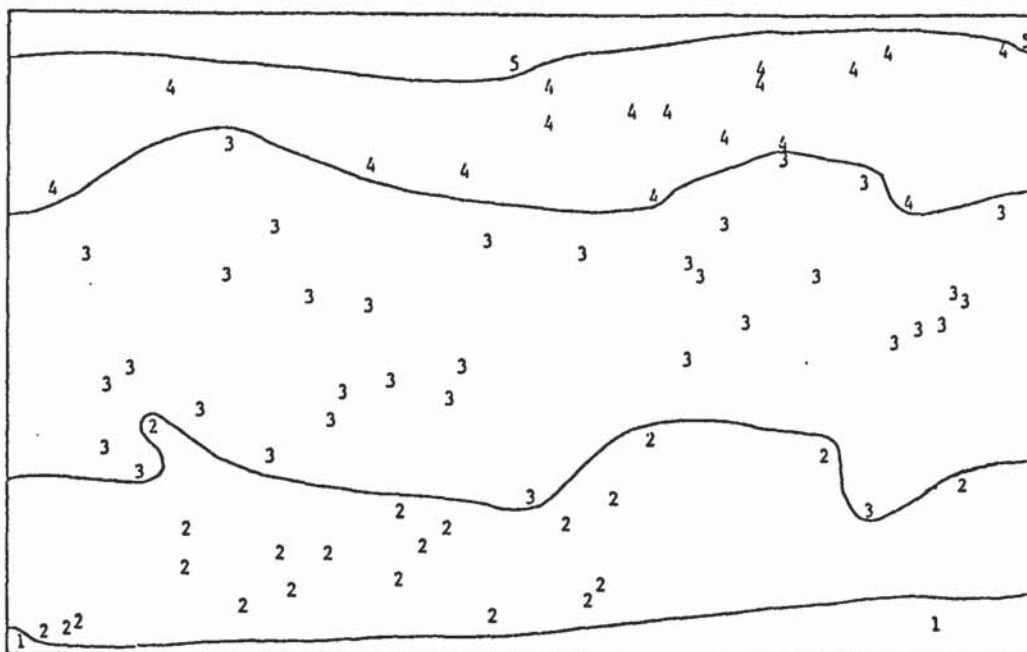
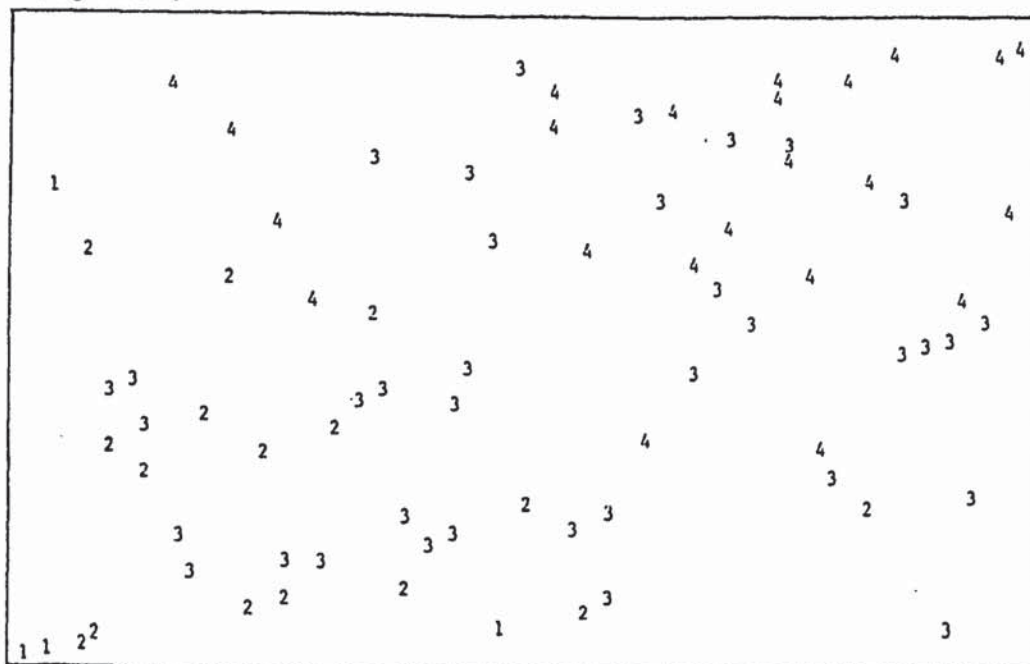


Figure 10.1b POSAC Item Diagram of the Environmental Evaluation Element of Department (All Subjects)



The third plot, figure 10.1c, shows the partitioning for the self element. From the vertical partitioning of the space it can be seen that the self item (element) forms the second pole of the qualitative axis of the POSA.

The fourth item plot (building) presented in figure 10.1d, reveals a second horizontally partitioned element. It was expected that the building and organisation elements would be rather similar. However, the partition lines of the building plot are less linear than for the organisation. This suggests that organisation more clearly plays a polar role in the partial order scalogram than the building.

Figure 10.1e shows the item plot for the office element. Again it can be seen that it is not possible to partition the space.

The final plot is shown in figure 10.1f. The plot has been partitioned as far as is possible. It is quite clear, however, that the partitioning is inadequate in terms of arguing that the element plays a role in the structuring of the partial order scalogram.

While the partitioning, or lack of partitioning, of the first three elements, organisation, department/work group, and self, correspond, to a degree, with the last three items (elements), building, office, and desk, there is not an exact correspondence. This suggests a tendency towards each element of the organisational unit having a

Figure 10.1c POSAC Item Diagram of the Environmental Evaluation Element of Self (All Subjects)

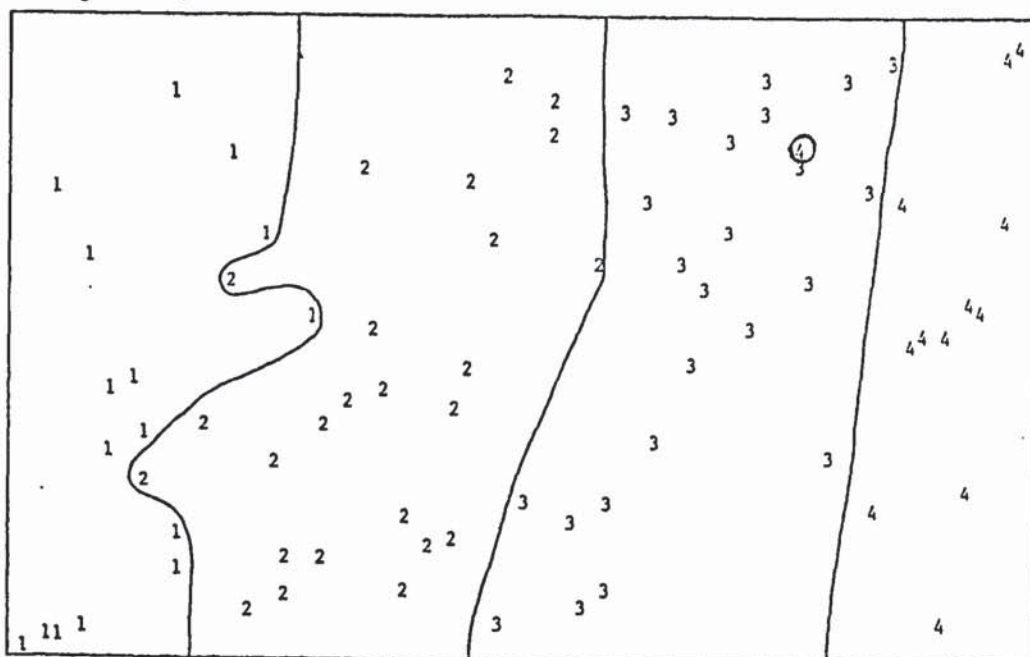


Figure 10.1d POSAC Item Diagram of the Environmental Evaluation Element of Building (All Subjects)

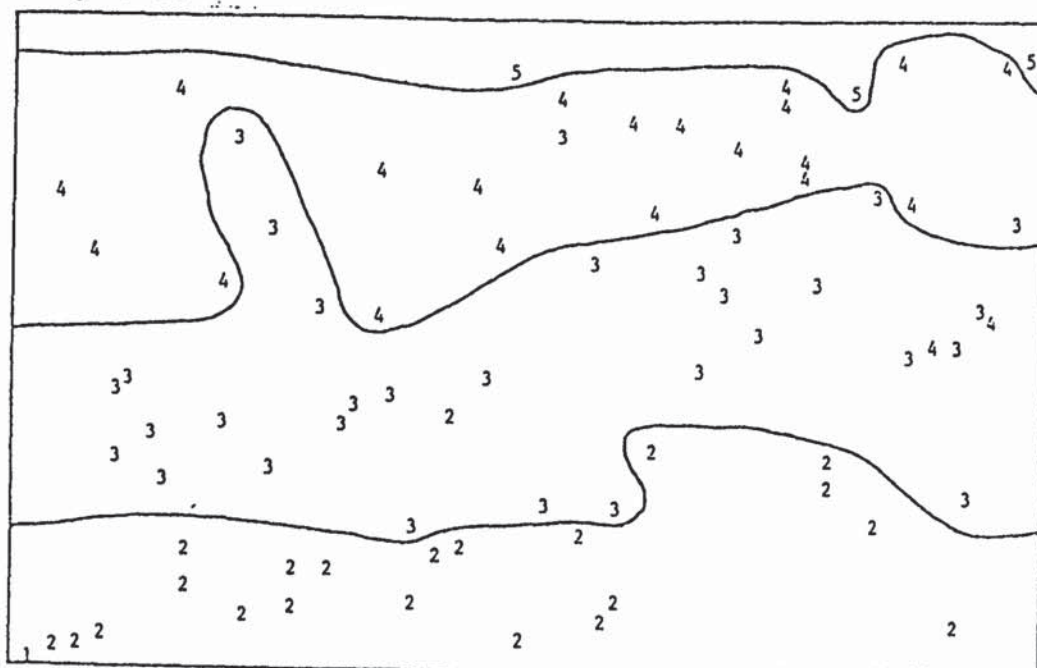


Figure 10.1e POSAC Item Diagram of the Environmental Evaluation Element of Office (All Subjects)

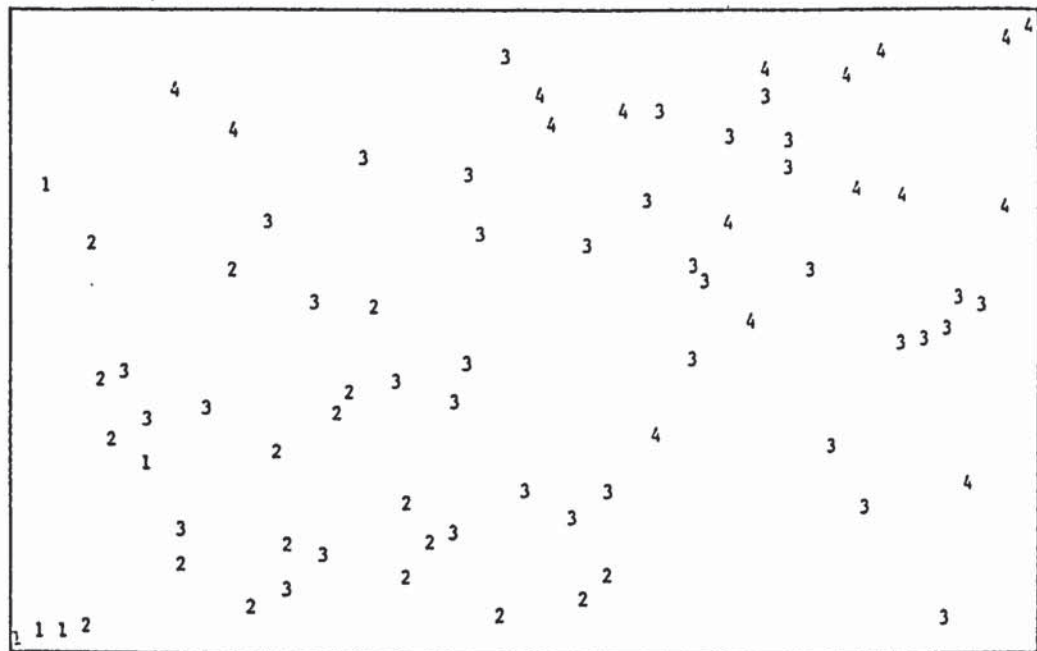
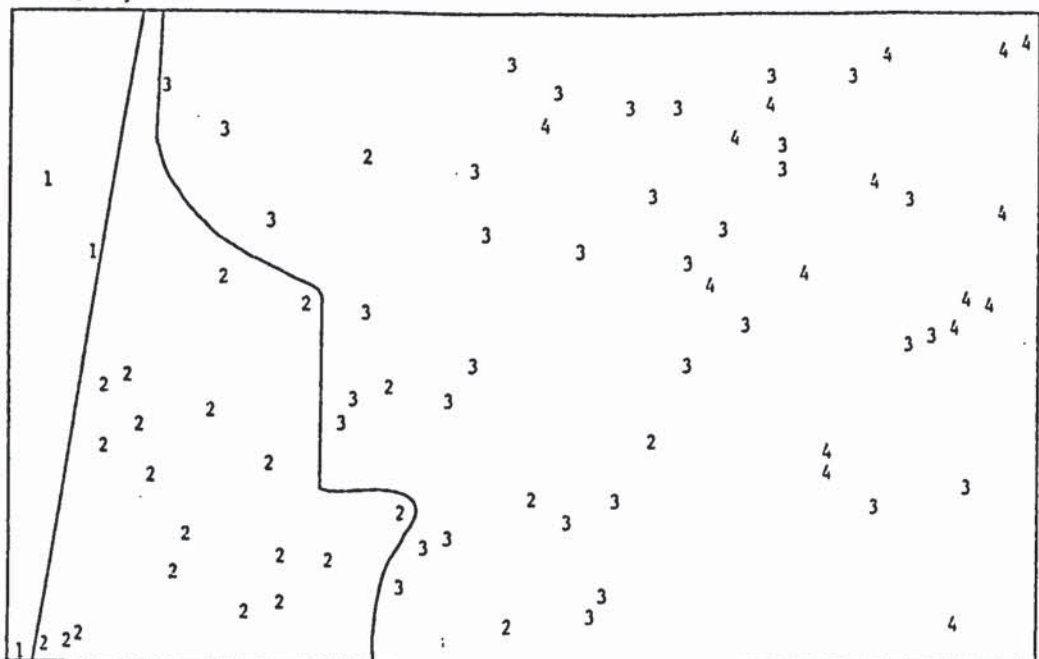


Figure 10.1f POSAC Item Diagram of the Environmental Evaluation Element of Workspace (All Subjects)



corresponding element in the level facet. The tendency, it must be stressed, is weak.

Before proceeding it is perhaps worth providing a summary of the above results in a somewhat simplified form. Figure 10.2 below shows schematic diagram of the essential aspects of the results of the POSAC. There are two points which need to be remembered when considering the figure below. The first point is that the figure has been, in effect, rotated forty five degrees from the POSAC plots. The horizontal and vertical coordinates of these plots are shown by the lines forming the "box" on the figure. Secondly, anyone familiar with POSA as portrayed by Hasse diagrams will, of course, recognise that the figure below basically represents such a diagram.

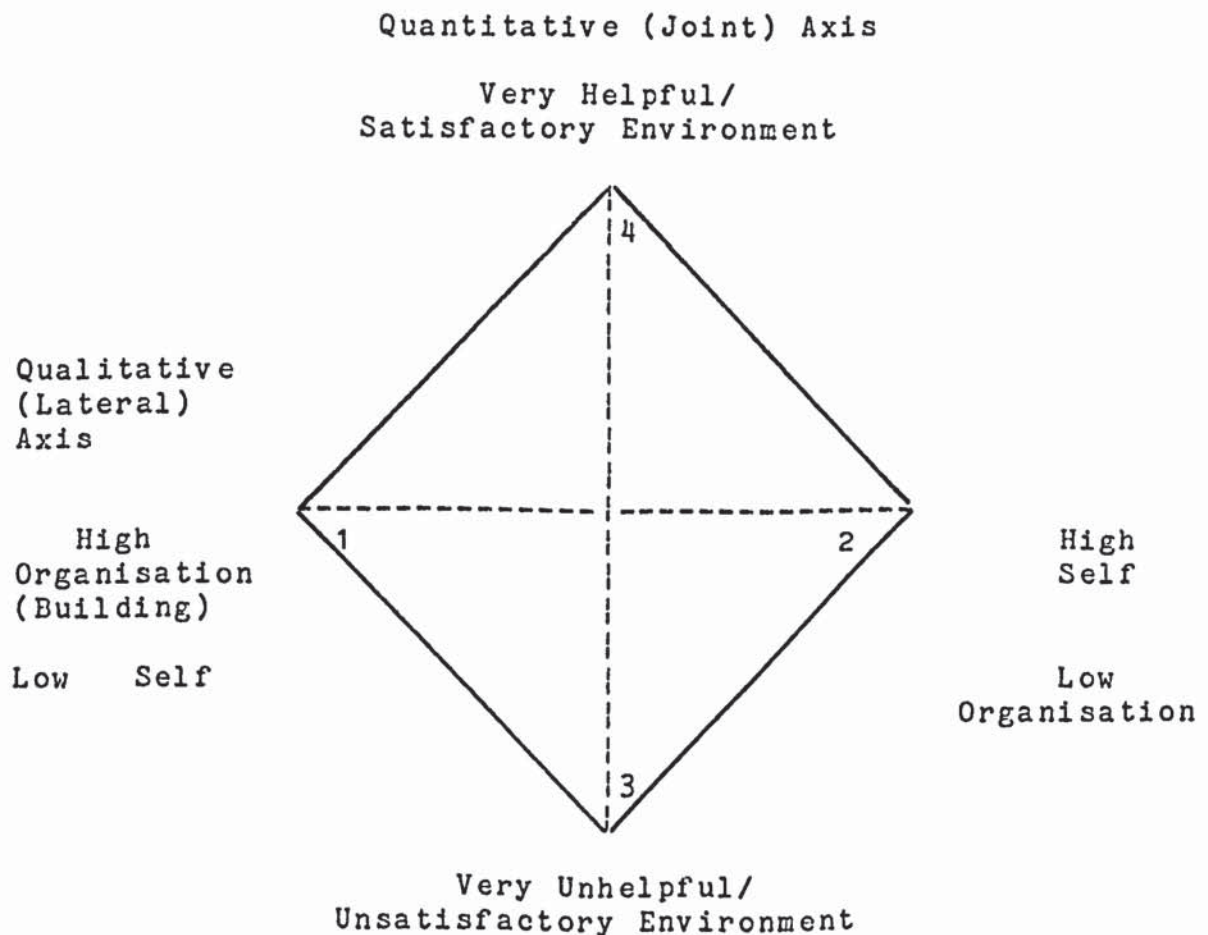
In the figure below there are two dimensions. The joint axis shows the total level of satisfaction/dissatisfaction with the environment. The lateral axis shows the qualitative axis, which is defined by the organisation/building, and self elements. Four hypothetical evaluations have been located on the figure in order to provide examples to assist interpretation and understanding. Points 4 and 3 represent people who are satisfied or dissatisfied with all aspects of the environment respectively.

Persons 1 and 2 are both equally, and moderately, satisfied with the environment; they are at the same mid-level of the

joint axis. However, these two evaluations differ qualitatively. Person 1 is satisfied with the environment in terms of the organisation and building elements, but dissatisfied with the environment from the perspective of the self element. The converse of this is true for person 2.

Figure 10.2.

Schematic Representation of the Essential Aspects of the POSAC of the Environmental Evaluation Elements



To summarise, of the six elements of the evaluation domain the organisation and self elements are those which

discriminate between people's evaluation, in terms of the qualitative axis of the partial order scalogram of the evaluations.

10.8 POSAC of the Evaluations of Each Site

Having established the general, overall dimensions of the evaluations, the next step is to consider the data from each of the individual collection sites. Again the rationale for this analysis is to discover the extent to which the above general scalogram structure applies to a variety of settings.

10.8.1 Site 1

The first plot, presented in figure 10.3a, shows the organisation element to be partitioned by L-shaped boundary lines. The partitioning reveals this element of the evaluation to be playing the role of a moderator item. Basically this means that high scores on this element are associated with middle scores on the lateral dimension of the partial order scalogram.

This role can be made more clear if figure 10.2 is considered. In terms of positioning people on this figure, a person with a high score on the moderator item would be located close to the central vertical axis of this diagram. It should, however, be remembered that items with this partitioning are not playing a role in defining the qualitative axis, and are, therefore, only of minor

interest.

The plot for the department element, figure 10.3b, is partitioned horizontally, showing it to be one of the two poles of the qualitative lateral axis.

The third plot, figure 10.3c, reveals that the self element forms the second pole of the qualitative dimension; it is vertically partitioned.

Plot 4, shown in figure 10.3d, reveals the building element to be almost exactly the same, in terms of the partitioning of the POSAC space, as the organisational element. The only difference between the plots is with regard to the score of 1 on the organisation element, which is 2 on the building plot.

The final two plots of the POSAC, shown in figures 10.3e and 10.3f, for the office and desk elements respectively, do not partition strongly; no partition lines have been included on the plots.

From these plots it can be seen that for Site 1 the qualitative axis of the Partial Order Scalogram is defined by the department at one pole and self at the other. The high scores for the organisation element are associated with the mid point of the qualitative axis defined by the other two elements.

Figure 10.3a POSAC Item Diagram of the Environmental Evaluation Element of Organisation (Site 1)

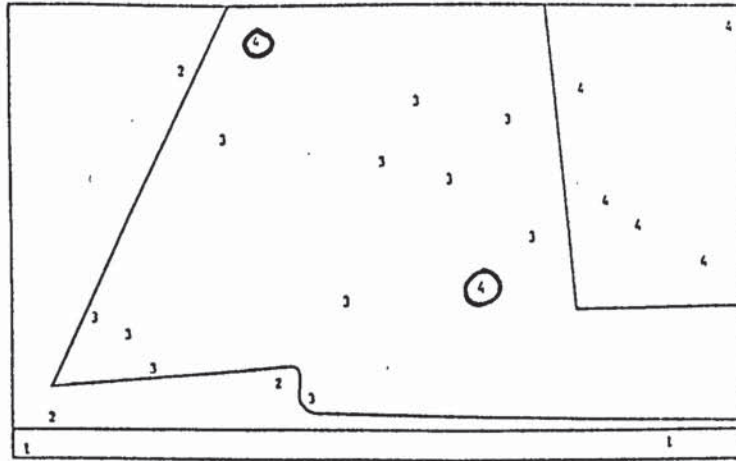


Figure 10.3b POSAC Item Diagram of the Environmental Evaluation Element of Department (Site 1)

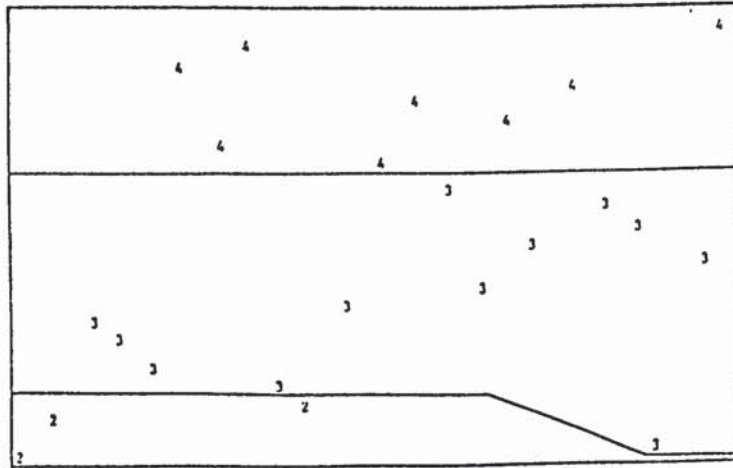


Figure 10.3c POSAC Item Diagram of the Environmental Evaluation Element of Self (Site 1)

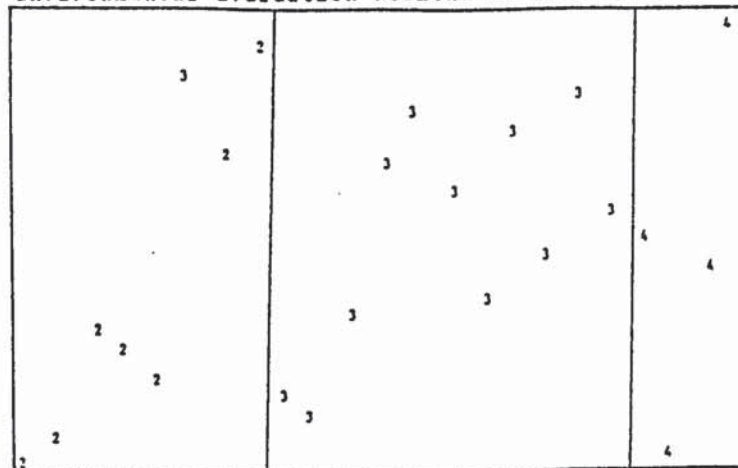


Figure 10.3d POSAC Item Diagram of the Environmental Evaluation Element of Building (Site 1)

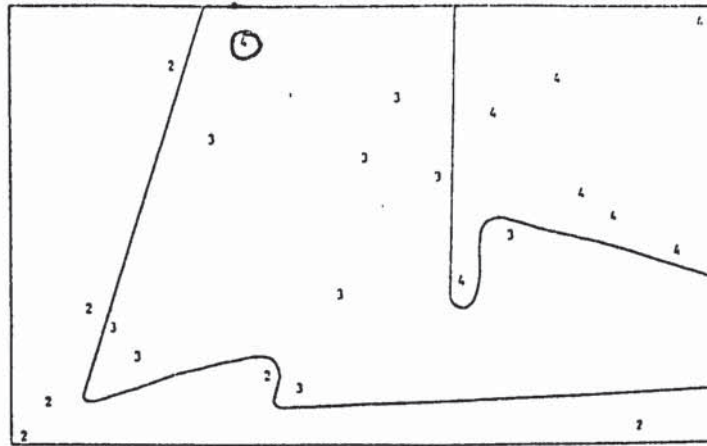


Figure 10.3e POSAC Item Diagram of the Environmental Evaluation Element of Office (Site 1)

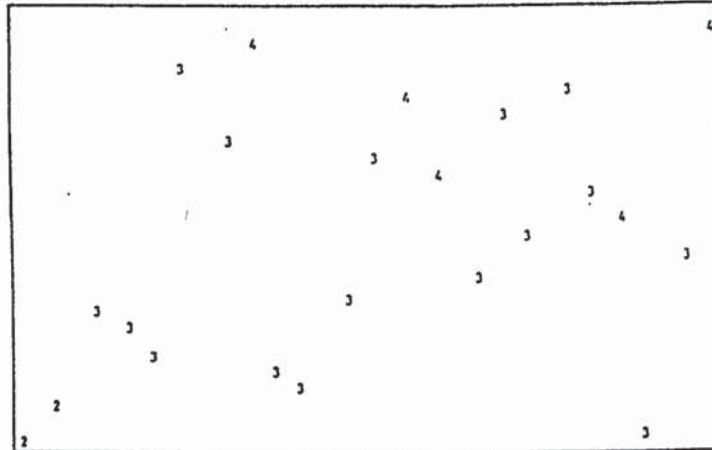
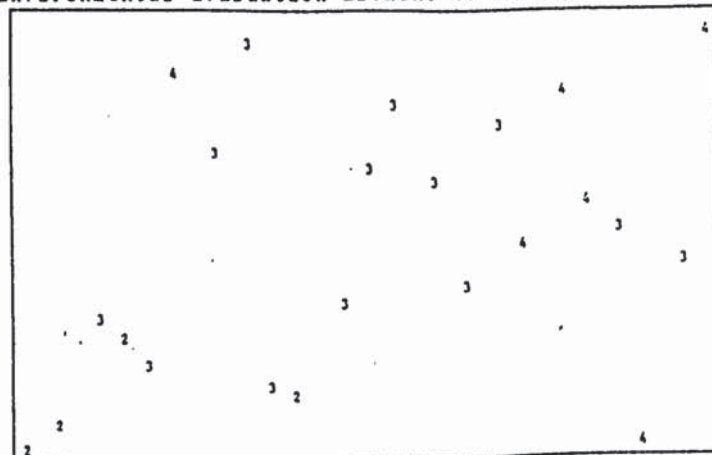


Figure 10.3f POSAC Item Diagram of the Environmental Evaluation Element of Workspace (Site 1)



10.8.2 Site 2

The results of the analysis of the data collected at Site 2 are different from those collected at Site 1. The partitioning for element 1, the organisation, is horizontal. The boundary lines shown in figure 10.4a do deviate a little from the linear. This suggests that while the role played by this element is that of a polar item, it is not as strong as the role played by the second element

The resultant plot of scores for the department element, figure 10.4b, shows a strong horizontal partitioning. This element, along with element 1, thus provides one pole of the lateral axis. However, the major defining element of the two is the department.

Element 3, figure 10.4c, again shows strong partitioning of the space. However, for this, the self element, the regions are demarcated vertically. Thus, again, the self element provides the second pole of the qualitative axis.

Elements 4 and 5, figures 10.4d and 10.4e, the building and office, partition in the same direction as elements 1 and 2. These results show that scores on each of the elements are similar, or at least part of the same unidimensional scale.

The final element, desk, approximates an L-shaped partitioning, as can be seen from figure 10.4f. This shows element 6 to be a moderator.

Figure 10.4a POSAC Item Diagram of the Environmental Evaluation Element of Organisation (Site 2)

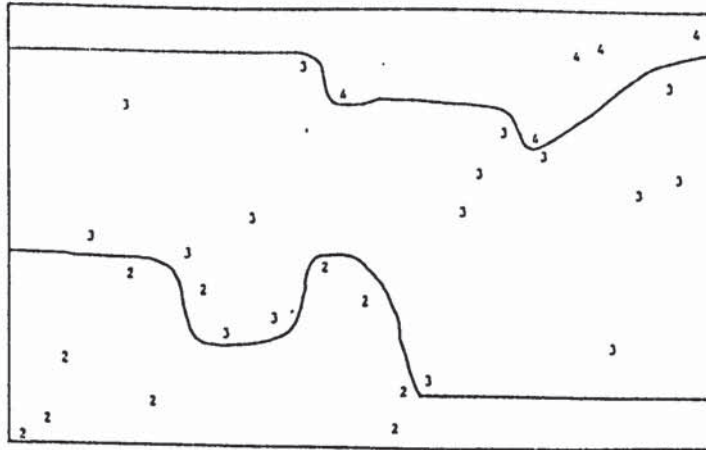


Figure 10.4b POSAC Item Diagram of the Environmental Evaluation Element of Department (Site 2)

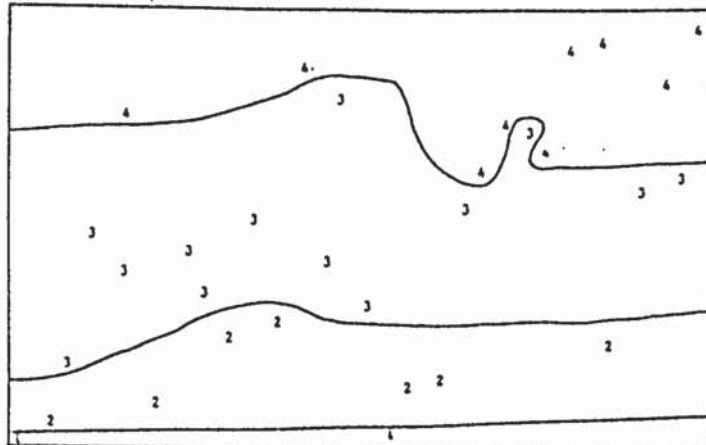


Figure 10.4c POSAC Item Diagram of the Environmental Evaluation Element of Self (Site 2)

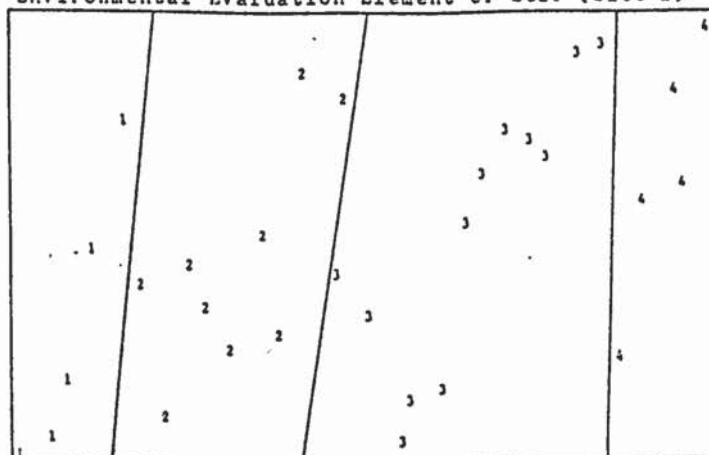


Figure 10.4d POSAC Item Diagram of the Environmental Evaluation Element of Building (Site 2)

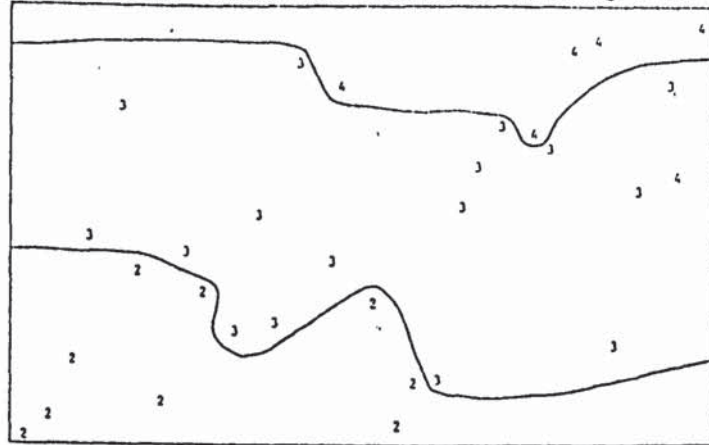


Figure 10.4e POSAC Item Diagram of the Environmental Evaluation Element of Office (Site 2)

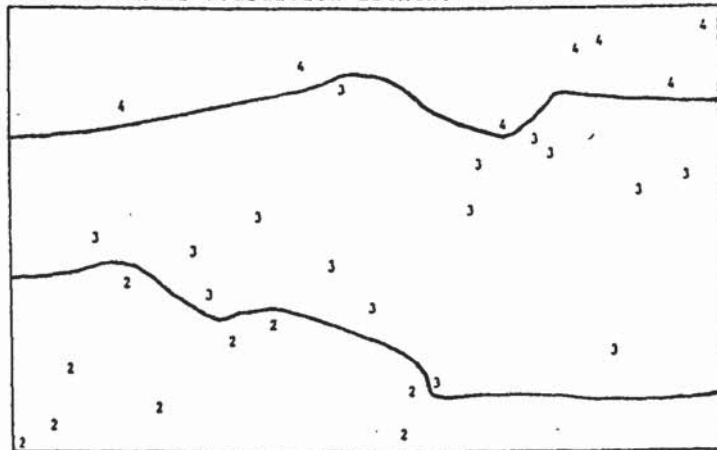
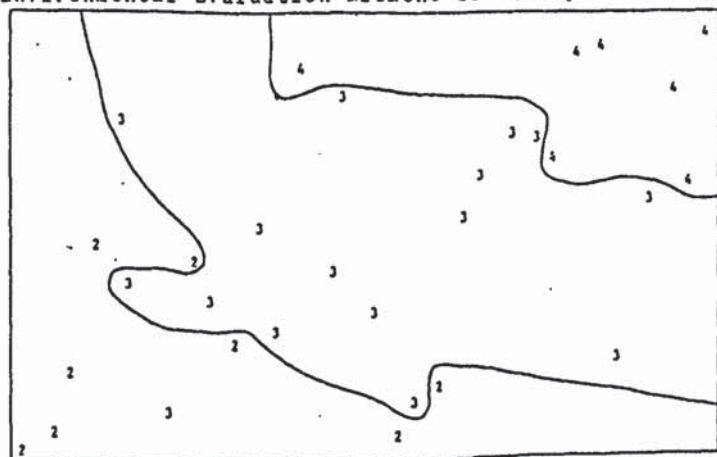


Figure 10.4f POSAC Item Diagram of the Environmental Evaluation Element of Workspace (Site 2)



10.8.3 Site 3

The plot for element 1, the organisation, can be seen from figure 10.5a to be very clearly partitioned. This item once again provides a pole of the partial order scalogram.

Figure 10.5b showing that the second element, department, partitions with L-shaped boundaries. Thus high scores on this item are associated with the mid point on the lateral axis.

The third element, self, provides the second pole of the axis differentiating qualitatively between evaluations. As can be seen from figure 10.5c, the space contains strong vertical regions, and thus follows the pattern already established in the previous analysis.

From figure 10.5d it can be observed that the partitioning of the plot for the building element is strong and vertical. The clear partitioning of this item is in accord with the partitioning for the organisation element, showing them to be similar in terms of their evaluation.

The office element, shown in figure 10.5e, is divided into regions by L-shaped partition lines. Thus the office is playing a similar role in structuring of the evaluations as the department.

The final item plot, figure 10.5f, shows the desk element to form, along with the self element, the second pole of the POSA. The partitioning is, however not quite so clear.

Figure 10.5a POSAC Item Diagram of the Environmental Evaluation Element of Organisation (Site 3)

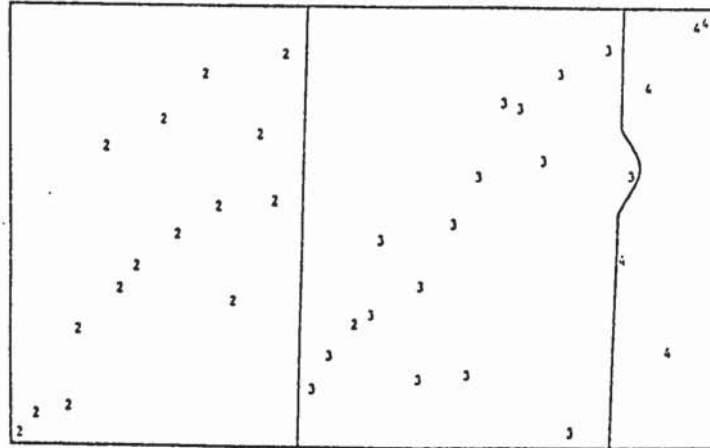


Figure 10.5b POSAC Item Diagram of the Environmental Evaluation Element of Department (Site 3)

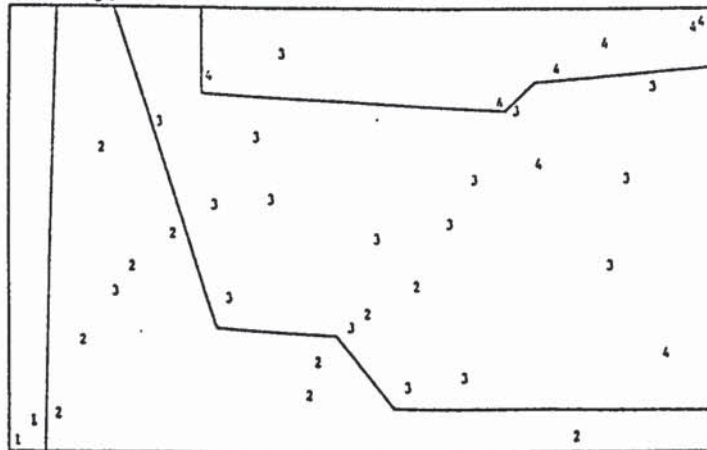


Figure 10.5c POSAC Item Diagram of the Environmental Evaluation Element of Self (Site 3)

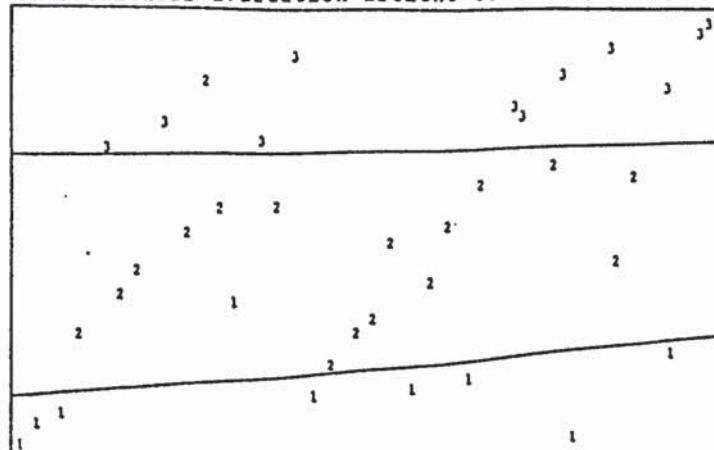


Figure 10.5d POSAC Item Diagram of the Environmental Evaluation Element of Building (Site 3)

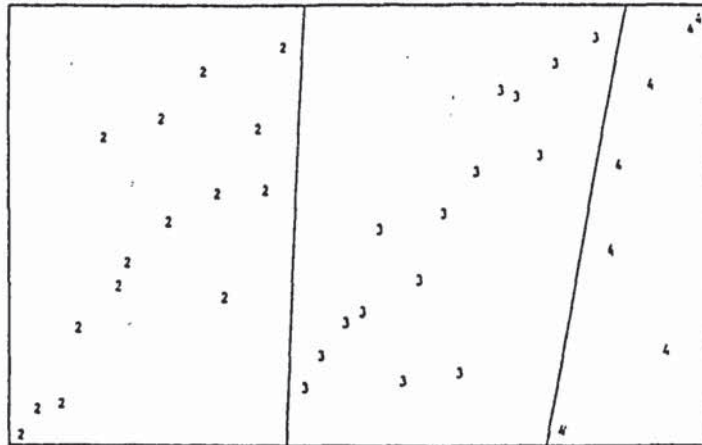


Figure 10.5e POSAC Item Diagram of the Environmental Evaluation Element of Office (Site 3)

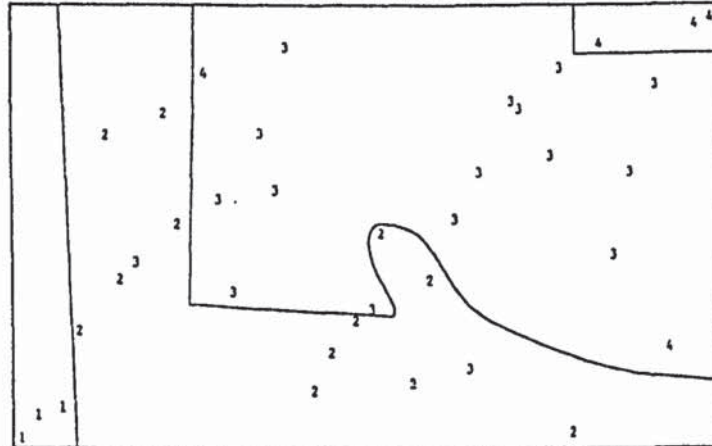
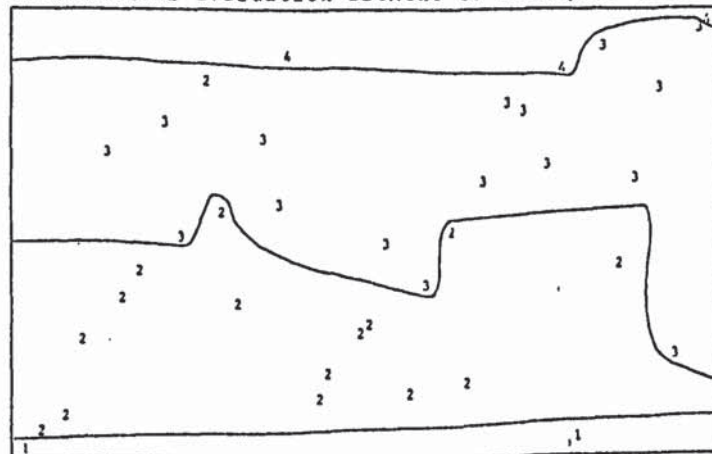


Figure 10.5f POSAC Item Diagram of the Environmental Evaluation Element of Workspace (Site 3)



The close correspondence between the partitioning of the elements of each facet reveals the association of the organisational unit with a particular level of the environment, in terms of workers' evaluations of the environment at this site.

10.8.4 Site 4

The final POSAC reveals further consistencies in the way in which people evaluate their office environments. As with other analysis, the first element, the organisation, provides a pole of the scalogram with the scores partitioning horizontally, figure 10.6a.

From figure 10.6b it can be seen that the department element does not reveal any strong partitioning of the space, which suggests that it plays no great role in the structure of the evaluations.

The third of the organisational unit elements, self, again plays a polar role, and therefore a part in defining the lateral axis (figure 10.6c).

The plot for the building element, shown by figure 10.6d, partitions horizontally, and again this element corresponds with the organisation element.

Figure 10.6e presents the plot for the level element of office. The space partitions with approximately inverted L-shaped boundaries. Inverted L-shaped partitions are the

Figure 10.6a POSAC Item Diagram of the Environmental Evaluation Element of Organisation (Site 4)

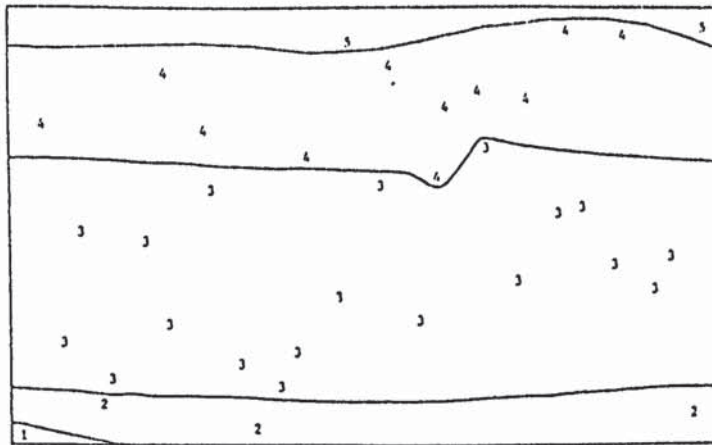


Figure 10.6b POSAC Item Diagram of the Environmental Evaluation Element of Department (Site 4)

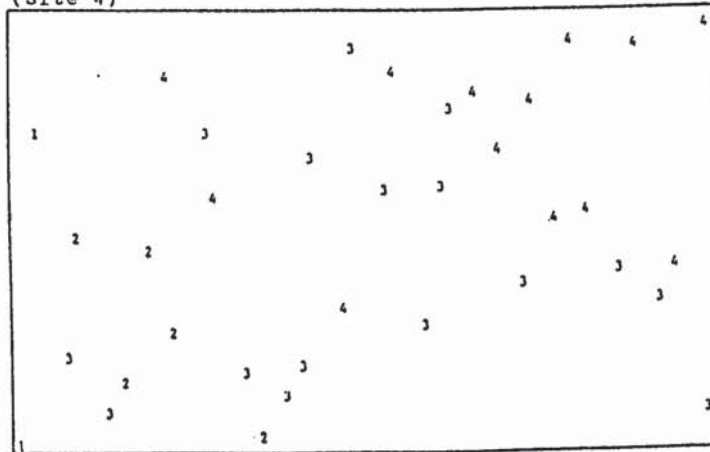


Figure 10.6c POSAC Item Diagram of the Environmental Evaluation Element of Self (Site 4)

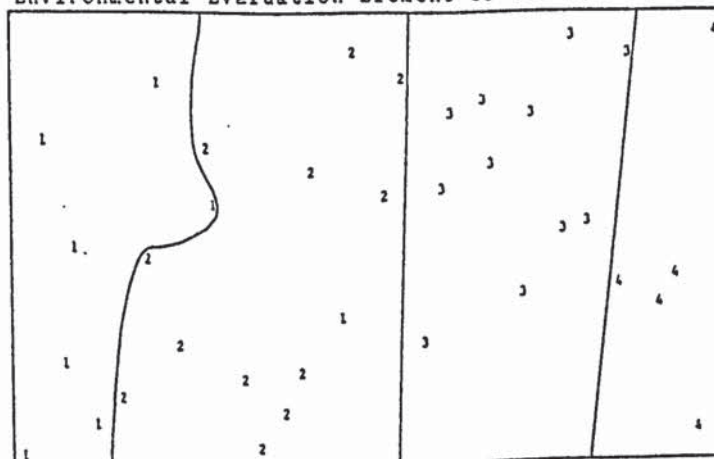


Figure 10.6d POSAC Item Diagram of the Environmental Evaluation Element of Building (Site 4)

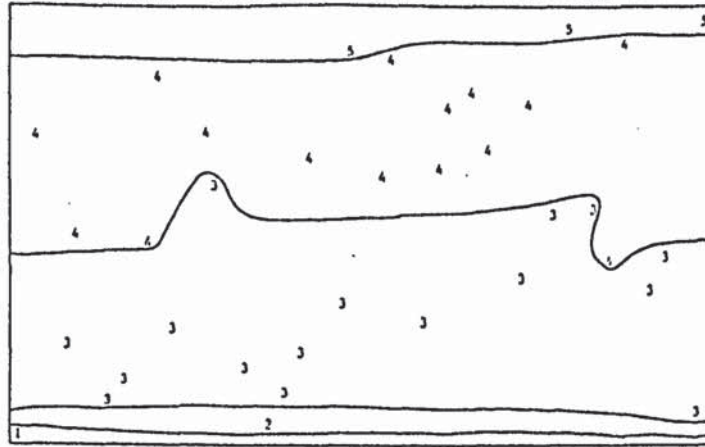


Figure 10.6e POSAC Item Diagram of the Environmental Evaluation Element of Office (Site 4)

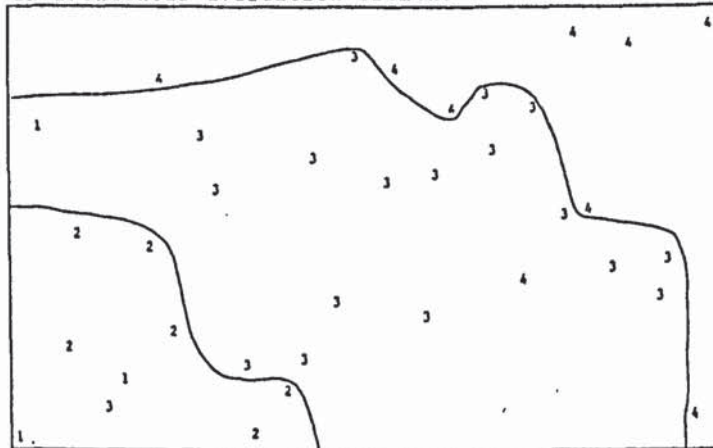
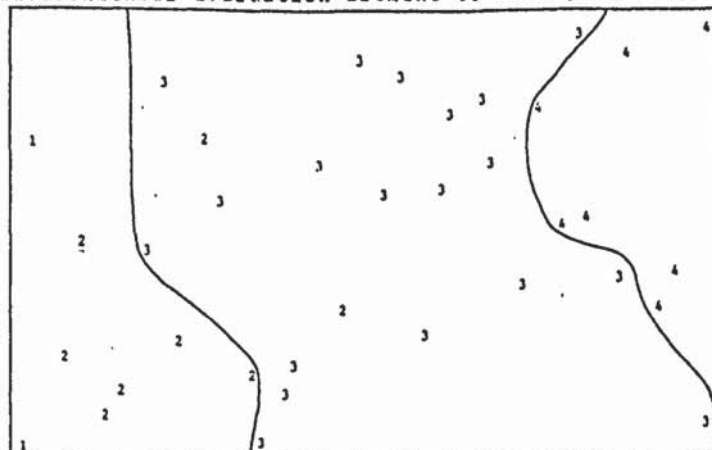


Figure 10.6f POSAC Item Diagram of the Environmental Evaluation Element of Workspace (Site 4)



fourth and final type of POSAC partitioning. Items with such a partitioning are polarizers; high scores on this item are associated with extreme values on the lateral axis. In terms of figure 10.2, participants with high scores on the office element would be found located at the extremes of the horizontal axis of the cross. Again the polarizing items play a minor role in differentiating the profiles.

The final figure of this section, figure 10.6f, reveals the self element scores to fall into vertical regions. Although the direction of the partitioning is the same as that for the self element, it is not so linear.

The above analyses have shown considerable consistency in the qualitative dimensions of the evaluations. It is helpful to schematically represent the evaluations from each Site. The essential features of the partial order scalograms are shown in figures, 10.7 to 10.10. In each of the figures the weaker partitioned elements are shown in parentheses.

Figure 10.7

Schematic Representation of the Essential Features of the
POSAC of the Environmental Evaluation Items for Site 1

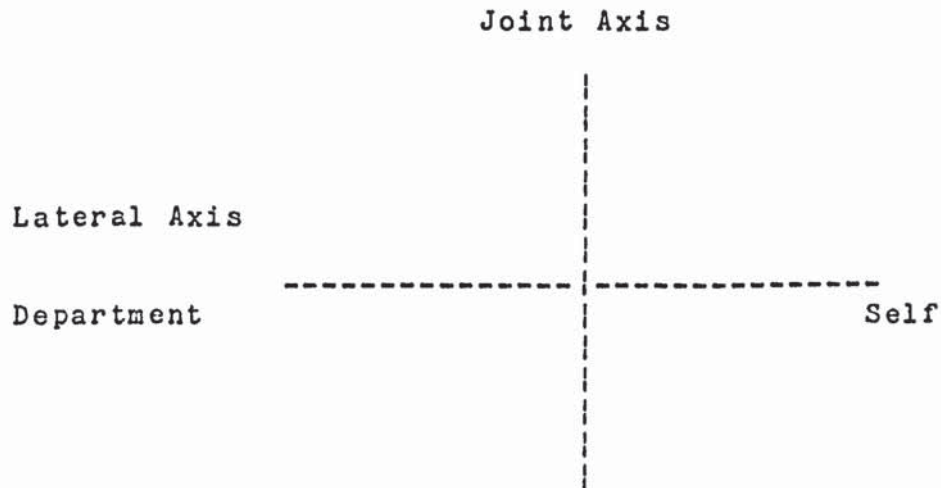


Figure 10.8

Schematic Representation of the Essential Features of the
POSAC of the Environmental Evaluation Items for Site 2

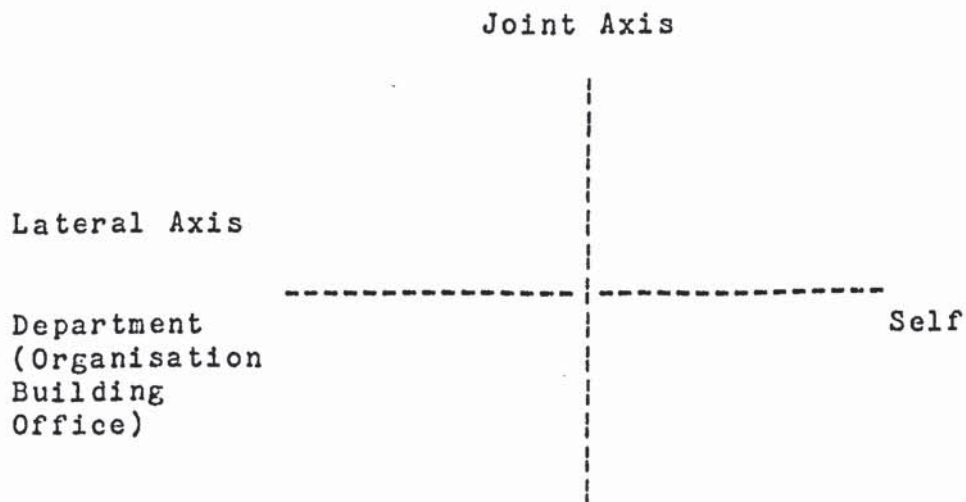


Figure 10.9

Schematic Representation of the Essential Features of the
POSAC of the Environmental Evaluation Items for Site 3

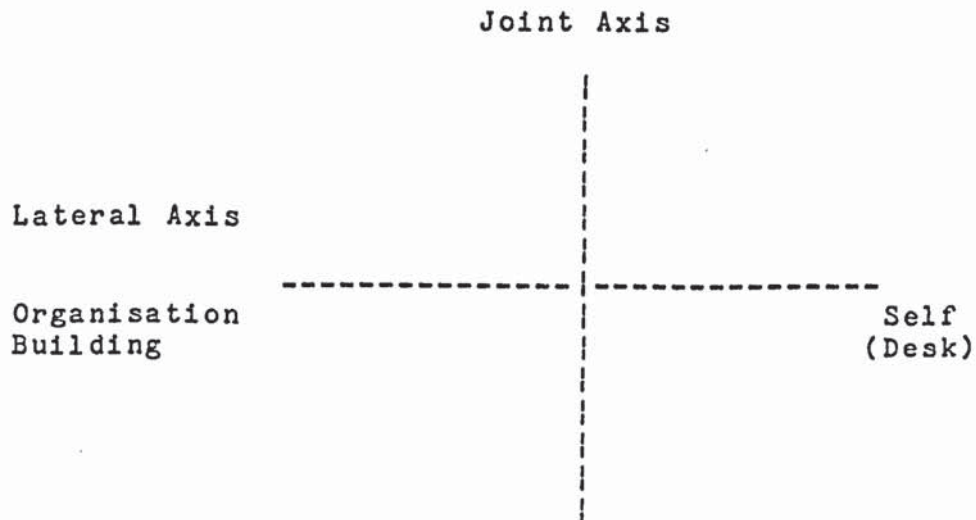
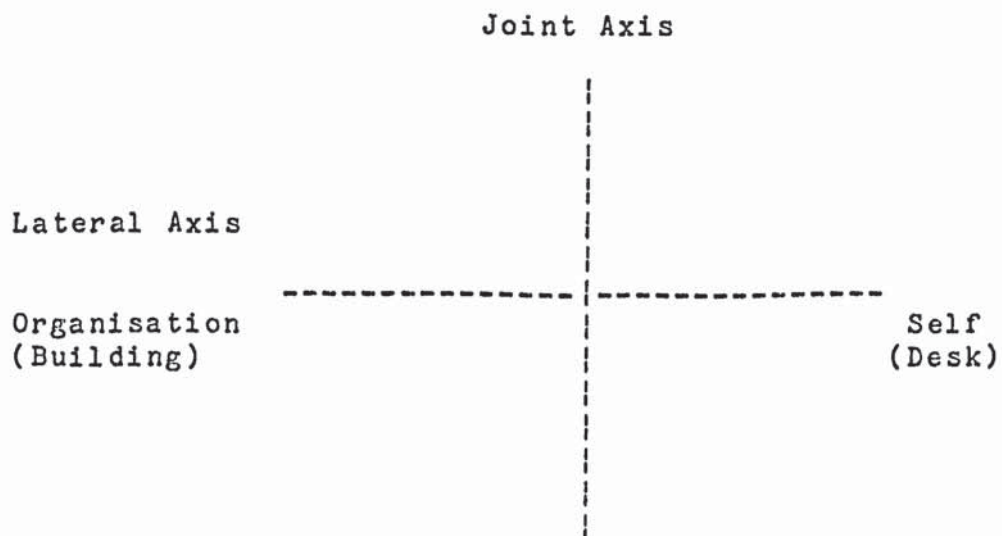


Figure 10.10

Schematic Representation of the Essential Features of the
POSAC of the Environmental Evaluation Items for Site 4



From the above results some important conclusions can be drawn. Firstly, there is a strong tendency for a particular environmental level to be associated with a particular organisational unit. This, however is only a tendency, and the partitioning of the organisational unit elements is the strongest. Secondly, the self element always provides one of the poles of the partial order scalogram. The second pole is provided by the organisation or department.

The latter of these two principal characteristics of the evaluations can be stated more fundamentally. In an evaluation of an office the individual makes his or her judgments from two basic perspectives; as a differentiated individual and as a member of a social entity.

Given this feature of the evaluations, one might expect that qualitative differences between the evaluations would be a function of some personality characteristic; work orientation. This possibility will be considered in later chapters.

10.9 Standardisation of Evaluation Scores

In the preceding sections the partial order structure of the evaluations of the buildings of each Site have been explored, and found to be relatively consistent. In the later parts of the thesis the evaluations will be considered in relation to other external domains, specifically people's perceptions of their organisation,

their work orientation, and the experience of cohesion in their department. In considering the relationship between internal and external domains, there are two possible strategies.

The first strategy would be to examine the way in which the Sites differ in terms of their evaluations, and then relate this to the manner in which they differ in terms of the external items, and thus draw some conclusions. This is the approach taken by, for example, Marans and Spreckelmeyer (1986). A second strategy would be to compare all the individuals regardless of the site from which they are drawn, and compare their responses in relation to the different domains.

The basic difference between the two approaches is that in the case of the former, one is drawing conclusions about specific stimuli. In the latter approach the focus is on relationships between the domains, regardless of the stimuli which gave rise to the particular conditions, which thus produces more generalisable results with regard to the relationships. An additional advantage of this latter approach is that it makes better use of the sample in making the comparisons.

In order to pursue the latter strategy, it is necessary to, in effect, remove the influence of the particular stimuli to which people are responding. This may be achieved by standardising the scores from each site. In order to do

this z scores were calculated for each individual from each site. This was achieved by following the usual formula of:

$$\frac{X_i - \bar{X}_i}{SD X_i}$$

A one-way analysis of variance was performed on the elements of the environmental evaluations of each Site in order to discover whether there were indeed significant differences in the evaluations. The results of this analysis are presented in appendix 14. In summary, with the exception of the department element, there is shown to be a statistically significant difference between the organisations ($p < 0.05$) in relation to the elements of evaluation. In terms of the differences between specific organisations, the most consistently statistically significant ($p < 0.05$) differences were between Site 1 and 4, with Site 3, and Site 4 with Site 2.

10.10 POSAC of Standardised Items

The interpretation of the POSAC is facilitated by the dichotomisation of the evaluation scores. This is especially the case when comparisons are to be made in relation to external variables. The standardised scores were therefore dichotomised above and below the mean (0).

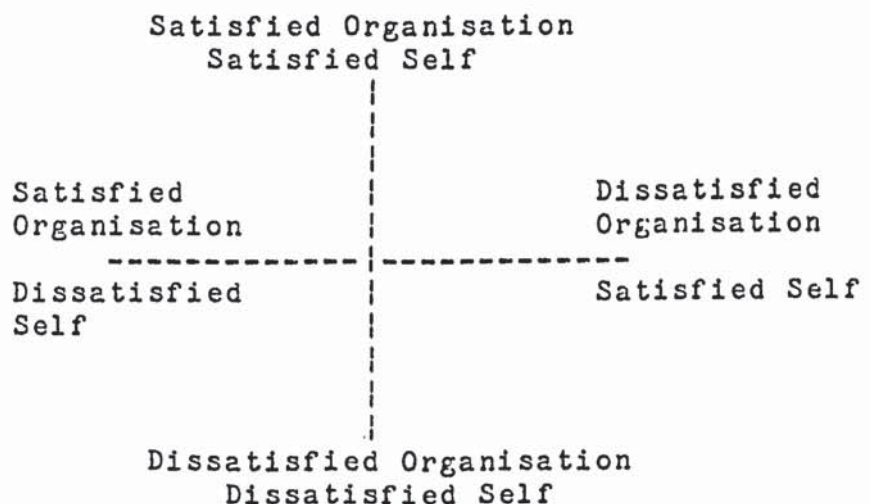
In order to check that the partial order structure of the dichotomised standardised score was the same as that for the original 5 point scale, the data were subjected to

POSAC. As the main interest was in the three organisational unit elements, only these three items were included in the POSAC. The results, shown in figures 10.11a to 10.11c, reveal that the poles of the POSAC continue to be formed by the organisation and self referents.

The results of the POSAC are summarised in figure 10.12

Figure 10.12

Schematic Representation of the Essential Features
of the POSAC of the 3 Standardised
Environmental Evaluation Elements



Each profile may be located at one of the four points of the cross shown in the above figure. The figure shows the two axes; horizontally across the space can be found the qualitative axis, and vertically the quantitative axis.

Figure 10.11a Item Diagram of Environmental Evaluation Element of Organisation from the PCSAC of 3 Standardised Items

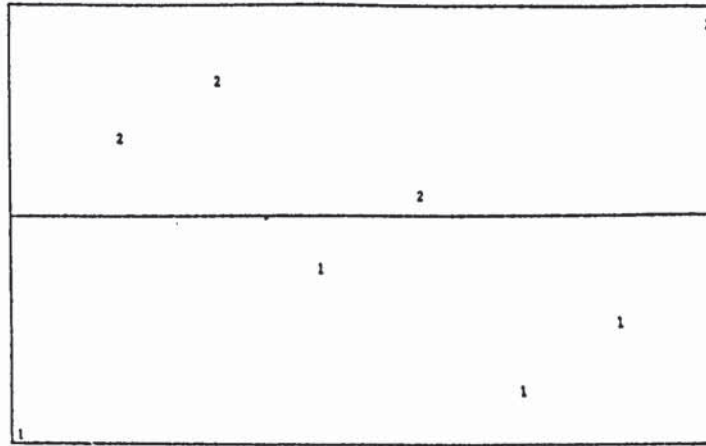


Figure 10.11b Item Diagram of Environmental Evaluation Element of Department from the FOSAC of 3 Standardised Items

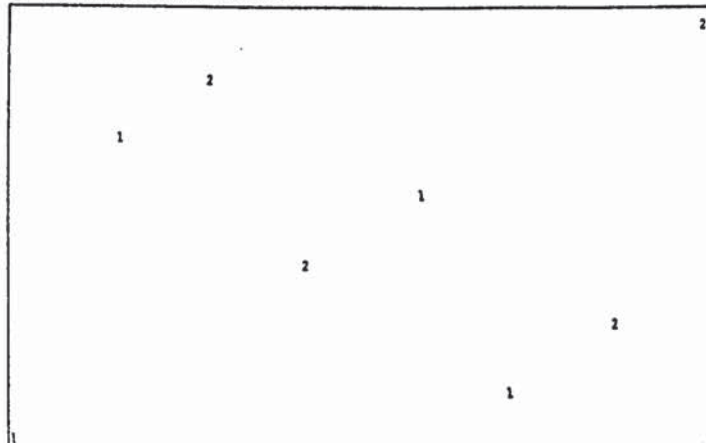
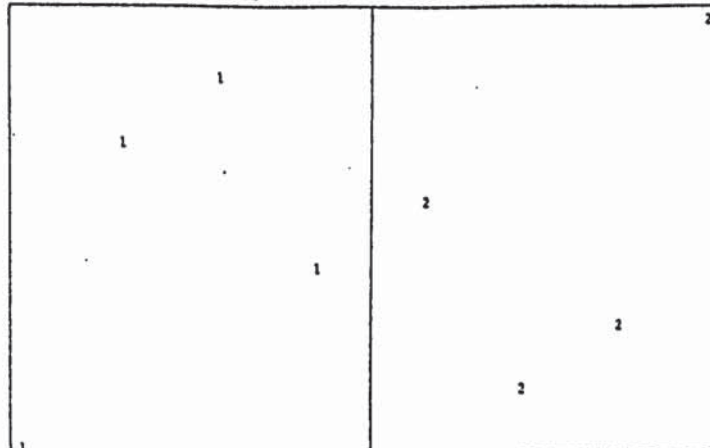


Figure 10.11c Item Diagram of Environmental Evaluation Element of Self from the FOSAC of 3 Standardised Items



10.11 Summary

In the present chapter the partial order structure of the participant's profiles of raw scores on six facet elements has been investigated and established. The elements, which have been calculated from the means of several items, show a large degree of consistency in terms of the role they play in differentiating between participants. Two dimensions have been identified. The first dimension is quantitative and represents the sum of people's score; their total evaluation score.

The second dimension is qualitative. The items defining this dimension are self and organisation/office. The principal item forming the second pole of the qualitative axis is the organisation.

The scores on the three organisational unit elements have been standardised and dichotomised in order to relate them to the external domains in an attempt to discover which of the external variables are associated with which positions (profiles) in the POSAC of the office evaluations.

CHAPTER 11

Results 3: Organisational Perception, Work Orientation, & Cohesion

11.1 Introduction

In this chapter the results of the analysis of the data concerned with what have been termed the external domains will be presented. The data analysis will generally follow a similar pattern to that for the environmental evaluations. The analysis will, however, only be performed on the total sample, and not on each organisation separately. The reason for this is that the concern here is with the general relationships between the office evaluations and external domains. The conditions within the specific organisations which may have given rise to, for example, the organisational perceptions, are, therefore not of direct relevance to the present aims.

11.2 Organisational Perception

A number of questions in the organisational perception section of the questionnaire were worded in such a way as to reverse the underlying conceptual direction of the response scale. Consequently the data from these questions were recoded. The recoded items are; 14 15 16 18 20 24 25 26 27 29 and 30. Having recoded the data the next step was to obtain a measure of the internal consistency of the questionnaire items.

11.2.1 Reliability and Internal Consistency

In order to assess the internal consistency and reliability of the organisational perception items, the alpha coefficient for the items was calculated. The standardised alpha coefficient achieved by was 0.83978. Within the criteria provided by Nunnally (1967), the alpha value is acceptable. It is also encouraging given the stage of development at which the model of organisational perception stands. The next stage in the analysis was to test the validity of the hypothesised facets of organisational perception.

11.2.2 SSA of Organisational Perception Data

The data from the organisational perception section of the questionnaire were subjected to SSA. The resultant SSA solution, which had a coefficient of alienation of .15, is shown in figures 11.1a and 11.1b.

Figure 11.1a shows the SSA plot which most clearly partitions in accord with the elements of the organisational unit and mode facets. Support for the elements of both facets can be clearly seen from the partitioning.

11.2.2.1 Organisational Unit

The partition line distinguishing between the elements of the organisational unit facet can be seen running from, approximately, the top left to bottom right diagonally

across the plot shown in figure 11.1a. The only items not located in the predicted regions are item 19, the extent to which the individual is asked to act as spokesperson for others in their organisation, and item 20, which refers to departments within the organisation.

It would seem that the apparent mislocations may be due, in the case of item 19, to the possibility that if people are asked at all to be a spokesperson, it will be for their department, rather than the organisation. In the case of item 20, it seems that the respondents may not only distinguish between their own department and the organisation, but also between other departments and the organisation. This would suggest a third element of the organisational unit facet; other departments.

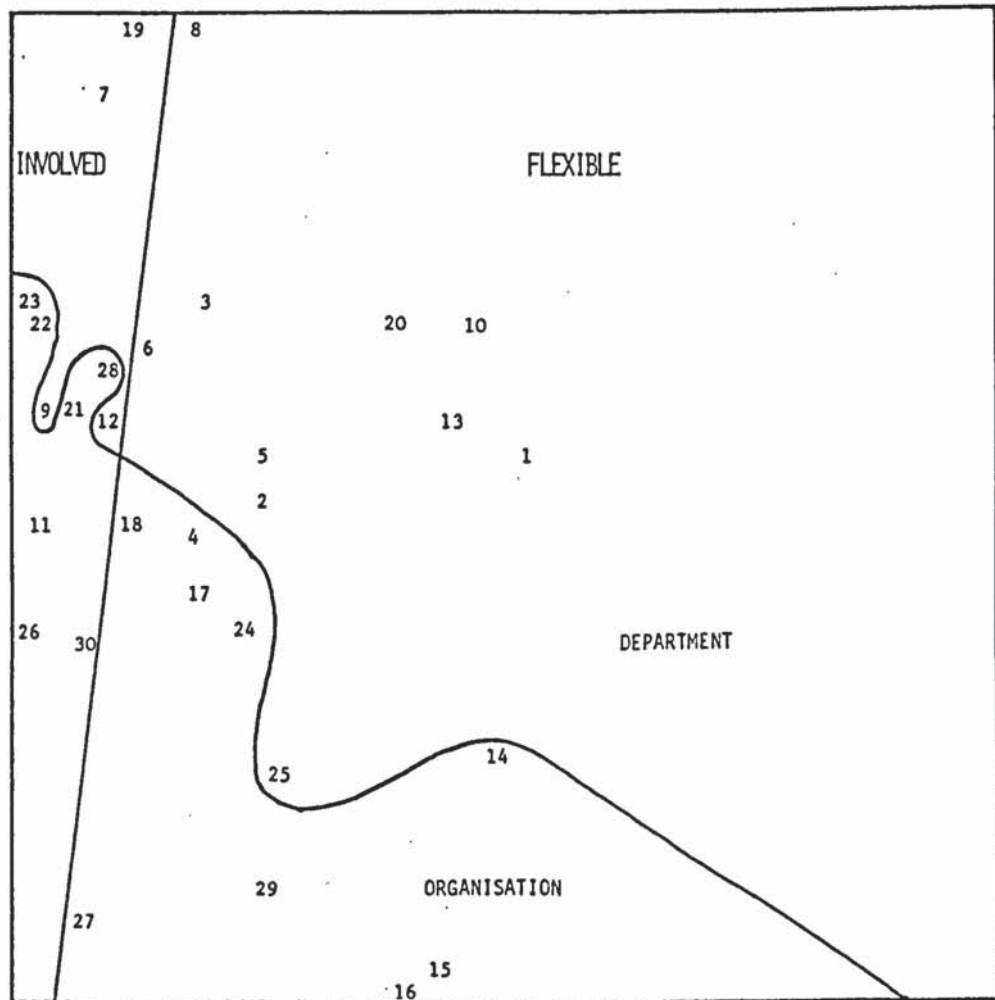
11.2.2.2 Mode

The partition line dividing the plot in accord with the mode facet elements can be seen running from the top to the bottom of the same plot (figure 11.1a). On the left of the partition line can be found items concerned with involvement, and on the right, those concerned with flexibility. Thus, there is again support for the hypothesised facet.

Only two items are found in regions other than those predicted. The first of the two items, question 24, "people

Figure 11.1a

Projection of the SSA of the Organisational Perception
Items Showing The Organisational Unit and Mode Facets



at the top of my organisation are isolated and out of touch", was thought to refer to an aspect of involvement; an organisation in which its higher echelons were isolated was thought to be one which was not concerned or involved with its workers. However it seems possible that such an organisation may also be perceived as rigid and inflexible.

The second item, question 10, "most of my friends are people in my department", is also located in the flexibility region. It was originally envisaged that the answer to this question would reflect the extent to which the people in the department involved the respondent socially. However it seems likely that the question in fact relates to the individual's behavioural tendencies and their flexibility in making friendships.

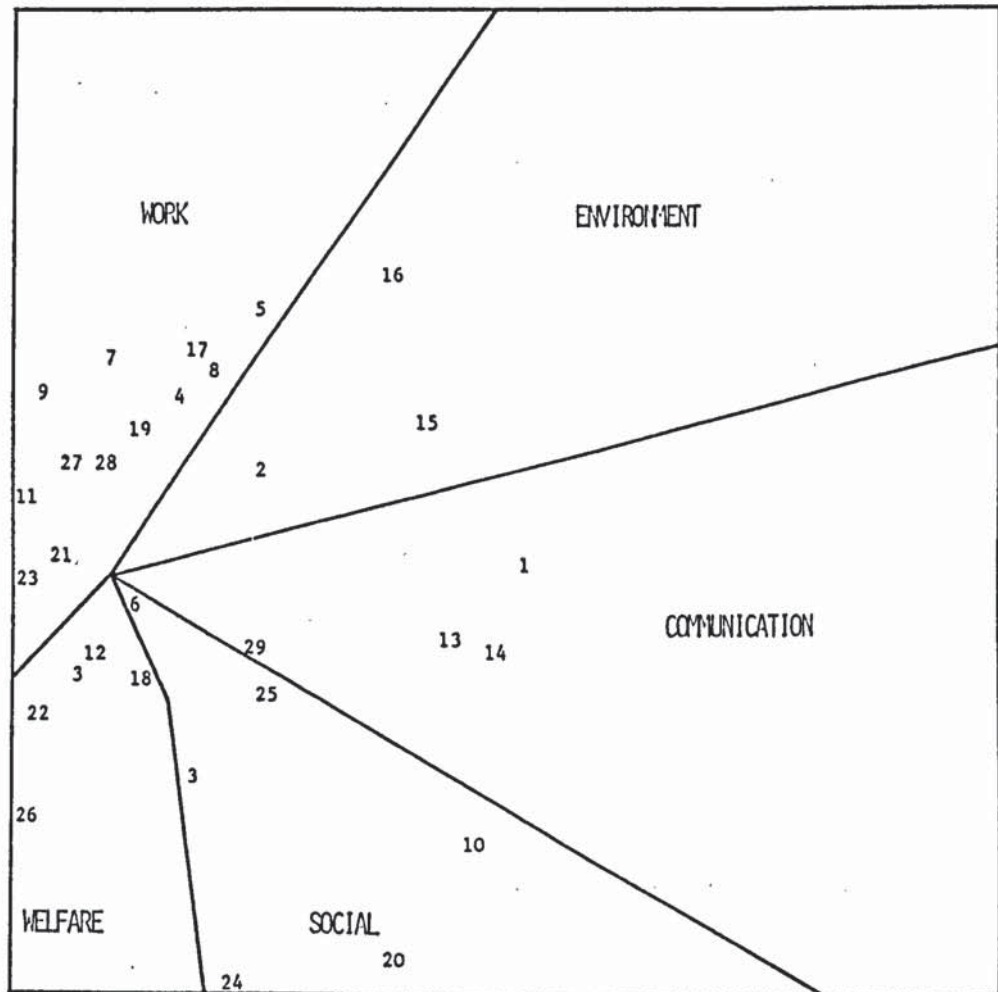
11.2.2.3 Area of Organisational Life

Although the third facet, area of organisational life, is not to be considered in relation to the environmental evaluations, as a matter of interest and completeness the partitioning of the SSA space which accords with this facet is shown in figure 11.1b. It can be seen that the elements of the facet are distinguished in the plot.

A number of items are found in regions other than those previously hypothesised. Item 9 for example is concerned with the environment. Items 7, 19, 23, and 28 are all general questions and fall in the work region. Items 7 and

Figure 11.1b

Projection of the SSA of the Organisational Perception
Items Showing the Area of Organisational Life Facet



19 are concerned with the individual as a "go-between". This would suggest that either there is an additional, unspecified, facet element, or, more likely, rather general questions are conceptualised as part of the work element.

Despite the anomalies found in the positioning of a small number of items, the support for the model is considerable. Generally, empirical evidence supports the multiple classification of workers' perceptions of their organisation. In the next sections we will consider the role of each of the elements of the organisational unit and mode facets further.

11.2.3 Construction of Element Scores

Following the procedure outlined previously in respect to the office evaluation data analysis, an item representing each of the four elements of the two facets of interest of the organisational perception mapping sentence was constructed. The items used in the construction of each element score were as follows;

1. Organisation	14	21	22	23	26	27			
2. Department	1	3	5	6	7				
3. Involvement	7	8	9	12	19	21	22	23	28
4. Flexibility	4	5	14	17	18	27			

The items selected to construct each scale were based on their position in the SSA space, whether they were located appropriately, and the extent to which the alpha

coefficient of the element could be improved by their inclusion or exclusion.

The final alpha coefficient measuring the internal consistency of each element composition are shown in table 11.1.

Table 11.1
Alpha Coefficient for Each Organisational
Perception Element Scale

Element	Standardised Alpha
Organisation	0.64514
Department	0.58735
Involvement	0.81631
Flexibility	0.67511

It can be seen that the alpha coefficient for three of the four elements is quite low. However, all coefficients are sufficiently large as to be useful for basic research (Nunnally, 1967) and the present purposes. With the exception of the involvement scale, all scales should be improved in any future research.

11.2.4 POSAC of Organisational Perception Data

It has previously been noted that the strategy adopted in the present thesis is to consider the individual's

responses without regard to the particular organisations and environments in which they work. However, as a matter of interest, a one-way analysis of variance was performed in order to discover whether there are differences between the organisations with regard to organisational perception. The results of this analysis is presented in appendix 15. Basically, the analysis failed to show any statistically significant ($p < 0.05$) differences between the organisations except in relation to the organisational element. The only two organisations which differ at the $p < 0.05$ level of significance are Site 1 and 2.

For the analysis presented in the remainder of the thesis the scores on each element were standardised. The data was then dichotomised above and below 0 (the mean).

A POSAC was performed on the dichotomised and standardised data. The results of the POSAC of the organisational perception elements are shown in figures 11.2a to 11.2d.

Figures 11.2a and 11.2b show that the organisation and department elements play the polar roles of the partial order scalogram, partitioning the space vertically and horizontally respectively.

Figure 11.2c shows the partitioning of the POSAC space for the involvement element. The partitioning is L-shaped revealing the element to be associated with the middle scores on the lateral axis.

Figure 11.2a Item Diagram for the Organisation Element of the POSAC of the Organisational Perception Elements

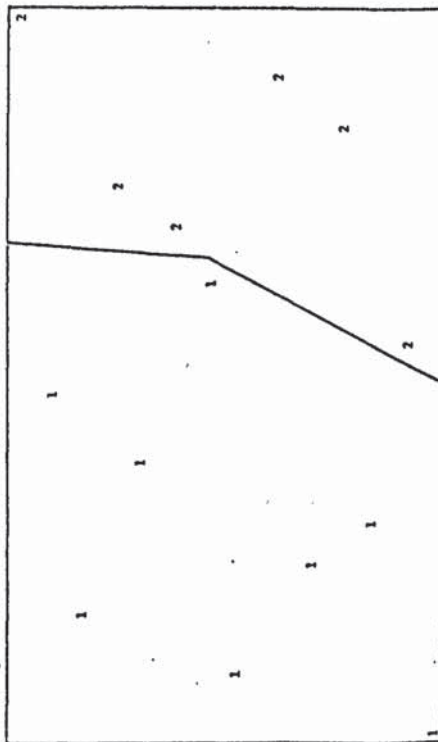


Figure 11.2c Item Diagram for the Involvement Element of the POSAC of the Organisational Perception Elements

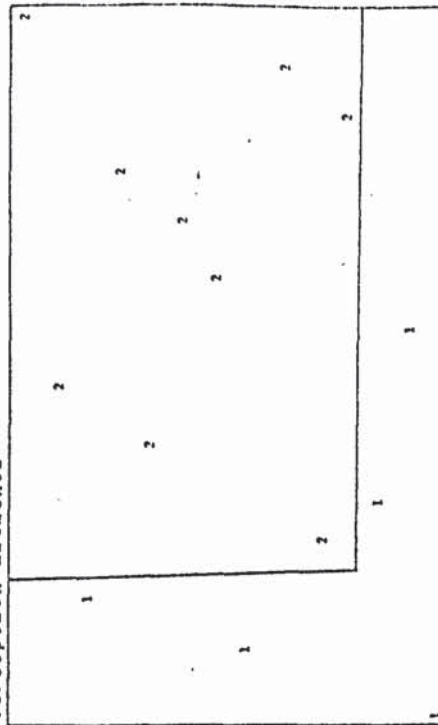


Figure 11.2b Item Diagram for the Department Element of the POSAC of the Organisational Perception Elements

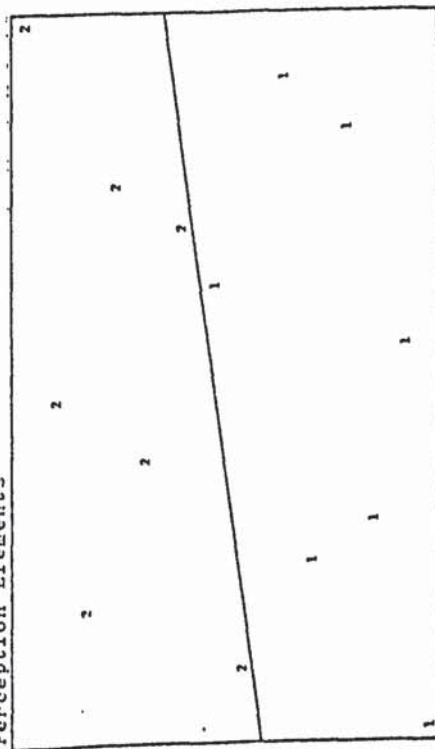
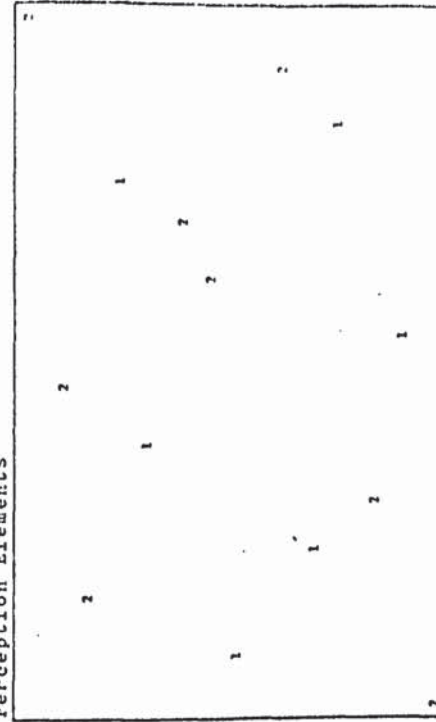


Figure 11.2d Item Diagram for the Flexibility Element of the POSAC of the Organisational Perception Elements



The plot of scores on the flexibility element, presented in figure 11.2d, can not be partitioned. Flexibility, therefore, plays no role in structuring the organisational perception partial order scalogram.

From the above results it can be seen that the qualitative axis of the POSAC is defined by the organisational unit elements. Thus the respondents can be qualitatively differentiated between those who have a positive view of the organisation and a negative view of the department, and vice-versa. The remaining participants either have positive or negative perceptions of both organisation and department.

In the final results chapter we will consider the relationship between the scores on the above elements in relation to the environmental evaluations. In the next section of this chapter the results of the work orientation questions will be presented.

11.3. Work Orientation

Again, the first step in the analysis of this section of the questionnaire was to reverse the scores on a number of items in order to achieve a unidirectionality of the response scale. The following items were recoded: 3 5 6 8 9 16 18 20 21 22 24 29.

11.3.1 Internal Consistency of the Work Orientation Questions

The recoded data set was analysed in order to calculate the alpha coefficient for the work orientation questions. The resultant alpha coefficient obtained was 0.7500. The alpha level achieved is within our present criteria of acceptability.

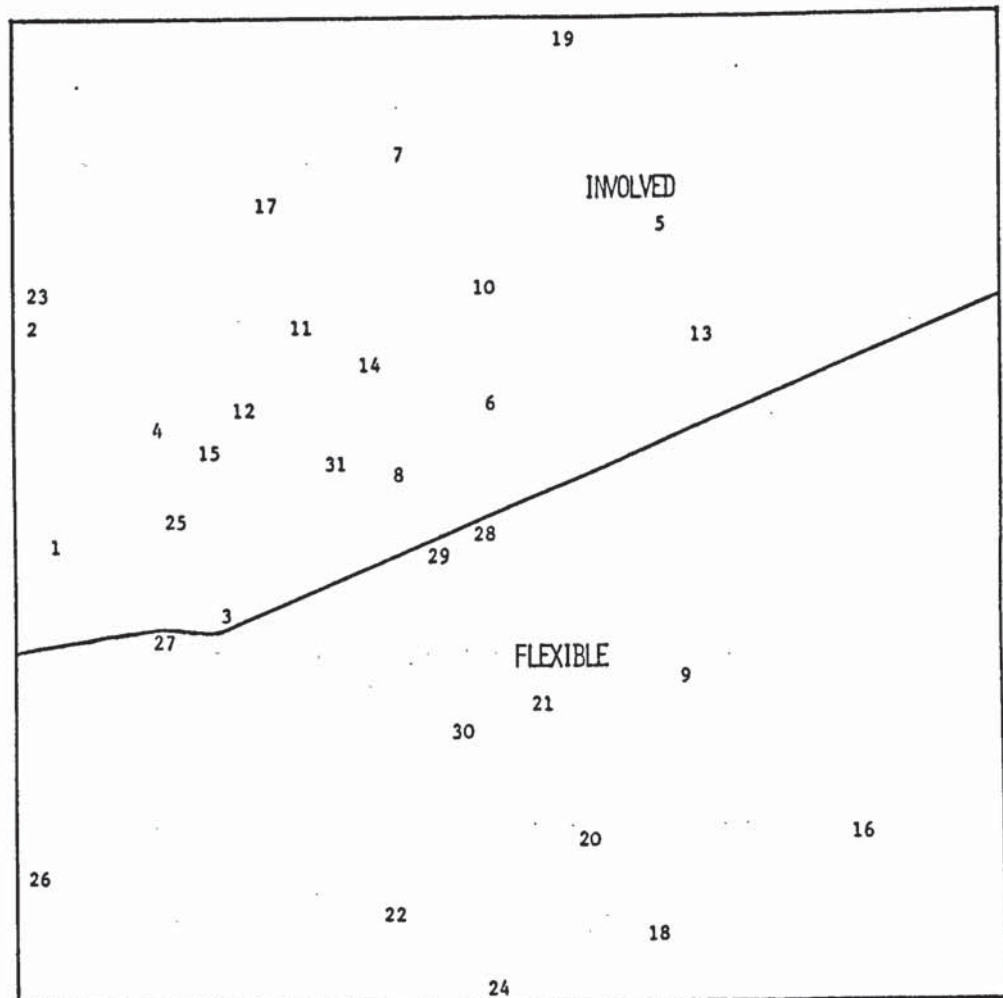
11.3.2 SSA of the Work Orientation Questions

The data from the work orientation section of the questionnaire were subjected to SSA. The plot presented in figure 11.3 shows a projection of the SSA space partitioned in accord with the single mode facet. It can be seen from the figure that there is a clear partitioning of the space such that there are distinct regions for each of the elements. The coefficient of alienation for this SSA solution was .19, which is acceptable.

While the partitioning of the space is very clear, there are four items located in a region other than predicted; 9, 17, 19, and 23. Given the exploratory nature of this part of the study, the mislocation of only four items is rather encouraging.

Figure 11.3

Projection of the SSA of the Work Orientation Items
Showing the Elements of the Mode Facet



11.3.3 Construction of Element Items

Following the pattern of previous analysis, an item representing each element of the facet of the work orientation section of the questionnaire was constructed. The questions used in the construction of each element score were;

1. Involvement 5 6 10 12 14 15 31
2. Flexibility 9 16 18 20 21 22 24 30

The internal consistency coefficient alpha was calculated for each of the two element items. The alpha coefficients are shown in table 11.2 below.

Table 11.2
Alpha Coefficients for Each Work
Orientation Element

Element	Standardised Alpha
Involvement	0.63617
Flexibility	0.64737

The alpha values are relatively low and clearly further work would be necessary to improve the measures, nonetheless, the coefficients are sufficiently high as to be useful here.

Finally, the element scores of the work orientation

elements were standardised and dichotomised for use in later comparative analysis.

A one-way analysis of variance, presented in appendix 15, showed there to be no statistically significant differences between the Sites in terms of work orientation.

With regard to the partial order structure of the work orientation data, with a two item dichotomised data set it is inevitable, assuming that four different profiles exist, that one will obtain a structure in which each item plays a polar role. Consequently a POSAC of the data would have been pointless. If the data are not dichotomised such a structure is not inevitable.

The final section of the questionnaire to be included in the thesis is the part concerned with departmental cohesion. It is to this that we now turn.

11.4 Cohesion

The data regarding departmental cohesion required little analysis at this stage. The cohesion items were not composed of multiple classification questions. The only analysis deemed relevant at this stage was the measurement of the internal consistency of the cohesion items.

The data from the four cohesion questions were therefore analysed and alpha coefficient was 0.65303. Again this is not as high as would be preferred, but it does indicate a reliability or internal consistency of a degree sufficient

for present purposes. Finally, for reasons noted several times previously, the scores on the cohesion item were standardised for later analysis.

In keeping with the analysis of data concerned with other aspects of the present study, a one-way analysis of variance was performed on the cohesion data. The results, presented in appendix 15, revealed no statistically significant differences between the four sites at the $p < 0.05$ level.

11.5 Summary and Conclusion

In the preceding section the results of the analysis of the "external" domains of the present study have been presented. Support for all proposed facets and elements has been shown.

The POSACs of the data have revealed which elements of each domain play the polar roles in structuring the data. For organisational , perception the polar items are "Organisation" and "Department". The two work orientation elements also, inevitably, play polar roles.

CHAPTER 12

Results 4: Evaluations and Organisational Perception, Cohesion and Work Orientation

12.1.Introduction

In the previous chapters models of office evaluation and organisational perception have been developed and empirically validated. The first stages of a model of work orientation have also been successfully completed, and finally a measure of perceived departmental cohesion has been produced. From these models, element scores have been calculated. The reliability of some of these subscales needs improvement, however all are sufficiently reliable for the exploratory purposes of the present study.

The elements have been subjected to POSAC and the items playing the principal roles in structuring the partial order structures of the domains have been identified. Finally the scores on each item have been standardised and dichotomised.

From the previous analysis the following elements have been validated and scores calculated.

Environmental Evaluation:

Organisation
Department
Self

The other elements of the evaluation mapping sentence have not been included for further analysis due to their

generally subsidiary roles in structuring people's evaluations of their environment.

Organisational Perception:

Organisation
Department
Involvement
Flexibility

Work Orientation:

Involvement
Flexibility

and the single measure of cohesion.

12.2 Aims of the Analysis

The aims of the analysis presented in this chapter are threefold. Firstly, to demonstrate or provide an example of the advantages and uses of descriptive models in investigating the relationships which may exist between domains. Throughout the thesis mention has been made of the limitations of models which presuppose the existence of descriptive models, when these models have not been established. By developing descriptive models prior to investigating the relationships between different areas it is hoped that it will be possible to show that their establishment allows a better, clearer, and more subtle understanding of the relationships.

A second aim of the analysis presented in this chapter is to show how the analysis procedures widely used within the facet theory framework can be usefully combined with the more conventional inferential statistics. In previous

research Donald (1983) applied POSA to environmental evaluations for the first time. In this thesis the application is being taken further. Basically, the results presented in this chapter will attempt to demonstrate that the use of inferential statistics can benefit from a foundation provided by the prior application of the MDS procedures of SSA and POSAC. From the converse perspective, it is hoped that the analysis will demonstrate that the use of POSAC can also benefit from inferential statistics. When considering the profiles in POSAC it is usual to simply note the frequency with which particular profiles are associated with scores on external variables; no test of statistical significance, or measures of association, is applied to the relationships. This will be the first time such procedures have been combined. It is hoped that this will facilitate the integration of the two research approaches.

It should be noted that most facet theorists reject the use of tests of statistical significance. The rationale for this lies in Guttman's (1981) criticisms of the procedure. While the author is aware of these, and accepts them, such tests will be applied. However, the reader who disagrees with their application can decide for him/her self as to whether they consider any of the relationships shown are truly significant; sufficient detail will be provided.

The final aim of the chapter is substantive; it is to

discover which relationships actually exist between the various domains and their elements. A number of areas have been suggested as being related to office evaluations. Tests of these have previously been inadequate due to poor conceptual specifications. They therefore remain open to question. Answering some of these questions is of importance to our understanding of the office environment.

At a later stage in the chapter, analysis will be performed on nominal level data. The analysis procedures chosen should reflect this. In the present study Chi square will be used. This procedure also has the advantage of departing minimally from the usual approach of those who use POSAC; it is concerned with frequencies.

In the next section the results of the crosstabulation of each of the external element items with the three evaluation items of organisation, department, and self will be presented. Following this we will consider the joint and lateral axes of combinations of environmental elements.

12.3 Crosstabulation of Environmental Elements with External Elements

The dichotomised scores on the individual environmental elements were crosstabulated with the items drawn from the other domains. Chi square between the items was then calculated. The results of the Chi Square are shown in table 12.1.

Table 12.1

Chi Squares of Environmental Element
Scores and External Variables

External Variables	Environmental Elements		
	Organisation	Department	Self
Perception			
Organisation	4.72028 *	6.66752 *	1.22495
Department	0.15369	0.00193	0.0
Involvement	1.42687	1.50966	0.87891
Flexibility	0.0	0.29915	0.08236
Orientation			
Involvement	4.54202 *	14.07233 *	0.82800
Flexibility	0.16993	3.70879 *	0.01135
Cohesion	0.16617	0.60372	3.81989 *

* $P < 0.05$ 1 Degree of Freedom $n=216$

N.B. All Chi squares, in this chapter, with 1 degree of freedom are corrected Chi squares.

From the above table it can be seen that six of the twenty one Chi squares are significant at the $P < 0.05$ level.

It is useful for understanding how evaluations are related to the external variables to consider the actual frequencies of the crosstabulations. In the following paragraphs we will consider the frequencies for each of the the Chi squares which are significant at the $P < 0.05$ level.

In discussing the tables below, a score of 1 will be

referred to as negative, and a score of 2 as positive. This simply aids the explanation of the tables, and it should be remembered that a 1 refers to a score below the standardised mean for the population, and a score of 2 refers to a score above the standardised mean of the population.

12.3.1 Frequencies of Organisational Perception and Environmental Evaluations

Table 12.2

Frequencies of the Organisation Element of Organisational Perception and the Organisation Element of the Environment

		Organisational Perception Element: Organisation	
		1	2
Environmental Element Organisation	1	74	25
	2	70	47

It can be seen from the above table of frequencies (table 12.2) that of those individuals with a positive evaluation of the organisation, 65.3% also have a positive evaluation of the organisational element of the environment, and only 34.7% have a negative evaluation. Additionally, of those who have a negative evaluation of the environmental element, 74.7% have a negative, and 25.3% a positive, perception of the organisation.

A negative perception of the organisation is almost equally associated with a positive or negative environmental evaluation. Similarly, a positive evaluation of the environment is almost equally associated with positive and negative perception of the organisation.

Table 12. 3

Frequencies of the Organisation Element of Organisational Perception and the Department Element of the Environment

Environmental Element Department		Organisational Perception Element: Organisation	
		1	2
1	1	70	21
	2	74	51

Table 12.3 shows a similar pattern to the previous table; 70.8% of participants with positive perceptions of the organisation have a positive evaluation of the departmental element of the environment, compared to 29.2% who have negative evaluations. However, a negative perception of the organisation is almost equally associated with a positive or negative evaluation of the departmental element of the environment.

Again, a negative evaluation of the environment element is associated with a negative perception of the organisation. Of those with a negative evaluation of the environment, 76.9% and 23.1% perceive the organisation negatively or

positively respectively. There is little difference between those who have a positive evaluation of the environment in terms of their perception of the organisation.

Table 12.4

Frequencies of Involved Work Orientation and the Organisation Element of Environmental Evaluation

		Involved Work Orientation	
		1	2
Environmental Element Organisation	1	34	65
	2	24	93

In the above table it can be seen that 58.9% of people with a positive orientation of involvement have a positive evaluation of the organisational element of the environment, and 41.1% have a negative evaluation. Also 58.6% of those with a negative involvement orientation have a negative evaluation of the environmental element, and 41.1% have a positive environmental evaluation.

Additionally, while there are more people with a positive evaluation of the environment than a negative evaluation, from both levels of involvement orientation, the difference between the levels of involvement are greater for the positive environmental evaluation. For example, 20.5% of those with a positive evaluation have a negative

orientation, and 79.5% have a positive orientation. In the case of negative evaluations, 34.3% and 65.7% have a negative or positive involvement orientations respectively.

Thus, while the relationships between the domains is not as strong as those shown previously, in essence the more oriented toward being involved a person is, the more highly they evaluate the organisational element of the environment, or more precisely, the more likely they are to consider that the environment facilitates the organisation related objectives of the person-environment transaction.

Table 12.5

Frequencies of Involved Work Orientation and the Department Element of Environmental Evaluation

		Involvement Orientation	
		1	2
Environmental Element Department	1	37	54
	2	21	104

From table 12.5 it can be seen that the relationship between the individual's orientation toward involvement, and their evaluation of the departmental element of the evaluation, is similar, though more strong, to that shown in the previous table.

65.8% of people with a positive orientation of involvement

have a positive evaluation of the departmental element of the environment, and 34.2% have a negative evaluation. Also, 63.8% of those with a negative involvement orientation, have a negative evaluation of the environmental element, and 36.2% have a positive environmental evaluation.

Additionally, while there are more people with a positive evaluation of the environment than a negative evaluation from both levels of involvement orientation, the difference between the levels of involvement are greater for the positive evaluation. For example, 16.8% of those with a positive environmental evaluation, have a negative orientation, and 83.2% have a positive orientation. In the case of negative evaluations, 40.7% and 59.3% have a negative or positive involvement orientations respectively.

Table 12.6

Frequencies of Flexible Work Orientation and the Department Element of Environmental Evaluation

		Flexible Orientation	
		1	2
Environmental Element Department	1	58	33
	2	62	63

Table 12.6 reveals that of those individuals who are

positive with regard to the orientation of flexibility at work, 34.4% evaluate the departmental element of the environment negatively, but 65.6% evaluate it positively. In terms of a negative flexibility orientation, 48.3% of people are also negative with regard to environmental element, and 51.7% are positive.

While in both categories of orientation the percentage of people who are positive in their evaluations of the environment is greater than the percentage who are negative, the proportion of those who are positive in terms of flexibility who are also positive in terms of the environment, is greater than those who are negative in terms of flexibility. In essence, there is a stronger association between positive flexibility and positive environmental evaluation, than between negative flexibility and positive evaluation. Thus people who are flexible in their approach to work are more likely to evaluate the environment highly in terms of the facilitation of the departmental related environmental objectives, than those who are not flexible.

Table 12.7
Frequencies Cohesion and the Self Element
of Environmental Evaluation

		Cohesion	
		1	2
Environmental Element Self	1	77	29
	2	65	45

In the final table of this section it can be seen that of those who perceive their department as cohesive, 60.8% are positive in their evaluation of the self element of the environment, and 39.2% are negative. Considering those who are negative with regard to the cohesion measure, 54.2% are negative, and 45.8% are positive in their environmental evaluations.

In terms of the percentage of people at each level of evaluation who are positive or negative in relation to cohesion, it can be seen that at each level of evaluation there is a higher percentage of people with negative, rather than positive, cohesion scores. However, at the low environmental evaluation level there are 72.6% who perceive the cohesion negatively, and only 27.4% who have a positive perception. The proportions are somewhat different at the high evaluation level with 59.1% having a positive perception of cohesion, and 40.9% a negative view.

Thus in general it can be said that a person who perceives his/her department as cohesive is likely to be positive in their evaluation of the self element of the environment. Further, a negative evaluation of the self element is more strongly associated with a negative perception of departmental cohesiveness.

From the above results it is possible to generally state that a positive orientation or perception of an organisation is more likely to be associated with a positive environmental evaluation than it is with a negative evaluation.

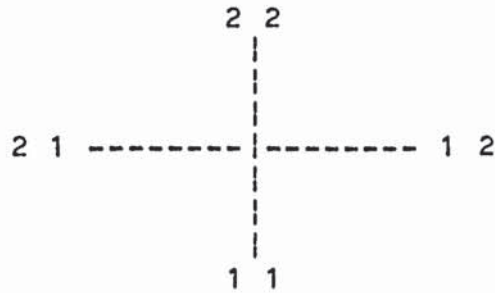
12.4 Description of Analysis to be Performed

The analysis presented in the remaining sections of the chapter are a little different to those which are conventionally undertaken. It is in this analysis that the use of combining POSAC and Chi Square is shown. The analysis will take advantage of the results of the POSACs of the evaluation data. Chi square will be used to consider the relationship between profiles on two environmental evaluation elements, and the external variables. More complex profiles could be considered, however this would cause the interpretation of the results to be more difficult to those unfamiliar with the techniques associated with facet theory, and require larger sample sizes. In this section the analysis to be performed will be explained in some detail.

Taking the environmental evaluation analysis as an example, there were originally six items. Using dichotomised items for clarity, a POSAC of the full set of data shows two of the six items to be structuring the POSA. If we then take these two items, it is possible to assign the individual's profiles to one of the four possible groups. The first group is composed of people who evaluate their environment more highly than the mean for the sample; their profile is 22. This group has a total evaluation score of 4. The next groups have total, or in POSAC terms, Joint, score of 3. There are however, two qualitatively distinct groups at this level. The first of these two groups is above averagely satisfied with one of the aspects of the evaluation, and below averagely satisfied with the other. For the second of these two groups the converse of this scoring is true. The final group is composed of individuals who have a joint evaluation score of 2, and are below the sample mean in terms of their evaluation of the environment.

The above example may be represented in the figures below. The figures are similar representations to those used in the previous chapters to portray the essential aspects of the POSAs. Consequently they should assist in the basic exposition of the analysis description; they are of no significance in themselves.

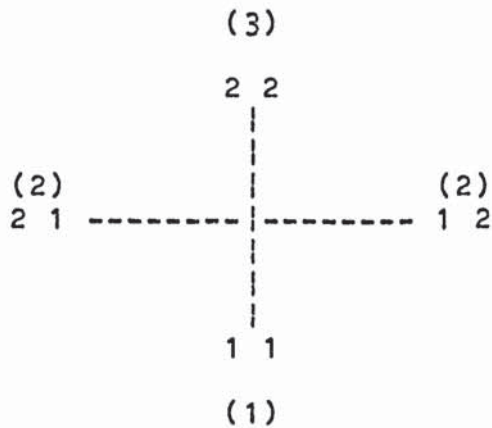
Figure 12.1
Hasse Type Representation
of Evaluation Profiles



In figure 12.1 the four possible profiles can be seen located on the joint and lateral axes. The joint, or total, evaluation score runs from 4 (2+2) at the top, through 3 (2+1 or 1+2) at the intersection, to 2 (1+1) at the base of the cross. The qualitative dimension can be seen running across figure from 2 1 to 1 2.

A relationship between the evaluations and the external variables may be explored by discovering whether the relationship is between the qualitative or the quantitative dimension. In order to investigate this possibility different values may be assigned to the profiles according to their position in relation to each axis. Again the use of a schematic representation of the profiles may be useful.

Figure 12.2
Hasse Type Representation
of Values Assigned to the
Joint Evaluation Scores

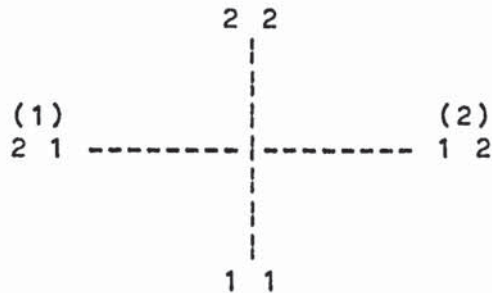


It can be seen that each point on figure 12.2 is assigned a value of 1, 2, or 3, depending upon their position along the joint (quantitative) axis; the vertical line. From these scores it is possible to discover the relationship between the quantitative levels of environmental evaluation and other variables by crosstabulating these scores with the external variables.

The final aspect of interest is the qualitative axis. In this case we are interested in two of the four groups; those with the profiles at the extreme ends of the horizontal axis. This may be seen in figure 12.3 below.

Figure 12.3

Hasse Type Representation
of Values Assigned to the
Lateral Evaluation Scores



Again it is possible to crosstabulate the assigned scores, each representing a position on the lateral axis, with the external variables. By doing this one can discover whether the extremes of the qualitative axis are significantly associated with the particular external variable.

It should be noted that we have moved from interval data to nominal level data. The analysis procedures chosen reflects this. It should also be clear that each score represents a two item profile, and that the analysis is concerned with the qualitative, and quantitative differences between the evaluations.

12.5 Chi Square of Two Environmental Element Profiles with External Elements

The next, and final, set of analyses performed are of profiles on a combination of two environmental elements in relation to the external variables. As was shown above, there are two sets of scores which can be assigned to the profiles; qualitative and quantitative. In the following

sections the crosstabulation of the six external variables with combinations of pairs of environmental element scores will be presented.

12.5.1 Environmental Profile of Organisation and Self

In the chapter concerned with the environmental evaluations, we saw that the two items which, overall, most consistently distinguished qualitatively between the the evaluations were the organisation and self elements. It is this combination that will be considered first.

Scores were assigned to each of the three quantitatively different profiles, and to both of the lateral profiles. These were then crosstabulated with the six external variables. A Chi square of the relationship was also calculated. The resultant Chi square values for both the joint and lateral scores are presented in table 12.8 below.

Table 12.8

Chi Squares of External Variables by
Organisation/Self Environmental
Evaluation Profiles

External Variables	Environmental Profile Organisation/Self	
	Lateral Axis	Joint Axis
Perception		
Organisation	0.40648	6.79544 *
Department	0.6817	0.08835
Involvement	0.0	2.82597
Flexibility	0.04393	0.03887
Orientation		
Involvement	4.87014 *	0.97086
Flexibility	0.0	6.44785 *
Cohesion	0.80489	4.14863

* $P < 0.05$

Joint Score 2 degrees of freedom $n=216$

Lateral Scores 1 degree of freedom $n=101$

It can be seen that the qualitative differentiation of the participants is related to their work involvement orientation. The quantitative differences between the participants is related to their perception of the organisation, and their orientation of flexibility toward their work.

Again, it is useful to look at the actual frequency tables. We will begin with a consideration of the lateral axis. Table 12.9 shows the frequency of people with each of the

two lateral profiles and their involvement orientation.

Table 12.9

Frequencies of Involvement Work Orientation and
the Lateral Score the Self/Organisation
Element Profile of the Environment

		Involvement Orientation	
		1	2
Environmental Profile	Organisation 2 Self 1	10	44
	Organisation 1 Self 2	19	28

Generally, table 12.9 shows that a positive involvement orientation is more likely to be associated with a positive evaluation of the organisational element, and a negative evaluation of the self element, than an evaluation which is positive toward the self element, and negative toward the organisational element. A negative involvement orientation is likely to have the reverse association.

If table 12.9 is considered in a little more detail, it can be seen that while the percentage of people in both environmental categories with a positive involvement orientation is greater than those with a negative orientation, of the participants with a profile of 2 1, 18.5% are negative and 81.5% are positive in their orientation. A profile of 1 2 shows a difference between the percentages which is somewhat smaller; 40.4% have a

negative orientation and 59.6% are positive.

Additionally, 34% of people who are negative in their orientation have a profile of 2 1, but 65.5% have the 1 2 profile. The reverse trend is found for those with a positive orientation, with 61% with a profile of 2 1, and 38.9% with a profile of 1 2.

Table 12.10

Frequencies of the Joint Score on the
Organisation/Self Element Profile and the
Organisational Perception Element of Organisation

	Organisational Perception Element: Organisation	
	1	2
Environmental Profile Joint Score 4	34	29
Joint Score 3	71	30
Joint Score 2	39	13

In summary, from table 12.10 it can be seen that a positive perception of the organisation is likely to be associated with quantitatively higher evaluations of the environment profile of self/organisation. A negative organisational perception is likely to be associated with quantitatively more negative evaluations of the environmental profile.

At each level of environmental evaluation there are more

participants who perceive the organisation negatively than positively. The difference between the percentage of people from each level of evaluation in relation to their organisation perception, reveals some considerable differences. Of those with a joint score of 2, 75% are negative in their perception of their organisation, and 25% are positive. At the joint evaluation level of 3, a similar pattern is evident, with 70.3% being negative and 29.7% having a positive perception. At the final level of evaluation, 4, 54% of people are negative, and 46% positive in their organisational perception. Thus it is clear that as the evaluation of the environment decreases, the proportion of people perceiving their organisation negatively increases substantially.

Table 12.11

Frequencies of the Joint Score on the Organisation/Self
Environmental Element Profile and
Flexible Work Orientation

	Flexible Orientation	
	1	2
Environmental Profile Joint Score 4	32	31
Joint Score 3	65	36
Joint Score 2	23	29

From table 12.11 it can be seen that the person's flexibility toward work does not differ greatly in relation to the highest and lowest joint scores. However, a negative orientation toward flexibility is strongly associated with a mid score, 3, on the joint axis.

Taking the two extreme profiles, 4 and 2, little difference is evident. Of those participants with a negative flexibility orientation, 19.2% have a low evaluation of the environment, and 26.7% have a high evaluation. The difference between the two levels of evaluation in terms of the group who have a positive flexibility orientation is even less; 30.2% have a low evaluation and 32.3% a high evaluation.

Considering the percentage of people at each of the two extreme levels in relation to their flexibility orientation, one can observe that, at the lowest level of evaluation, 2, 44.2% are negative, and 55.8% are positive in their orientation. At the highest level of evaluation, 4, there is almost an equal division of people in each orientation category; 50.8% are negative and 49.2% are positive in their flexibility.

The results from this table are a little curious. One would expect that as the individuals increased in their flexibility, they would become more satisfied in relation to the environment, in that individuals who are more flexible would, or could, adapt more readily. However, it

is also possible that while they may be more flexible in their approach to work life, they are also more aware of the ways in which the environment hinders their goals, especially if these goals are more unusual as a result of the individual's orientation.

12.5.2 Environmental Profile of Department and Self

In the analysis of the individual data collection Sites it was shown that the overall partial order structure of the data differentiated qualitatively between the self and organisation elements of the organisational unit of the evaluations. However, some of the sites had a lateral axis composed of the department and self elements.

Table 12.12 shows the Chi Square values for the joint and lateral axes of the department/self profile. It can be seen from the table that there are statistically significant relationships between the quantitative axis and people's perception of the organisation element of organisational perception, and the involvement encouraged in the organisation. The qualitative differences in the evaluations relate, again, to the orientation toward involvement by the participants.

Table 12.12

Chi Squares of the External Variables
by the Environmental Evaluation
Profile of Department/Self

External Variables	Environmental Profile Department/Self	
	Lateral Axis	Joint Axis
Perception		
Organisation	0.61954	7.96924 *
Department	0.0	0.74877
Involvement	0.03931	6.08704 *
Flexibility	0.0	0.65073
Orientation		
Involvement	12.37339 *	4.97087
Flexibility	2.74347	2.04608
Cohesion	0.33856	4.76190

* $P < 0.05$

Joint Score 2 degrees of freedom $n=216$

Lateral Scores 1 degree of freedom $n=95$

Again, we can look more closely at the actual frequencies used in the calculation of the Chi square. We will begin with the lateral or qualitative axis.

Table 12.13

Frequencies of Involved Orientation and the Lateral
Profile on the Self/Department Elements
of the Environment

		Involvement Orientation	
		1	2
Environmental Profile	Department 2 Self 1	9	46
	Department 1 Self 2	21	19

The relationship of an involvement orientation to the department/self lateral axis is similar to that shown previously for the organisation/self profile. People with an orientation toward being involved are more likely to have a positive evaluation toward the department element and negative evaluation toward the self element, than the opposite profile. The reverse is the case for those with an orientation which is negative in relation to involvement.

Of those individuals with a negative involvement orientation, 30% have a high evaluation of the department and a low evaluation of the self elements. For the reverse profile of 1 for department and 2 for self, 70% are negative in their orientation. Almost exactly the opposite tendency is found for people with a positive involvement orientation; 70.8% have a profile of 2 1, and 29.2% a profile of 1 2.

Taking each environmental profile, of those with a profile of 2 1, 16.4% have a negative orientation, and 83.6% a positive orientation. For the other profile, 1 2, 52.5% have a negative orientation and 47.5% a positive orientation.

Table 12.14

Frequencies of the Organisation Element of Organisational Perception and the Joint Score on the Environmental Evaluation Profile of Department/Self

		Perception Organisation	
		1	2
Environmental Profile Joint Score 4		41	29
	Joint Score 3	61	34
	Joint Score 2	42	9

From the above table the general pattern is evident that a positive perception of the organisation element of organisational perception is associated with higher joint scores. A negative perception of the organisation element is not associated with either extremes on the joint axis, but is strongly associated with the mid score.

Again, however, it is useful to compare the proportion, or percentage differences between people at each level of evaluation in relation to their perceptions of the

organisation. At the lowest level of environmental evaluation, the difference in the percentage of people who are positive or negative in their perception of the organisation is greatest with 82.4% being negative and 17.6% positive. At the next level of evaluation, joint score of 3, the difference is less; 64.2% are negative and 35.8% positive. Finally, at the highest level of evaluation, there is little difference in the percentage difference between the two groups of individuals. At this level, 58.6% have a negative perception of the organisation and 41.4% a positive perception.

Considering the proportion of participants from each of the groups of organisational perception separately, it can be observed that of the individuals with a negative perception of the organisation, the largest proportion, 42.4% have an evaluation score of 3. In relation to the extreme evaluation scores, 29.2% have the lowest evaluation and 28.5% the highest; there is little difference. However, if one considers the positive organisational perception group, a rather different pattern is evident. Of this group one again finds a large proportion at the mid level of evaluation; 47.2%. There is a though, a large difference between the two extremes of environmental evaluation. Only 12.5% of the positive organisational perception group have a negative evaluation of the environment, compared to 40.3% who have a high evaluation of the environment.

The final set of frequencies is shown in table 12.15. Here one can observe the proportion of people at each environmental level in relation to their scores on the perception of organisational involvement. The proportion with a positive perception increases as the environmental evaluation rises. At the lowest level of evaluation, 27.5% and 72.5% have negative or positive perceptions respectively. At the mid level of evaluation the difference is less with 32.6% being negative and 67.4% being positive. At the highest level of evaluation the difference in the proportion of individual with positive and negative perceptions is the greatest. Of the individual with a joint evaluation score of 4 only 15.7% have negative perceptions of organisational involvement, but 82.3% have a positive perception. Thus there is a large difference in the proportions of people with negative or positive perceptions of the organisational involvement element in relation to the evaluation of the environment.

Taking the percentage of individuals from each the two different groups in terms of their perception of the organisation and their evaluations of the environment, it can be seen that of those with a negative perception of the organisation, the largest proportion, 55.4%, have a mid point evaluation of the environment. However, there are differences at the extremes of the joint evaluation scores; 25% of participants with negative perceptions have the lowest evaluation of the environment, and 19.6% evaluate

the environment at the highest level. At the extremes of evaluation, the reverse trend is evident in relation to those individuals with positive perceptions of the organisational involvement element. Again the largest proportion of individuals, 40%, have a mid score on evaluation. However 23.1% of those with a positive perception have a low evaluation, and 36.9% have a high evaluation of the environment. Thus, again, there is a positive association between organisation perception and environmental evaluation.

Table 12.15

Frequencies of the Involvement Element of Organisational Perception and the Joint Score on the Environmental Evaluation Profile of Department/Self

	Perception Organisation Involvement	
	1	2
Environmental Profile Joint Score 4	11	59
Joint Score 3	31	64
Joint Score 2	14	37

In the next chapter, the discussion, we will consider these results in terms of their implications for environmental and organisational psychology, and office design. For the present it is helpful to summarise the findings presented

in this chapter.

12.6 Summary

The chapter has been concerned with the relationship between people's evaluations of their offices and their perceptions of various aspects of the organisation, their orientation toward work, and their perceptions of the cohesion of their departments.

The first set of analyses was concerned simply with people's evaluations of individual aspects of the environment and the external variables. The analysis following that was more complex in that it considered quantitative and qualitative differences in the evaluation of two aspects of the environment. The results generally revealed that perceptions of the organisation were related to the quantitative differences in evaluations, and that an involved orientation toward work is associated with the qualitative differences in the evaluations.

In performing the above analysis it has been shown that it is possible to combine the scaling procedures associated with facet theory with inferential statistics in a fruitful manner. Additionally, it is also clear that an empirically based descriptive model of a domain facilitates a better understanding of the ways in which environmental evaluations are associated with the various external variables, by allowing the discrimination between elements

of facets of domains more precisely. It has also been possible to discover where group differences lie in terms of quantitative and qualitative differences in environmental evaluation.

CHAPTER 13

Discussion

13.1 Introduction

The field of environmental psychology is multidisciplinary. To be applied, psychology in general needs, likewise, to be an activity which crosses many disciplinary boundaries. While the present thesis represents research in a narrowly focused area of applied environmental psychology, its results and findings have implications for a wide variety of areas. Foremost amongst the areas upon which the present work has drawn, and consequently has implications for, are design, organisational theory, environmental psychology, and environmental evaluation. In this chapter the results presented previously will be discussed within this multidisciplinary framework. The discussion, however, must, by necessity, draw most heavily on environmental research.

In discussing the present research each component of the study will be discussed in turn in relation to the primary areas of relevance. Finally the discussion will broaden in focus to consider the general contributions and implications of the research.

13.2 Model of Office Evaluation

The overall model of office evaluations was presented in the form of a mapping sentence based on Canter's general mapping sentence for the purposive evaluation of place

(1983). In adapting the model to the field of office evaluation an additional sub-facet was added to those proposed by Canter. As a consequence the mapping sentence consisted of Canter's three facet's with a fourth sub-facet. The overall model of office evaluation has a number of general implications, however each facet has importance in its own right. In the following sub-sections each of the facets will be discussed.

13.2.1 Level of Interaction

In a review of the purposive model Donald (1985) proposed that, in addition to being conceptualised in terms of the proximity of actions in relation to an overriding goal, such as patient care in hospitals, the level facet could be interpreted in terms of the level of the environmental scale with which one is concerned. Such a conceptualisation refers to particular architectural loci. While the environmental scale interpretation of the level facet was proposed as a additional facet of the GMS, the present study applied only this latter conceptualisation suggesting three environmental levels; building, office, and immediate workarea.

The results of the SSA of all 41 environmental evaluation questions provides some support for the proposed level elements. However, no distinction was evident between the office and the individual workspace in this analysis. The second set of analyses, performed on the 23 socio-spatial

referent items, did reveal a distinction between the office and workspace. The analysis of individual Sites showed that this finding is in fact consistent. The difference between the two sets of analysis suggest that there may be differences in the nature of the referents in relation to the elements of the level facet.

Four different questionnaires (Donald, 1983; Present study) have failed to show any distinction between the workspace and office in the structure of people's evaluations. This suggests that this is a relatively enduring and generalisable finding. The present research is the first to include and analyse the socio-spatial items separately. It is also the first to reveal the tripartite distinction. The implication from these results is that the distinction between the workspace and wider office is only relevant to socio-spatial considerations. The corollary of this is that the distinction is not relevant to services and non-social space.

There are a number of possible explanations for the differences between the referents in relation to the level. Firstly it is possible that the physical characteristics of the environment account for them. Secondly, the activities of the people making the evaluations may not require an evaluatory distinction between the two levels in relation to all of the referents. Finally, the psychological processes in relation to each referent may vary, and so result in different level distinctions.

Considering the actual physical environment, it is not surprising that people are not making a distinction between their workspace and the wider office in terms of lighting, heating, and ventilation. In a recent discussion of office lighting, for example, Ellis (1986) notes that;

"The convention of the last 20 years or so has been to provide overhead fluorescent lighting at uniformly (emphasis added) high levels of illumination throughout the office." (p 225).

and Pile (1976), reviewing developments in office design, and in discussing individual task lighting in particular, notes that;

"this idea has been lost with the practice of lighting offices to achieve a uniform, high level, of light throughout the space from ceiling sources." (p 184)

Both of these quotes make the point that lighting tends not to be differentiated for individual workspaces in open plan offices. If lighting is uniform throughout an office, it seems likely that workers will not make distinctions in their evaluations between the office and their personal workspace.

Individual task lighting could lead to some differentiation between the office and workspace. The offices evaluated in the present study contained a considerable number of participants working in drawing offices who consequently had desk lighting. The general ambient lighting was, however, sufficiently high as to negate the effect of

personal lighting in terms of space differentiation. The above quotes also make the point that lighting is most often found to be at excessively high levels of illumination. This "the more the better" approach to lighting is widespread (Ellis, 1986; Sundstrom 1986; 1987).

The potential for task lighting to create spaces is recognised:

"Task/ambient systems that provide higher light levels on the primary work surface but reduce the overall ambient light levels create an unevenly lit space surrounding the work space" (Goodrich, 1986, p 123)

The picture painted by Goodrich is, however, alien to the offices evaluated. Consequently, it would be expected that no differentiation between workspace and office would be found.

Similar arguments apply to the ventilation and heating of offices. While localised conditions may be different for a small number of office workers, the majority are likely to experience uniform office temperatures. The offices in the present study were, with one exception, air conditioned. A consequence of centrally controlled heating and ventilation is often uniformity.

There is evidence for a distinction between the building and office/workspace in the evaluations. This can be explained by the differences between offices and floors in terms of these services; offices are uniform, buildings have

variation. Numerous studies have found that satisfaction with service conditions vary between offices within a single building (Hedge, 1982; 1986). If there is variation between offices it would suggest that conditions are not uniform.

Few of those participating in the research occupied screened or physically differentiated spaces. Yet in socio-spatial terms a distinction was made between their workspace and the office. This suggests that the differentiation of space is a social-psychological phenomenon rather than a direct consequence of the physical characteristics of the environment.

The concept of human territoriality is useful in understanding why, without physical differentiation of space, people distinguish between the office and the workspace. Territoriality has been widely discussed in the environmental literature. From the definitions which have been given of the concept (eg. see Brown, 1987, p 507, for a review) one finds a number of interesting features. It is clear that territoriality is a group as well as an individual phenomenon. This of course has relevance for the organisational unit facet. A second important characteristic of the definitions is that little reference is made to the physical characteristics of the space; physical boundaries. Thus it would seem that while differentiation between levels in relation to services may require physical differentiation, in relation to socio-

spatial considerations, physical barriers are not necessary; physical boundaries are replaced in open offices by psychological and behavioural boundaries.

It was suggested above that the activities and objectives of office workers may be such that a distinction between the office and workspace is unnecessary in relation to services. The majority of participants in the present study were clerical workers. It seems likely that the tasks they perform do not require lighting at their desk in addition to the office lighting. It is possible that specialist tasks requiring much attention to detail or the use of VDTs may necessitate different lighting at the workspace. As a consequence, such workers may differentiate the two levels in their evaluations. This possibility should be investigated in future research.

The worker's objectives in relation to the socio-spatial referent are different. Sundstrom (1986) notes that territory applies to human action, and the workspace represents a zone of control that helps a person regulate his or her contacts with others. The regulation of such contacts is important for both organisational and individual functioning (Altman, 1975). The notion that the objectives of the individual include differentiation between the self and others provides a rationale for the organisational unit facet. The support for this facet suggests that this is an objective which forms a basis for

the evaluations.

The importance attached to defining spaces within the larger office space is present in the work of many authors and, again, demonstrates that the differentiation is a socio-spatial objective. In discussing the PRU's early study of the office environment, Manning (1965) noted that many of the participants in the study placed an emphasis on the demarcation of areas within an office space. In a review of the health effects of office design Canter and Donald (1983) concluded that the available evidence suggests that the lack space differentiation may be associated with stress-related psychological and psychosomatic disorders. Duffy (1974a) has argued that it is important for the efficiency of an organisation, and the well-being of the individual workers, that distinctions between different spaces within an office is made, and especially if these are associated with status differences.

The final possible explanation for the difference in the structure of the evaluations between the full and sub-set of data, is that it is possible that different psychological processes are associated with the different referents. The socio-spatial items are concerned with social-psychological phenomena. The service referents, however, may be concerned with physiological and perceptual processes. It is possible that the distinction between the office and workspace is concerned with social-psychological processes and not physiological or perceptual

considerations.

In relation to this point, attention can be drawn to the quotation by Goodrich (1986) presented above. The use of lighting suggested by Goodrich is different to that necessary for the performance of tasks. The creation of spaces is a social and aesthetic process. It is possible that the distinction between levels, in relation to services, may be relevant for services when the objectives are social in nature. In the present study such questions were not included. This area represents another topic which would benefit from future research.

The final consideration of the level facet is concerned with the actual structure of the elements of the facet. Rapoport argued that the experience of each level of the environment is a function of other levels which are lower in the hierarchy; each level is nested. Canter (1977; 1983) contends that each level is quite distinct and independent of each other level, and further that the levels are arranged along a continuum. The results presented here clearly support Canter's proposition that the levels are arranged along a continuum and are independent.

This characteristic of place hierarchy has important implications for both design and research. In relation to the design of offices the most clear implication is that the quality of one level can not compensate for that at other levels, and conversely, poor quality of design will

not carry over to different levels. In relation to the lack of distinction between office and workspace in evaluation when service items are included, the results suggest that the ambient conditions of the office as a whole are indistinguishable from those of the individuals space. This finding is specific to the ambient characteristics of the offices studied. However it does suggest that if a designer wishes to create distinct areas, it is insufficient to rely only on space, and that lighting of individual workspaces needs to be considered in relation to the overall office lighting. This would imply reductions in office lighting levels.

The independence of the levels of the office environment is in direct contradiction to the findings of Marans and Spreckelmeyer (1982; 1986) who, in relation to their research findings, write that,

"One of the more general and perhaps most important findings is that people's assessments of the larger environmental settings...were influenced by their feelings about their immediate workplace." (1982, p 343)

One of the principal problems with discussing the work of Marans and Spreckelmeyer is that little information is given with regard to the actual content of their measures and the analyses employed. At no point are the actual questions specified. This, of course leaves open to question what the actual facet from which their conclusions are drawn is.

If, for example, the level was being differentiated in terms of services, the lack of evaluatory differentiation found here may explain their results. Additionally, it is possible that their measures at the workspace were concerned with the central objectives of the workers, and that measure of the office and building were concerned with less central goals. It would only be by multiple classification that this issue could be resolved; Marans and Spreckelmeyer would need to consider central and peripheral goals in relation to both immediate workarea and building.

Given the clarity of the evidence shown by the present study, the most clear explanation of Marans and Spreckelmeyer's results is that they were measuring components or facets of the environment other than the level. It is of concern that the authors appear to have been imprecise in their conceptual thinking, and the operationalisation of their research. The findings they present have important and direct implications for design which, from the evidence here, and that presented elsewhere (eg. Canter, 1983; Donald, 1985), is incorrect.

13.2.2 Referent of Interaction

Previous applications of the GMS to hospitals wards (Kenny and Canter, 1981), housing (Canter and Rees, 1982) and Offices (Donald 1983) have specified three elements of the referent facet; spatial, social, and service. It was argued

in the present study that while each of these elements would be valid in office evaluations, a fourth facet would exist; socio-spatial. The inclusion of this element stemmed from the argument that while there are clearly social and spatial components of environmental interaction, there are many instances when the objectives of an office worker imply a combined social and spatial phenomenon.

The social-spatial element of the referent has been of central concern to office researchers, designers, and organisational psychologists. It has been seen that territoriality has received much attention. Additionally, communication, a central consideration in neo-classical organisational theory and office design, has been the focus of attention by organisational psychologists (eg. Hanson, 1978; Oldham and Brass, 1979; Sundstrom, 1982). Privacy is one of the most widely researched areas, especially in relation to open offices (Ferguson and Weisman, 1986; Hedge, 1982; 1986; Sundstrom, 1986; Sundstrom et al., 1982; 1982a). Finally, small group research in relation to the environment also focuses on a socio-spatial phenomena.

From this interest it is clear that the socio-spatial element is of importance. The results of the present research are consequently of importance in facilitating our understanding of this element in relation to the rest of the model. The pilot study had shown that this element existed as a distinct aspect of evaluation along with the

other three referents. In the final office mapping sentence the social element was not included, nonetheless, the additional element was again seen to be part of the referent facet. Additionally, the results show that the referent elements, including the additional socio-spatial element, are qualitatively differentiated.

There are a number of implications from this result. It is clear that socio-spatial aspects of the environment are only one part of the domain of evaluation. As a consequence, those studies which attempt to understand the nature of person-office relationships by focusing on this one aspect, are only considering a very small part of the system and are therefore inadequate; from the evidence presented here, socio-spatial phenomena, such as privacy, are one component of the referent and not a 'special' or different aspect of the domain compared to services, for example.

An example of an attempt to model person-environment interaction in the office can be found in the work of Ferguson and Weisman (1986). The centrality of concern with privacy can be seen from this model. The problem with this model is that there is no indication as to how privacy fits into the broader person-environment system. It is only by the production of models such as that presented here that it becomes possible to understand how privacy fits within the wider system.

Not only do the results show that the referents are distinct components of a system, and therefore should be all included in the evaluation, but also that one can not compensate for inadequacies of one element by improving another; they are qualitatively different. Additionally, the qualitative circular ordering of the elements shows that no one element is more important than another; they are not located on a continuum.

This qualitative difference between the items has implications for research into office design. Numerous researchers attempt to obtain rankings of aspects of the environment in terms of their importance (eg. Louis Harris and Associates, 1978). The problem with such an approach is that it is not possible to meaningfully rank features of the environment which are drawn from qualitatively different components of the environment. This will be returned to when the focus facet is discussed. For the moment attention will be paid to the organisational unit facet.

13.2.3 Organisational Unit

The organisational unit facet was proposed in addition to those provided in the GMS. Three elements were suggested for this facet; organisation, department and individual. It was argued that each of these units are in fact sub-elements of the referent elements, and that while the facet may be relevant to all of the elements of the referent, the

major link would be with the socio-spatial element. As a consequence it was in relation to this element that the unit facet was applied. The analysis of the socio-spatial referent showed clearly the elements of the organisational unit facet. From a number of perspectives the nature and validity of this facet is of importance.

Firstly, in relation to evaluations of different settings and the purposive model, the results suggests that an additional facet, "social unit", could be fruitfully applied. For example, in a housing evaluation the elements could include, self and family. In areas, such as the quarters of Paris or Rome, the ethnic identity of the quarter could be used to define an additional group, with Parisian being a fourth. The application of this additional facet to such areas could reveal how generalisable the facet and its structure is, and help us to achieve an understanding of person-environment and group-environment relations. It is therefore suggested that future research should include this facet.

The validity of this facet is important for design and research. For example, design should not focus on the individual as a being isolated from his or her social context or group. The individual evaluates and experiences the setting in relation to being distinct, but also, and equally important, as a member of a group. The important consideration for design is that the individual must have sufficient control over the environment as to enable them

to be separated and integrated from and into the group.

This facet represents a social psychological phenomenon which is at the heart of the problems associated with open-plan and cellular, private offices. The private office emphasises and facilitates the distinctiveness of the individual. The open plan office relegates this aspect of person-environment interaction to other issues, such as communication (Pile, 1976).

The problems of a lack of privacy in open offices has been shown by numerous researchers (eg. Elder et al. 1979; Goodrich, 1979; Nemecek and Grandjean, 1973; Wineman, 1981; 1982; Sundstrom; 1982; 1982a; 1986), and represents a "major issue of concern" (Wineman, 1982, p 280). This focus is due, perhaps, to the concentration of study by environmental psychologists on burolandschaft. Given the results of the present thesis, however, it is clear that privacy is merely one aspect of the person-others relationship. Equally important is the requirement to be a member of a group. Little attention has been paid to the private office. From the present results one would expect that problems would be found from the perspective of group integration. Clearly, design should not be concerned with either group or individual considerations, but in striking a balance between the two; both are necessary. This should also be recognised by office researchers.

The integrated and qualitative structure of the

organisational unit facet also has implications for the study of issues related to the group and individual, especially privacy related issues. Traditionally research has considered the group-person relationship to be one of stimulus-response. Both the individual and group have been conceived of as providing the stimulus or response component of this relationship. From the results it is clear that rather than one or other unit providing a stimulus and the other the response, both are part of the same system.

One of the foundations for this facet was the work of Sundstrom (1986). It is worth noting, therefore, that the structure which Sundstrom imposed on his reviews of work environments (1986; 1987) has been shown to be an important part of person-office interaction, and that it is indeed, as argued, an implicit theory which has been manifestly specified and empirically supported here.

It will be recalled that previously it was argued that purposive action can be considered in relation to the individual or group (Giddens, 1987; Gould, 1973). It was also argued that the individual is aware of their present state in relation to an envisaged future or desired state. A comparison of present and future can be considered a process of evaluation. The evidence from the research presented here shows that an individual is not only capable of such assessment, but also capable of assessing the gap

between an envisaged and present state in relation to the group. It is also clear that action is a group and individual phenomenon. At this point attention can be drawn to territoriality which may be considered a group, as well as an individual, phenomenon (Brown, 1987).

The results of this facet also have implications for organisational psychology. It was noted previously that organisational writers (Argyris, 1964; Porter et al., 1975) have pointed to the issue and problem of integrating the individual and organisation. Argyris (1964) considers that the individual as a distinct being and their integration into the organisation represents a conflict. The results here show that, at least in relation to environmental evaluation, the two states are part of a system and not a conflict; the individual is both an individual and member of an organisation. From Porter et al.'s argument that the individual is socialised into the organisation, a number of issues ensue. One important area of future study could be the evolution of the elements of the facet. The basic question to be answered is whether the elements are valid at all points in time, or whether the group perspective evolves over time as the individual is socialised into the group.

The results also have implications for participative design. Rather than considering the requirements of the individual as if he or she is isolated, their relationship with, and assessment from the perspective of, the group

must also be considered. Thus in participative design it is necessary to obtain a group related perspective.

As we have already seen that an area for future research is the process by which the groups perspective emerges. From the theory of evaluation presented here, this is of especial interest. It has been argued that evaluation is an emergent process of person-environment interaction in relation to their purposes and goals. Evaluating the environment in relation to the person's interaction with the group is likely to emerge as a result of numerous work, organisational, and personal conditions. It would be of interest to discover whether these emerge in ways different to the interaction with the environment. Related to this, the ability to make evaluations from the group perspective, presumably, as has been noted, requires a process of socialisation into the group in order to understand and assimilate their goals and purposes. Again there is the question as to whether this process works by different mechanisms.

A further area of interest is with regard to the relationship between organisational units and environmental levels. In the present study, due to the reclassification of two items, the questions addressing the unit element of organisation were, with one exception, the same as those for the building. It would seem likely that environmental features associated with the building are more likely to

relate to the organisational unit. However, it is also unlikely that it is inevitable. In future research attempts should be made to discover and include items which address this issue.

Another important question to be answered is whether the organisational unit sub-facet is relevant to all of the evaluation referents, and thereby a facet in its own right. There is some indication from the present results to suggest that this is the case. However, the evidence is, at this point, tentative.

The final aspect of this facet is its role in the differentiation between individual's evaluations. While there is a correspondence between the unit elements and those of the level facet, it is the former which consistently play an important role in qualitatively differentiating between evaluations.

The results of the POSACs reveal a basic division between the self element and others, or group. This suggests that there are perhaps different criteria and processes involved in the evaluations in relation to each element. It is worth mentioning that this fundamental self-others distinction is also central to Goffman's notion of front and back stage behaviour (Goffman, 1961).

13.2.4 Focus of Interaction

From the analysis of the full set of environmental items, and the socio-spatial sub-set, there are indications as to the focus of office evaluations. The results from the full 41 items suggests that the environmental focus is in terms of the extent to which a particular aspect is central or peripheral to the goals of the workers. The classification of items in relation to these elements was not made prior to the analysis of the data.

The sub-set of items revealed something rather interesting with regard to the focus. Although no such elements were specified, there appears to be two regions which approximately accord with cohesion and access/meeting others. This could be termed cohesion and communication. If one assumes that the centrality/peripherality argument applies, then it is clear that communication is peripheral to the evaluations and cohesion central.

In terms of design, burolandschaft has been primarily concerned with communication, and not group feeling and cohesion. The results suggest that cohesion should be a central focus. In relation to organisational theory and its implications for design, the classical theories were concerned with work-flow. This is a peripheral consideration. The neo-classical theorists understood the importance of the group. Designs, however, reflected communication rather than cohesion. However Hopf (1931) some considerable time ago, pointed to the esprit de corps

that can be created by appropriate designs. From the present results it is clear that architects should pay more attention to this neglected aspect of design.

The question as to the underlying conceptual elements of the focus is important. The discovery of the two elements of the focus is therefore of significance. However, even had the identification of such elements not been possible the findings, in terms of the structure of evaluations, would nonetheless have been important.

In relation to the referent facet it has been shown that, in addition to the elements being qualitatively differentiated, no one element is more central or peripheral than any of the others. Thus, for example, lighting is not more important than social or socio-spatial elements. It was noted earlier that research has attempted to show that either lighting or privacy, or some other aspect of the environment, is more important than others. However there is a basic problem with this research. While particular items drawn from within one element may vary in their centrality, all elements are important, and, as they are qualitatively different, it is therefore not possible to rank their importance as if they were arranged along a unidimensional scale.

If it is accepted that there are qualitative differences between the various elements, it is necessary to use more than one scale. For example, one can rank which particular

aspect of privacy is more important, however, it is not possible to say that it is more important than lighting as the two elements are not comparable.

A rather trivial example may help in demonstrating this problem. Cox's apples may for example, be preferred to Granny Smith's, but are they preferable to tea or coffee; tea may be preferable to coffee, but can that preference be compared with difference between cabbage and spinach. Each of these must be considered in relation to conceptually similar objects.

Again, in relation to the organisational unit, each element contains items which are central or peripheral. Therefore one can only consider the importance of each in terms of each element, and not between the elements.

13.2.5 Contribution of the Model

Having considered each of the facets of the model of office evaluation separately, this section will discuss the model as a whole.

Earlier it was contended that the evaluation field had suffered from the lack of a framework or model which could help the research in the field become more integrated and cumulative.

It is apparent that the research reported here has its general foundation in Canter's (1983) purposive model of

evaluation which was derived from, primarily, hospital ward evaluations (Kenny and Canter, 1981). It also draws on the more limited model of office evaluation proposed by Donald (1983). It has been possible to compare the results of the present study with those of other distinct settings; offices, housing, and hospital wards. In doing this the research has drawn on the findings in these areas, and contributed additional facets which may in turn be applied to them. As a result, it can clearly be seen that the research has been both cumulative and comparable, despite the considerable differences in the particular characteristics of the environments.

From the above it is clear that contributions have been made to our theoretical understanding of the process of environmental evaluation and person-environment transaction. Equally important, however, are applied contributions of the research.

It was seen earlier that there is a need for standardised instruments of evaluation (Canter, 1983; Donald 1985; Kenny, 1983; Wener, 1982). The problem with previous proposals has been that they are either too general to be applicable to particular settings (eg. BPRU, 1972), or too specific as to be useful in more than one environment. The general model of place evaluation, grounded as it is in the basic psychological processes of evaluation, is indeed general. However, the form in which it is specified makes it readily adaptable to specific settings. The same can be

said of the model of office evaluation. It has identified possibly generalisable facets which may be applied to other settings, social unit, but also particular elements which can be applied to the office.

The mapping sentence is the standardised instrument, rather than a questionnaire or inventory. Using the mapping sentence, it is a relatively simple matter for the researcher to produce items based on the skeleton provided by the structuples derived from it. Additionally, those aspects which are not of interest can simply be excluded. However, the exclusion process can be precise and systematic.

The amount of time required to develop a particular questionnaire for different offices would be clearly reduced using the mapping sentence for office evaluation. As a consequence, not only could research be more rapid, but also less costly. Two very important considerations in applied research and consultancy.

Canter (1983) considered that the potential of the GMS for providing a template to be one of its important characteristics. It is clear that the GMS can be fruitfully used in this way. While the provision of a general template, such as that provided by the GMS, requires considerable work in its first application to a particular setting, once it has been validated in relation to that setting, future research concerned with that environment is

facilitated. Thus the GMS provides a general environmental template, and the mapping sentence for office evaluation provides a template of more direct applicability to the office setting.

13.2.6 Model of Office Evaluation and Design

In the preceding chapters the use of evaluation research for design was considered. In addition to the rather limited number of precise ergonomic type guides which can be established and used by designers, an important contribution can take the form of frameworks and ideas which may influence the designer's initial conceptualisations upon which they base their designs (Cooper and Crisp, 1983; Donald, 1987).

In terms of influencing initial ideas, each of the facets, as well as the model as a whole, can be specified in ways which may be assimilated into the designers conceptual system. For example, the need for group and individual perspective. Designing for cohesion and communication, and flexibility.

The model, however, can contribute to design in other ways. For example, the mapping sentence may find use in the structuring of design goals and questions. Each structuple may be specified as a question or goal. For example, does the proposed location of a workstation facilitate individual goals, or does the location of the workstation

facilitate group goals. Does the lighting help distinguish between areas in an office. All of these may be seen as guides to the designer. Additionally, of course the structuples can guide research questions in evaluations which are incorporated as an ongoing part of the design process. The use of the mapping sentence by researchers and designers would allow a direct point of reference between the two professions, and assist in assessing the extent to which the design goals are being met. Additionally, as with a standardised instrument, the designer can select and delete facets depending upon his or her particular aims.

An interesting issue, which could be a topic of valuable research in the future, is the relationship between the architects and users conceptualisations of a particular setting. Taking the purposive model as a model of environmental conceptualisation, it would be possible to discover whether the designers and users conceptualise the environment in a similar way. For example, if it were found that the focus of the users were different to those of the architect, it would be possible to direct attention to bringing the two sets of conceptualisation closer together.

In an interesting study which has compared architects and non-architects (accountants) conceptualisations of building facades, it was found that while there are areas of similarity, there are also important differences between the two groups. These differences are not only in terms of the particular constructs which are used by the groups, but

also differences in the structure of the conceptualisations (Wilson and Canter, 1986). It would seem from this research that the discovery of differences in relation to the internal elements of a building would be a fruitful area for exploration, and have considerable pragmatic value.

13.2.7 The Purposive Model and Other Models of Evaluation

As was seen there is a trend toward model building in general environmental evaluation (Holahan, 1986; Stokols and Altman, 1987) as well as in the field of office research (Weisman, 1986). However a principal criticism of these models is that they have dwelt on the activities of the researcher, or the proposition of causal relationships with limited foci, and are lacking in terms of definition and precision in the actual phenomena being studied; many have lacked a psychological component.

The present model can relate, in numerous ways, to those proposed by other authors. The model provided by Ferguson and Weisman (1986) for example, focuses on the relationship between, among other things, enclosure and evaluations of privacy. The present study has provided an overall model of evaluation which shows that privacy is one part of a larger integrated system. It can be seen that their research investigates one small part of the system, the overall context and framework of which is provided by the model developed here.

Russell and Pratt's (1980) model of affective assessment is a little unclear in terms of whether they are specifying criteria or components of evaluation. The model is also, as the authors recognise, limited in that it only addresses affective aspects of environmental assessment. When discussing Russell and Pratt's model it was seen that it can readily be incorporated into the present model. Their model could be a part of an additional facet which distinguishes between evaluation in terms of cognitive, instrumental, and affective objectives of evaluation.

The models provided by Freidman et al. (1978) and Keys and Wener (1980) are concerned with the actual process of carrying out an evaluation study. Neither provide any clear specification of the components of the environment and their relationships, neither do they consider evaluation as a psychological process on the part of the building user. The frameworks proposed by these authors are useful, however their utility can be increased by incorporating the present model at the appropriate stage in the conduct of research in order to specify empirically validated components of the environment.

Marans and Spreckelmeyer (1982; 1986) provide a conceptual model which is concerned with various components of the office-work context. This model is in the form of a set of causal hypotheses. Unfortunately the model is rather imprecise in its specification of its components. The addition of the present evaluation model in the form of a

precise definition or description of the environmental components would enhance their model. Additionally, the incorporation of the facets of the external domains of the evaluation would also improve the model.

In general the purposive model can be seen to be of considerable applied and theoretical importance. The application here suggests further evidence that the model of evaluation relates to universal conceptualisations of the environment in terms of evaluation. In a recent paper Donald and Canter (1986) proposed that the model may in fact be a model of place experience in general, rather than being limited to a model of evaluation. It would be useful for future research to apply the model to domains other than evaluation. Donald and Canter (1986) have, for example, suggested that the model has potential for application to the study of environmental well-being and stress. Given the repeated validation of the model in evaluation, theoretically one of the most fruitful future directions would be its application to other areas.

13.3 Model of Organisational Perception

It has become well established that people's positions and roles within organisations are associated with different evaluations of their environment (eg. Hedge, 1982; 1986; Sundstrom et al., 1982; Zalesny et al., 1985) even when the physical characteristics of that environments are similar (Donald, 1983). What has not been established, however, is

the relationship between the organisation and people's evaluations. As the objective conditions of the environment account only in part for different evaluations, it is important to discover whether relationships exist between evaluations and other domains.

One of the problems with research in this area is that objective organisational conditions are compared with environmental perceptions. Another problem is that organisational conditions are not adequately specified. Marans and Spreckelmeyer (1982; 1986) have made one of the only, if not the only, attempt to relate the organisation to people's evaluations. Their measure of the organisation is, however, inadequate in that it represents the objective organisation and it is too gross and imprecise. To an extent, an awareness of this is shown by the authors who write;

"At best we were able to differentiate between organisations by indicating the particular agency in which the individual employees worked." (Marans and Spreckelmeyer, 1982, p 342)

In order to investigate the possible relationship between environmental evaluations and aspects of the organisations, it was necessary to develop a more precise model. The facet approach allows precise specification of research domains, it has also been useful in model development in environmental evaluation, and was being used in the major section of the thesis. Consequently a facet model has been

proposed. The model is of organisational perception. While the objective conditions of an organisation can be measured, it seemed more reasonable to compare perceptions of the organisation with the perceptual evaluations of the environment.

While the organisational perception component of the thesis has direct relevance to organisational psychology, and makes a contribution to that discipline, the focus of the present research is within the field of environmental psychology; in effect the contribution to organisational psychology is incidental. As a consequence the organisational perception facets will be discussed in relation to organisational psychology in a more limited way. Even with this limited discussion it is hoped that some steps toward an integration of environmental and organisational psychology will be achieved.

The model of organisational perception drew, at least initially, from the concept of organisational climate or culture. Each of the facets of the mapping sentence were empirically supported and have implications for organisational psychology. In the next section each facet will be considered.

13.3.1 Mode

The results supported the two elements of this facet. In describing the organisation people distinguish between the organisation's flexibility and involvement in relation to

them.

While attention has been paid to the components of organisational climate, psychologists have tended to present them in the form of a list of areas which may be of relevance (eg. Campbell et al., 1975; Katz and Kahn, 1978; Payne and Pugh, 1978; Robbins, 1986). The results here suggest that there are fundamental constructs which underlie the various areas included in these lists.

If one considers the components of organisational climate proposed by Campbell et al. (1975), which seems universally to be the basis of most expositions of organisational climate, it becomes transparent that involvement and flexibility are part of each of the components. The first component, autonomy - the freedom of the worker and their responsibility in decision making - includes both flexibility and involvement by the organisation. The organisation can be seen as flexible in giving the individual the opportunity to exercise autonomy, and involvement in allowing them to take part in decision making.

The second aspect of Campbell et al.'s list is the degree of structure imposed on work positions; the degree of specification of tasks and supervision. Again this component refers to the flexibility of the organisation. The fourth component is the consideration and warmth from supervisors. Consideration and warmth can be reflected in

flexibility, making allowances, and involvement, being concerned about the workers. The fifth component implied by Campbell et al. is cooperative interpersonal relation among peers. Again this implies involvement.

From this list of components it is clear that flexibility and involvement are underlying aspects of each. What differentiates between the components is the areas of life to which they refer. Had the multiple-classification approach inherent in facet theory been applied to the area, this may have been originally more apparent.

The notion of involvement and flexibility is present in other approaches to organisational climate. For example, following the need-pressure theory of Murray (1938), Stern (1970) argued that there are two categories of pressure; anabolic and catabolic. The anabolic pressure describes a context which is conducive to self-enhancing growth, and the catabolic pressure represents a context which is antithetical to personal development. The anabolic and catabolic pressures appear to be opposite poles on a single dimension of growth and constraint. However from the present results these two types of pressure could be seen as located in relation to flexibility and involvement; two dimensions.

The basic climate of an institutional setting may also be seen as related to the characteristics of involvement and flexibility. For example, the particular model of mental

illness may define the climate of a setting or institution (Canter and Canter, 1979). A custodial or medical model of mental illness may be associated with an inflexible organisation or regime, and one in which involvement in the patient is minimal. A normalisation paradigm of mental illness may be associated with a flexible and involved institution. Recent, unpublished, research (Shattock, 1987) suggests that evaluations of hospital wards may differ depending on the model of mental illness held by workers in the environment, and which are associated^d with institutional climate. In Shattock's research there was found to be two basic models, humanist and medical/custodial. Both can be seen to relate to the elements of flexibility and involvement.

The notion of involvement and flexibility apply to many areas of interest to organisational psychologists. For example, the humanisation of work and job enlargement, expansion and enrichment suggest increased efforts by the organisation toward being involved in, and flexible toward, its employees. The elements are also relevant to discussions of participative organisations and organisational commitment, two areas which are seeing a growth of interest with comparative studies of western and Japanese organisations (eg. Luthans et al., 1985). It is quite possible that in most areas of concern for organisational psychologists involvement and flexibility are important dimensions. The validation of these elements,

therefore, suggests their application in these areas could be of value.

A further consideration with regard to involvement is the way in which it has been used in organisational psychology. The focus of concern has been the extent to which the individual is involved or committed to the organisation or identifies with his or her job (eg. Rabinowitz and Hall, 1977; Saal, 1981; Saleh, 1981; Kanungo, 1981; 1982). It is clear that involvement has wider meaning and relevance, and should be investigated further.

13.3.2 Organisational Unit

The difference between the organisation as a whole and the department is clearly shown. These results are again of importance in organisational theory in relation to culture and climate.

It was seen earlier that Payne and Pugh (1978) consider climate to be a concept applying to the organisation as a whole, or some definable part of it. In making this statement Payne and Pugh made no suggestions as to whether one would expect to find differences between perceptions of the organisation and the department. Stern (1970) has shown differences in terms of assessment of an organisation's climate by departments within the organisation. However, the results did not show whether the difference in perceptions were due to the participants describing the

climate of the department or the organisation as a whole. From the results presented here, it is clear that the department is perceived differently to the organisation as a whole. In relation to other findings, such as Stern's, it is open to question whether different departments were assessing the organisational climate separately, or whether in fact they were assessing the more local climate of the department. Using the present model questions such as this could be answered.

That departments represent sub-cultures within an organisation has pragmatic importance. For example, changes in organisational practice may not necessarily lead to improved perception of the sub-units. Additionally, problems within a particular department may be a result of a poor climate within that group, and not as a result of organisational practices as a whole. Of course, the importance of groups within organisations has been shown many times, however, the results here may facilitate a better understanding of the ways in which the sub-groups relate to the organisation.

One final point needs to be made with regard to the relationship between organisational climate and organisational perception. There is some debate as to whether the individual perceptions constitute organisational climate or job context (Payne et al., 1976). It is quite clear that it would be possible to incorporate an additional facet, similar to that of the organisational

unit facet in the environmental evaluation mapping sentence, into the model of organisational perception, and thereby allow the development of a model which integrates both individual and group perceptions of the job and organisational context.

13.3.3 Area of Organisational Life

Although the elements of the areas of organisational life facet were not considered in relation to evaluations, the facet, and its empirical structure, do have implications for organisational psychology that are worth briefly considering.

The structure of the elements of organisational life was found to be circular, indicating a qualitative differentiation. Such a qualitative structure suggests that no one area of organisational life is more important than any other; they are not located along a continuum. In common with the arguments pertaining to the referent facet of environmental evaluation, it is not possible to consider the areas of life to be ordered. Additionally, environmental psychologists have attempted to obtain ranks of areas of the work context in an attempt to discover how important the environment is. It can be seen from these results that the environment is not only a factor contributing to performance (Wineman, 1986), but is also an area in which the general orientation of an organisation toward the worker can be assessed.

The structure of the facet is also interesting in relation to other areas of psychological inquiry which have used the facet approach. The structure found in the present study is the same as that reported by Levy (1986) in her study of social values. In this study Levy included a facet "life areas". Amongst the elements included in this facet can be found parallels with those of the organisational life facet here. For example, Levy's work, social-community work, and social-human relations elements correspond to the elements of work, welfare/well-being, and social, respectively. It was noted in the introductory chapters of the thesis that Levy's work related to the referent facet of the evaluation mapping sentence which also results in a similar empirical structure.

It seems possible from these results that an "area of life" facet may exist for many areas of psychological research and be universal in its structure. If this is the case, it is important to note the qualitative differentiation between the elements and the conceptual implications this has. Additionally, if this is an important facet for psychology, its nonlinear quality has implications for the use of factor analysis. It is possible, for example, that the facet could be included in personality models as the context within which people exhibit particular traits. The favour with which factor analysis has traditionally been viewed by personality researchers and theorists suggests

that a methodological change would be fruitful.

The final considerations in relation to the model of organisational perception developed here, is with regard to its use and generality. It has been suggested that the facets of the model may be applicable to other areas of organisational research. One area where this may have relevance to environmental evaluations is the description of the objective characteristics of the organisation. The structuples provided by the mapping sentence could be used as items for the classification of objective characteristics. For example, the researcher could note the organisation's policy on allowing people to structure their own work, or the department's policy in relation to that and other areas.

Using the model in such a way may also help in integrating areas of organisational psychology. For example, by the inclusion of an additional facet, cognitive, affective, and instrumental, it would be possible to assess satisfaction, as well as obtaining descriptions and perceptions. It would seem worthwhile for research to attempt to replicate the present findings in order to discover how robust the model is. Because of the precision of the facet approach it would be possible for researchers to establish the validity of other facets while replicating the present model.

13.4 Work Orientation

It was noted that workers' personal characteristics also have a potential effect on their environmental evaluations. In order to investigate these more personality related considerations, the first stages toward developing a model of work orientation has also been made.

One facet consisting of two elements was used in the specification of work orientation items. The results support the distinction between flexibility and involvement in the person's approach to organisational life.

In chapter seven it was seen that in the general organisational psychology literature involvement in one's job is generally taken to be identification with it (eg. Kanungo, 1984). However Saleh and Hosek (1976) have distinguished between identification with a job and active participation. Both were taken to be part of the involvement concept. In this study participation in the individuals job context has been shown to be a valid construct; the term participation being used here to distinguish present interests in involvement from identification.

In addition to participative involvement, it has been shown that flexibility is a valid construct, and is part of the same facet. If the factors revealed by Saleh and Hosek are valid, then there is a possibility that identification is also an element of this facet. However, it is also possible

that identification represents a different facet. This possibility suggests an area for future research.

The work orientation section of the study is of relevance to the personality approach to person-environment studies. Donald (1987) has criticised the personality approach to environmental research on the basis that the measures which have been developed often do not measure underlying personality traits but, in essence, the extent to which specified attitudes are supported by, or predictive of, similar future behaviour. For example, the Environmental Response Inventory (McKechnie, 1974) includes a sub-scale of "Urbanism". The scale measures the extent to which people prefer an urban environment. People who are high on this scale will, when given the freedom, choose an urban environment. The problem with this, and other scales, is that they do not explain why people prefer urban settings. If scales could be developed which measure more fundamental traits or orientations they would be of more value from the perspective of gaining a psychological understanding of person-environment relations. It is possible that involvement and flexibility are orientations of relevance to settings other than the office. If this is the case, it seems likely that they will have more useful explanatory power than, for example, McKechnie's Urbanism Scale. Clearly, characteristics such as involvement and flexibility, in general, rather than only toward life at work, need to be explored further in other settings.

The obvious focus for future research is the specification of further facets of worker orientation. Clearly facets of organisational unit and area of life represent two possible facets. If a more detailed model of work orientation could be established, the ensuing model would have application in organisational psychology, including such areas as personnel selection, for which a facet model already exists (Canter and Donald, 1985), training, and other areas. However, these represent areas for future consideration. For the present attention will now be turned to the relationships between the evaluations and the external domains.

13.5 Office Evaluation and Organisational Perception, Cohesion, and Work Orientation

The crosstabulations of the external items with the elements of the organisational unit elements reveal some interesting relationships. In general terms, the results show a clear trend; the more positive the participants work orientation and perception of the organisation the more likely that their evaluations of the environment are positive. While some of the external variables show no statistically significant relationship to evaluation, on no occasion is there a negative correspondence between the variables of the domains.

There are few studies which have considered the relationship between the organisation and evaluations of

the environment. The only research project known to the author, which has attempted to consider office evaluations and the organisation, are those performed by Marans and Spreckelmeyer (1982; 1986). Recent volumes concerned with the office environment (Sundstrom, 1986; Wineman, 1986) also contain no references to studies exploring these relationships other than those conducted by Marans and Spreckelmeyer. It is therefore the work of these two authors with which the present aspect of the thesis can be considered and compared.

Marans and Spreckelmeyer's (1986) research revealed a significant difference between the environmental evaluations made by employees of two different organisations. To the extent that this reveals a relationship between the organisation and office evaluations, the findings here support those of Marans and Spreckelmeyer. However, there are a number of problems and limitations with Marans and Spreckelmeyer's study. Some of these have already been mentioned. Below further limitations will be discussed in relation to the present research.

The principal problem and limitation of the work is concerned with the particular organisational characteristics which can be said to be associated with differences in evaluations. Marans and Spreckelmeyer (1982) write that;

"The organisational context encompasses but is not limited to the mission of the organisation, the activities which take place within it, the morale of the organisation, and the general nature of employee/employer relations." (p 340)

However, as was previously noted, the only way in which individuals were distinguished in relation to the organisation was in terms of the agency for which they worked. There are a number of problems with this. Firstly little systematic information is given with regard to the ways in which the agencies differed. A second problem is that there is no distinction between the objective and perceived characteristics of the agency. Finally, there is the question as to whether the actual physical conditions present in each agency were significantly different.

At most, the only conclusion that can be drawn from Marans and Spreckelmeyer's study is that people working in the different agencies, evaluate their environment differently. Considering the statement by these authors, in relation to other evaluation studies, that;

"the things that are to be measured in the workplace, both objectively and subjectively, have either been poorly or incorrectly specified and measured". (1982, p 335),

one would have thought that they would have paid more attention to the specification and measurement of the various aspects of their own study.

Marans and Spreckelmeyer also considered what they termed

"personal characteristics" in relation to office evaluations. However, as was argued in the introductory chapters, the authors are incorrect in asserting that the characteristics which they considered are personal. In the sense of being an intrinsic characteristic which the person brings to the context, the characteristics of the individuals proposed by Marans and Spreckelmeyer are not, in fact, personal, but role related. There have been, as has been noted, many studies which have considered role relationships in office evaluation. It is to that body of research that Marans and Spreckelmeyer's study contributes. The important implications which accrue from personal and role differences were mentioned in the introductory chapters, consequently, they will not be repeated here.

At this point, attention can be drawn to the various one-way analysis of variance results presented in appendices 14 and 15. These results show a statistically significant difference between the four sites in terms of office evaluations. One could conclude from this that they show that different organisations result in different evaluations. This is, of course similar to the contention of Marans and Spreckelmeyer. One challenge to this would be that the sites are physically different, and therefore the evaluations are different. If, as is the case with Marans and Spreckelmeyer, little information is given with regard to the physical conditions of the office, it is not possible to confirm either conclusion.

Taking the one-way analysis of variance results in relation to the organisations, one finds only one organisational variable which shows a significant difference between the organisations. Thus one can conclude that the differences in evaluation can not be accounted for by organisational differences. This of course is in opposition to Marans and Spreckelmeyer's results.

The point of this argument is that it is inadequate to simply show evaluation differences between organisations and then conclude that these are a result of the different agencies. In order to investigate the differences one must consider particular groups, in terms of their organisational perception, rather than comparing evaluations at the gross level of differences between agencies.

The present study, using descriptive facet models, allows us to observe precisely which aspects of the organisations are related to different evaluations. It is to some of these specific relationships to which we can now turn.

13.5.1 Single Evaluation Elements and External Domains

In looking at the relationships between elements of office evaluation and external variables, the present discussion will principally focus on the overall trends rather than the specific relationships. There are two reasons for this. Firstly the trends are very consistent, and secondly, in

concentrating on each particular finding in great detail, there is a risk of obscuring the more general and fundamental implications of the research. Nonetheless some consideration of the particular relationships will be briefly given.

The first characteristic of these relationships is that the department element of the organisational unit of the environmental evaluation facets is consistently the element most strongly related to the external variables. Additionally, with the exception of the rather weak, though still statistically significant ($P < 0.05$), relationship between the department unit of evaluation and flexibility orientation, both departmental and organisation elements of the evaluation are related to the same external elements; the organisational perception element of organisation, and the involvement element of orientation. In both of these cases, however, the relationship is most strong between the external elements and the departmental element of the evaluation.

It would seem that evaluations of the department element of evaluation, the extent to which the environment facilitates the feelings of a cohesive and distinct group of which the individual is a part, is most strongly influenced by the external domains. It seems likely that feelings of being part of the department are more important and immediate than part of the organisation. The majority of daily contact, both in terms of work and socialising, is likely

to be with members of the department, (Wells, 1965) even within an open office (Hedge, 1986). It is therefore likely that it is the department element of the evaluation which is most sensitive to the worker's personal involvement orientation, and perception of the organisational element of the organisation.

An interesting feature is that positive involvement is most highly associated with a positive evaluation of the department and organisation elements of the evaluations. It is conceivable that people who like to become involved are those most likely to be dissatisfied with an environment that may frustrate these orientations. However, it is also possible that when an individual is satisfied with their environment, in terms of it helping them to be part of a distinct group or department, they they are more likely to want to be involved. Additionally, as will be argued later, there is a possibility that general feelings with regard to both the organisation and environment is mutually positive or negative.

The external variable of cohesion and the evaluation element of self are only associated with one another. This relationship is, however, relatively weak, though still statistically significant. Although the number of people with negative descriptions of cohesion is greatest for both positive and negative evaluations, the majority of people with positive perceptions of cohesion are also likely to

have positive evaluations.

It would seem likely, from the results, that when an individual is positive about the group, they will perceive the extent to which the environment facilitates their distinctiveness positively, regardless of the actual environmental conditions. If the individual does not like, or want to be a part of their work group, they do not consider that the environment provides sufficient distinction between them and the group, again regardless of the actual environment. In effect the people making their evaluations are judging the environment by different criteria. This can be clarified by a hypothetical question and answers; "Do you think that the environment sufficiently helps you to separate yourself from the group?" "Yes, because I really quite like my group and so do not need to be too strongly separated from it", or "No, I hate the group I work with and want as much separation as possible".

Before moving on it may be worth noting that Sundstrom's comprehensive review of the office literature (Sundstrom, 1986), he only refers to two studies of cohesion and office design (Richards and Dobyys, 1957; Wells, 1965). Both of the above studies are, however, concerned with the effects of the physical environment on the formation of groups and group norms. Neither considered the workers' evaluations of their environment in relation to their feelings with regard to cohesion. The present study represents the first such

study.

13.5.2 Two Element Profiles and External Domains

The analysis of the two element profiles is interesting. The association between the joint (total) evaluation scores and external variables follows the same trend as the analysis of the single elements. The most interesting relationships, however, are between the lateral axis and the external elements. The only item which is associated with qualitative differences in evaluation is the involvement orientation. That the relationship is similar for both profiles, self/department and self/organisation, is following the general finding regarding the distinction between self and others. Additionally, one also finds that relationships with the environmental element of the department are the strongest.

For both sets of two element profiles there is a similar relationship with the workers' orientations toward involvement. Those who have an orientation toward being involved are more likely to evaluate the organisation/department element of the evaluation positively and the self element negatively. The converse of this is true for those with a negative involvement orientation.

One possible explanation of the results is that the worker's general orientation is reflected in the aspects of

the environment positively evaluated, rather than whether the environments actually allows involvement. Thus because they like being involved, a person will consider any aspect of the environment which allows this as positive, with the converse of this being so for those who do not want to be involved.

Another possible explanation is that individuals who work in an environment which facilitates their membership of the group, will want to be involved in that group ie. the environment makes them feel a part of the group, consequently they want to be involved in the group; the department or organisation.

While these represent possible explanations, others may be suggested. Indeed, it would be possible to provide a rationale for results which are the opposite to those above. What is, perhaps of most importance therefore, is simply that the qualitative differences in evaluation are related to personal characteristics. Anything beyond this, from the present data, remains tentative speculation.

Rather than discussing the relationship between each of the total and qualitative evaluation scores in relation to the external variables further, it is perhaps more useful to suggest an explanation which can generally account for the relationships. From the results there is a basic characteristic of the evaluations which is evident. People's total evaluation score is positively related to

perceptions of the organisation, and qualitative differences between evaluations are related to personal characteristics, especially an orientation toward being involved.

A possible explanation for the pattern of results can be derived from the work of symbolic interactionists. While this group of writers represent a movement within sociology, their basic conceptualisations have psychological implications, and their approach is compatible with the work of numerous psychologists (eg. Harre and Secord 1972). Additionally their systemic and action orientations (eg. Strauss, 1964) are in keeping with the general approach taken here.

Essentially, symbolic interactionists contend that people ascribe meanings to events, objects, and actions. Via the meanings which are ascribed and interpreted, people and groups interact with one another in symbolic ways. In interacting in this manner various, media may be used for both verbal and nonverbal communication between the groups. From this perspective the environment can be viewed as a medium of symbolic communication, rather than being a stimulus which evokes human response (Ellis, 1986), or as a means of carrying out behaviour; the environment has properties beyond the purely functional.

It would seem likely, taking this basic approach, that an organisation may, intentionally or otherwise, communicate a

positive and caring (involved/flexible) image via its action in relation to numerous areas of the organisational context, including the environment. A person who evaluates or perceives the environment positively, may consider that an organisation which provides such an environment is generally caring toward its employees. As a consequence their perception of the organisation will be positive. Additionally, workers' perceptions of the organisation as positive, are likely to be reflected in their assessment of the environment. It should be clear that it is not being suggested that the perception of the environment causes the perception of the organisation, or vice versa. Rather, it is suggested that there is an evolving, mutually reinforcing, interaction between the perceptions and evaluations of the organisation and environment, and that what links the two is the possible symbolic qualities of the components of the context.

Underlying this proposition one can discern the contention that a "halo" effect is taking place; positive perceptions of one area result in positive perceptions of other areas. This should be recognised as part of the systemic nature of person-environment-organisation interaction. If this is the case one would expect that total evaluations (joint scores) would be most strongly related to perceptions of the organisation. This tendency is found in the present research. Additionally, one would expect that qualitative distinctions would depend to a greater degree on the

personal characteristics of the individual, again this was found.

The symbolic quality of the environment, and actions by organisations, may be observed dating from the Hawthorne studies of the 1930s. In relation to this work Schein (1980), for example, writes that it shows that;

"almost any change which is introduced and communicates interest and concern with the workers will produce an increase in production." (p 56)

That the environment can communicate is widely recognised by most environmental psychologists. In the field of office research this is most evident in, for example, the use of status symbols (eg. Steele, 1986). However, there has recently been research in which the more subtle and fundamental symbolic qualities of the office environment, with which we are presently concerned, have been shown (eg. Ellis, 1986).

From the results of his research, which supports the symbolic interactionist framework in relation to the environment, Ellis suggests that, as a consequence of this feature of person-environment interaction;

"Design researchers cannot afford to ignore (the) organisational context: first it provides the key to understanding the reasons behind users' expressions and feelings; and second, through an understanding of the organisational context, researchers may be able to influence it in order to increase the probability that the design will be accepted.." (p 228).

It is clear from the remarks of Ellis and the results of

the present study, that organisational context, and people's perceptions of it, including symbolic interpretation, are an essential ingredient in understanding evaluations. Most, if not all, research on offices has ignored the organisational context. It is clear that this represents a major inadequacy in the field, and one which should be addressed.

Additionally, the importance of individuals personal characteristics, rather than their roles, has been neglected in evaluation research, and further, personality approaches to the environment have failed to identify truly personality related characteristics (Donald, 1987). Again from the present results it is clear that these are important and should be considered in evaluations. This is especially important as it has direct implications for design decision making.

An additional implication from the present results is concerned with the advantage of the facet approach and descriptive models. Comparisons throughout the thesis with Marans and Spreckelmeyer's (1982; 1986) work have clearly demonstrated that descriptive models have considerable power. It can be suggested that other such models should be developed for other areas of research. The use of such models, specified with the precision of facet theory, would greatly enhance our study of the environment.

13.6 POSAC and Chi Square

The use of POSAC along with Chi square is unique to the the present study. Although this combined use of the two analysis methods does not represent a contribution of any great significance, it does provide a useful example of how the two orientations may be integrated. Although there is an increasing use of POSAC in the psychological literature, the results of the POSAC, when related to external items, are often presented in terms of simple frequencies. It would seem, from their use here, that it is possible and useful to perform analyses on these frequencies in order to discern how statistically significant the associations between the internal and external domains are; the pragmatic significance is, of course, a different issue.

CHAPTER 14

Conclusion

14.1 Introduction

There are a number of interesting and important conclusions which can be drawn from the results of the present research. In the following sections the major conclusions for each model developed in the study, along with those which accrue from the individual facets, will be presented. Directions for future research will also be suggested.

14.2 Model of Office Evaluation

14.2.1 Level of Interaction

The level facet revealed evaluations to be made in relation to the building, office, and workspace. Further, each level was shown to be independent and linearly ordered.

Service and purely spatial aspects of the person-environment interaction do not lead to distinctions between the office and workspace. It is suggested that this lack of distinction may be due to different processes being involved in the use and experience of socio-spatial, and service/space components of the environment. Future work should attempt to clarify what these processes are, and how they function. Also the socio-spatial features of, for example lighting, require investigation in relation to level differentiation in evaluations.

It may also be concluded that, contrary to the contention of previously cited authors, one can not compensate for poor quality at one level by improving design at other levels; the evaluation of one level is not dependent upon the evaluations of other levels.

An important conclusion from the research is that the workspace/office distinction is not a direct function of physical parameters, but rather of behaviourally based social psychological perceptions, and the objectives of the building user.

14.2.2 Referent

In relation to the referent facet and its elements, the results of the research affirm that the original tripartite classification of elements is valid, and, moreover, that they are qualitatively distinct and non-linear in their structure. It can also be conclude that a fourth important element exists in terms of people's evaluations of the office environment. This fourth element, socio-spatial, should be included in future research and tested in different settings.

It is clear from the present work that studies which emphasise only one element of the environmental referent are inadequate, in that no one element is more or less central than any other. It is also apparent that the much researched aspect of office life, privacy, is but one part of this facet. In relation to the attention which has been

paid to privacy, and the importance placed upon it, it is evident that improvements in terms of such phenomena are unlikely to improve evaluations of other aspects of the environment.

Given the degree of effort which has been directed toward gaining an understanding of privacy in the office, the present model is important as it integrates the phenomenon of privacy into the context of a wider, more comprehensive model.

14.2.3 Focus

Although no conceptually explicit focus elements were specified for the study, the results show that, at least in terms of the socio-spatial referent, a focus of cohesion and communication exists in workers' evaluations of their offices.

The present emphasis in design tends to be on efficient communication in organisations. Although this is an important consideration, attention clearly need to be paid to group unity and cohesion, and feelings of belonging in terms of the employees.

The importance of understanding alienation and involvement in organisations has been shown by the considerable effort which has been directed to its study. The results presented here suggest that not only is it an important area, but one which has at least some implications for the role of the

environment which have not previously been fully or adequately recognised.

Cohesion may be related to the concept of alienation in organisations. Alienation, in turn, has important implications for worker well-being. It has previously been suggested that those aspects which are central to the evaluation model are likely to be important for the place user's well-being. Given the centrality of cohesion, and its association with alienation, this argument appears to have some support.

Originally the focus facet was specified in terms of work and well-being. Given the lack of support for this distinction from the pilot study results, and the equal importance of cohesion for well-being and organisational functioning, it can be concluded that these two areas of organisational life are, in fact, integrated. As a result, it can be suggested that the distinction between work and well-being made in the office literature is too simplistic.

Finally, previous research using the GMS has revealed two foci. The first is concerned with the overall and specific qualities of the place. The second focus is in terms of how central or peripheral an aspect of the environment is to the objectives of its users. From the analysis of the full set of evaluation data, it is evident that it is the latter focus which applies to the office environment.

14.2.4 Organisational Unit

The organisational unit facet had not previously been included in studies based on the purposive model. The results of the present study show considerable support for the facet and its elements. From this support it may be concluded that office workers make subjective (from the perspective of the self) and projective (from the perspective of the group) evaluations. Additionally, the objectives of the individual include both being a member of a group, as well as being distinct from the group.

The structure of the facet elements leads to the clear conclusion that they are qualitatively differentiated and non-linear. Additionally, no one perspective, or socio-spatial objective, is more or less central to the evaluations. This is an important conclusion as it challenges many assumptions. In research concerned with burolandschaft, for example, it appears to be assumed that the differentiation of the individual from the group is of paramount importance. This neglects the equally important consideration of integration. Generally the results show that design must allow for control and be flexible.

A future direction for research would be to identify other groups within an organisation, and more generally, to seek support for a 'social unit' facet in other settings.

Finally, the facet has been considered a sub-facet of the socio-spatial referent element. It seems likely that the

organisational, or social, unit is a facet in its own right. Effort should be directed toward discovering if the facet applies to all referent elements.

14.2.5 The Model of Office Evaluation in General

There are a number of general conclusions which can be drawn with regard to the models of place and office evaluation. It is clear that the proposed model of office evaluation has been strongly supported. The results have shown that there is a generalisable, integrated structure of office workers' conceptualisations and evaluations of their work environments. That there has been support for the model from four organisations in evidence for its generality. The evidence presented here concurs with that found in Donald's previous office studies, and adds to it in important and significant ways.

The generality of the model of office evaluation suggests numerous possibilities for its future use. Firstly the model, and mapping sentence, may be utilised in evaluation research. The mapping sentence may be harnessed to provide an empirically validated structure for the observations to be made. To date, research using the mapping sentence has been conducted using questionnaires. One future direction would be to apply the mapping sentence to other data collection methods, such as behavioural mapping or unstructured/semi-structured interviews. Additionally, the post hoc interpretation of research findings, and content

analysis, could be enhanced by using the mapping sentence as a framework for the classification of user statements and research findings, and the integration of previous research.

The mapping sentence can be fruitfully exploited in relation to the three types of evaluation research utilisation identified previously; feedforward, feedback and feedin. In relation to the latter of these types, feedin, the use of the framework provided by the present research could provide a number of reference points for the comparison of the designer and prospective user as the building design travels through the design process. Additionally, the mapping sentence can frame the questions which the designer needs to ask regarding the environment which is being designed; each structuple identifies an area of design requiring attention.

The use of the mapping sentence could also facilitate cross-cultural office research. One of the problems with conducting cross-national research is the need to translate research questionnaires in to the languages of the various nations. The mapping sentence can readily be adapted to a different language, while preserving the important aspects of the evaluation. Thus instead of translating culturally bound questionnaires, one would simply form a questionnaire from the mapping sentence in the appropriate language. This, of course, is one further example of how the mapping

sentence may facilitate the comparison between research studies.

In addition to the need for future research to test the utility of the mapping sentence in relation to research methods other than questionnaires, there is also a need to apply the model to different office designs. To date, the model has only been applied to the most controversial of office designs; burolandschaft. Effort should be directed toward testing the model in cellular/private offices, and settings with mixed office provision.

14.2.6 Model of Office Evaluation and The Purposive Model of Place Evaluation

One of the explicit aims of the purposive model of place evaluation was to provide a general template for the construction of place specific models of environmental evaluation. It can be concluded from the present study that the model is useful in this regard.

It was contended that the basic components and structure of people's place evaluations are general in nature and not place specific. Again the results presented here provide further support for this argument. One important concern for future research would be to seek settings which are an exception to the findings of the existing studies using the place model. If such exceptions could be found and explained, they would further our understanding of person-place interaction.

The present research has not only provided further support for the purposive model of place evaluation, but also added significantly to it. A fourth element, socio-spatial, may be added to the referent facet, and a 'social unit' facet can also be included.

The elements of the social unit facet would be likely to differ between settings. Such differences as these could form the basis for the classification of places. The strong support for the general model, and its application to specific places, suggests that this may be a possibility.

14.3 Organisational Perception

The results of the present study with regard to organisational perception allows conclusions to be drawn at both a general level, and in relation to specific facets. This part of the conclusion will begin with a consideration of each facet.

14.3.1 Area of Life

The areas of organisational life were shown to be qualitatively differentiated and non-linear. It is clear that each area represents a distinct aspect of the worker's perception of their organisational context. The structure further leads to the contention that it is not possible to compensate for negative perceptions of one aspect of the organisation by improving the quality of other areas.

The relationship between the elements allow one to observe

how particular aspects of the context fits within an overall model, and shows that in order to be comprehensive research should consider each element. The inclusion of an environmental element in this facet also helps one to understand the place of the environment in organisations; it is a valid component of the organisational context.

There are a number of issues which may be addressed in future research. Firstly, additional elements covering other areas of organisational life may be included. Secondly, the generality of the facet could be considered in relation to both work and life in general. From the evidence which exists, it would seem that area of life is a generalisable facet applicable to many different domains including, work-life, well-being, and political action.

14.3.2 Organisational Unit

Considerable research has addressed the issue of sub-groups in organisations. The research presented here shows that, in terms of organisational perception, people do make distinctions between at least two organisational units, and further, the two units are independent. This is a rather important conclusion as it would be reasonable to hypothesise that perceptions of the organisation would be a function of perceptions of the department, or vice-versa. In the present study this was not the case.

In an organisation there are many social units in addition

to the organisation and department; future research could be directed to identifying some of these and discovering their structural relationships.

14.3.3 Mode

The principal conclusion to be drawn from this facet is that workers' perceptions of the organisation differentiate the actions of the organisation in relation to both the organisation's flexibility, and the extent to which it is involved in its workforce. additionally, both flexibility and involvement are independent aspects of the perceived organisation.

Studies in organisational psychology have, principally, been concerned with the worker's identification with the organisation. It is clear that this is but one part of involvement, and additionally, that involvement is but one aspect of person-organisation relations. Flexibility is a second aspect of this relationship, and it would seem likely that other elements may be valid. The search for additional elements of this facet would be a fruitful direction for future research.

14.3.4 Model of Organisational Perception: General conclusions

In general it can be concluded that it is possible to produce a useful descriptive structural model of organisational perception. By adding other facets it would be possible to integrate a number of areas of

organisational psychology in to a comprehensive model. Included amongst the areas which can benefit from the model is the field of job satisfaction.

The model represents a first attempt at developing such a framework. Attention should first be directed toward replication of the basic model, and then to its expansion. As a general framework the model could be fruitfully applied in a number of areas with the researcher adding or deleting facets and elements depending upon his or her research focus.

Finally, the validity of the model in contexts other than those of work, should be established. If it is found that the model is indeed generalisable, it could be of considerable benefit in studying numerous domains, including, for example, perceptions of societies.

14.4 Worker Orientation

The thesis was not concerned with developing a full model of work orientations. One facet of work orientation was however included. The two facet elements of flexibility and involvement were both supported and shown to be independent. Again it is clear that involvement in only one part of the individual's approach to, or relationship with, the organisation and work. Therefore, flexibility should also be investigated, along with other possible elements of this facet.

The most clear requirement for the future development of this part of the study would be the addition of further facets. One avenue of investigation which could be readily pursued would be to incorporate the facets of organisational perception into a model of work orientation. Not only would this be beneficial for the area of work orientation, but also may help in integrating the two areas.

14.5 Office Evaluations and the External Domains

It is clear from the present results that there are a number of statistically significant relationships between evaluations of the office, and worker orientations and organisational perceptions. In essence, the results have shown that a person's total environmental evaluation is positively associated with their perceptions of the organisation. It has been argued, further more, that this relationship may be due to the symbolic qualities of the environment communicating a positive organisational image to the worker.

The qualitative differences in evaluation are related to more organisationally independent factors; involved worker orientation. Previous research has not considered personal characteristics, such as work orientation, in relation to office evaluation. Instead the research has considered the relationship between role and evaluations. As the present research has shown the importance of personal

characteristics, and as different consequences for design and research ensue from role and personal differences, attention should be paid to the latter of these.

From these general trends it is evident that in conducting evaluations researchers need to pay attention to organisational perceptions and worker orientation in order to account for within and between organisation variance. Organisational psychology has increasingly taken a systemic perspective. This approach is clearly one which should be adopted by environmental and office researchers.

14.6 Facet Theory and Descriptive Models

It is the manifest aim of facet theory to specify hypotheses and describe domains in such a way as to; allow their precise and clear exposition, facilitate the systematic addition and deletion of components of an area of study, and thereby allow cumulative and comparable research.

In using the facet approach to research here, it has been shown that additions to the model of place evaluation proposed by Canter (1983), and the office evaluation model developed by Donald (1983), have been fruitfully made; the study has clearly demonstrated systematically cumulative research. The use of the approach has also revealed how the descriptive models which are developed within the facet framework can allow comparable research. The present study has compared the evaluations of hospital wards, housing and

offices at fundamental levels.

The precise specification of research domains, which is essential and unavoidable in facet research, has been shown to be of considerable importance. This has been demonstrated in relation to the only other study to address the issues with which the present research has been concerned. In the case of that study (Marans and Spreckelmeyer, 1982; 1986) the imprecise nature of their domain specification has led to confusion and difficulties in making comparisons.

The general tendency for facet researchers employing the POSAC procedure is to present raw profile frequencies. Here it has been shown that POSAC users can fruitfully employ inferential statistics in assessing the results of their POSACs; whether they in fact chose to do so is a matter of taste.

A forceful call for descriptive models in social psychology has been made by numerous authors. It was contended by the researcher that before office evaluation can progress, descriptive models need to be established. From the results here it is apparent that such models are fruitful and facilitate an understanding of the complex issue of person-environment-organisation relations.

14.7 Summary: General Aims of the Thesis Revisited

There were a number of general aims of the present thesis. In this final section conclusions directly related to these will be specified by way of a summary.

The primary aim of the research was to develop a multivariate descriptive model of people's evaluations of the office environment. The research has successfully developed the model of evaluation and thereby added to office evaluation and place evaluation in general, as well as providing a useful tool for structuring design participation.

The second aim of the thesis was to develop models and/or facets describing the external domains of organisational perception and work orientation. These models/facets have been successfully developed and validated. In achieving this, contributions to organisational, as well as environmental, psychology have been made.

The third aim of the thesis has been to discover whether there are any systematic relationships between office evaluations and a number of external variables. The results have shown that quantitative evaluation differences are related to organisational perception, and qualitative differences in office evaluation are related to work orientation.

The final aim was to integrate the use of the scaling procedure of POSAC with an inferential statistical

procedure. In revealing the relationship between external domains and office evaluations the usefulness of using both POSAC and Chi square together has been shown.

Each of these aims, and their findings, represent the first time such problems and research have been conducted in the area of office evaluation. In the case of the evaluation model, the research represents a significant advance on previous work conducted by the author. In the spirit of cumulative, scientific research, it is hoped that others advance and build upon the foundations laid by the present work.

APPENDIX 1

Facet Theory

A1.1 Introduction

Environmental psychologists, in moving away from the controls of the laboratory and into naturally occurring settings, have increasingly found it necessary to employ multivariate statistical procedures in order to fully understand and study the plethora of variables and influences which occur in these environments. However, with few exceptions, little attention has been paid to methods of specifying the complex, multivariate research problems and questions. Foa noted some time ago that;

"The increasing complexity of data requires, more than ever, systematic design and a rigorous statement of hypotheses." (1965, p 262).

Facet theory was developed in order to overcome not only the problem of analysing complex data, but also the difficult task of specifying the labyrinthine hypotheses in an orderly, systematic, and precise form. It is, as Canter (1982) writes,

"a coherent approach to the design of research projects, measuring instruments and data analysis." (p 143).

The field of place and office evaluation represents a multivariate area of research which can benefit from the application of facet theory. However, while facet theory has been with us for more than twenty five years, it has

not yet become common. Consequently, the present appendix will briefly outline the growth and development of facet theory along with its basic concepts and terminology.

A1.2 Development and Growth Facet Theory

Facet theory grew out of the discontent of Guttman and his colleagues with the selection of items for test construction and what they perceived as weaknesses in factor analytic approaches (eg. Guttman, 1954). The criticisms of factor analysis will be considered in appendix 2.

The basis of facet theory can be found in the early work of Brunswik (1956) and Fisher's (1949) factorial designs. The approach, however, was finally named and formalised by Guttman (1954a), who suggested that variables could be formally defined by using the notion of the Cartesian product. In this publication Guttman introduced the term facet to indicate a component set of the Cartesian product (Foa, 1965).

Despite its relatively long history, facet theory has not become part of the research orthodoxy. There are a number of reasons for the slow acceptance and development of facet theory. In her introductory paper on facet theory Brown (1985), for example, notes that:

"Choosing the facet approach requires a shift in thinking, an imaginative leap even, not only in the conception of the research problem but also in the

design and execution of the inquiry" (p 17)

In addition to the essentially psychological problem of accepting the facet approach to research, there has also been a problem of accessibility. Until recently most of the published accounts of facet theory were relatively technical in nature (eg. Borg, 1981; Shye, 1978) which make them difficult reading for the non-specialist. More recently, less technical expositions have been published (eg. Canter, 1982, 1985), and may well provide access to the approach to a wider audience.

In addition to the technical nature of the accounts of facet theory, studies which have employed the approach are not found in one particular area. The diversity of journals in which facet studies have been published, and the variety of substantive concerns which have been subjected to the approach, again hinders general exposure to facet theory.

Despite the above, there are clear signs of a growth in use of facet theory. In 1984, for example, the first international conference and workshops on facet theory was held at the University of Surrey. More recently, the 21st International Congress of Applied Psychology, held in 1986, included no less than sixteen presentations which utilised the approach.

A1.3 Facet Theory and Theory Construction

Facet theory is a method of integrating three components of research, all of which can be found in Guttman's (Gratch, 1973) definition of a theory as:

"an hypothesis of a correspondence between a definitional systems for a universe of observations and an aspect of the empirical structure of those observations, together with a rationale for such an hypothesis"

The same three components are also to be found in the writing of Shye (1978) and Canter (1982). For example, Canter states that facet theory;

"utilizes three major constituents of scientific activity: (a) formal definition of the variables being studied, (b) hypotheses of some specified relationship between the definition and an aspect of empirical observations, and (c) a rationale for the correspondence between (a) and (b)." (Canter, 1982 p 143).

These statements clearly emphasise the importance of the formal definition of the area being studied, and the integration of hypothesis and data analysis.

The emphasis placed on the development of hypotheses prior to data collection and analysis is, of course, not unique to facet theory. Thurstone (1951), for instance, relates that;

"In the psychometric laboratory at Chicago we spend more time in designing the experimental tests for a factor study than on all the computational work...If we have several hypotheses about postulated factors, we design and invent new tests which may be crucially differentiating between several hypotheses. This is an entirely psychological job with no computing. It calls for as much psychological insight as we can gather among

students and instructors....I mention this aspect of factorial work in the hope of counteracting the rather general impression that factor analysis is all concerned with algebra and statistics. These should be our servants in the investigation of psychological ideas." (p 277)

The close link between statistical analysis and the design and definition of variables is evident in the work of Fisher (1949) and Spearman (1927). Despite this, however, few attempts have been made to develop a method to guide and represent theory and theory construction. As Guttman (1953) notes in relation to the above quotation;

"Thurstone suggested no guide for theory construction beyond gathering insights for 'students and instructors'." (p 499).

Additionally, as McGrath (1967) argues, in relation to factor analysis, that;

"The most factor analysis can tell us is about the pattern in which the things we 'put in' go together. It is mute about the more critical question of classification, namely: what things should be 'put in' in the first place. For classification, we need a multiproperty input logic as well as a systematic procedure for assessing results." (pp 192-193).

Facet theory provides the required input logic for organising and designing research projects.

The basic activity of facet theory is common to research in general, as McGrath notes;

"for a long time many of us have been using the logic of facet analysis, more or less systematically, without knowing it" (McGrath, 1967, p 191)

However, what facet theory does provide is a systematic method to help and guide the researchers intuition (Foa, 1965); it is of course not a substitute for this intuition.

A number of concepts and components are used in facet theory for precisely specifying the area of concern. It is to an exposition of these that we now turn.

A1.4 Components of Domain Definition

A1.4.1 Facets

The definition of a domain of concern, such as office evaluation, is achieved by specifying the major conceptual components of the domain in the form of facets. The facets, in effect, precisely prescribe the boundaries of the research. A facet may be defined as:

"a set playing the role of a component set of a cartesian set" (Shye, 1978 p 412).

A less technical definition is provided by Brown (1985);

"a conceptual categorization underlying a group of observations" (p 22).

Basically, a facet is a distinct conceptual category describing a component, or dimension, of a particular object or area of research. Examples of facets could be age, sex, colour, and area of life.

There are three basic types of facet; background, domain (or content) and range. Background facets describe what may

be considered to be the context of the study or certain population parameters. For example, age and sex would usually be considered as background facets. In the present study one could also include the organisation or building from which participants are drawn as background facets.

The domain facets describe what may be considered as the "body" of the area of interest. In the present study, for example, the facets describing the content of the evaluation questions are the domain facets.

Canter et al. (1984), in drawing the distinction between domain and background facets in relation to more conventional approaches to research, have noted that;

"There are parallels between the study of treatment effects in conventional factorially designed research and the examination of background facets. The study of domain facets is more akin to the search for dimensional structure in factor analytic procedures." (p 2).

It is often the case that background facets are not formally specified in a mapping sentence. Additionally, as the above quotation shows, the two types of facet provide different foci for the research. In studying domain facets one is generally concerned with the internal structure of a domain. Background facets are usually considered in order to discover individual or situational differences in relation to the domain.

In the present study there is an example of domain facets being used as background facets. The first part of the

study establishes the domain facets of office evaluation. In a later part of the study the internal domain of organisational perception is also specified and tested. In both cases the concern is with the domain facets of each area. Later in the thesis the domain facets of organisational perception are used as background facets of office evaluation; they are used to describe characteristics of the population in relation to their office evaluations.

The present study provides the first example of research establishing the facets of a domain and then employing them as background facets in relation to another domain. It can be expected that as more facet studies are undertaken, and the facets of a wide variety of domains are established, there will be an increase in such use of domain facets.

The range facet describes the possible responses to the stimuli provided by the domain facets. In a questionnaire it is usually represented by the response scale. When the range of each item is a) ordered and, b) ordered in the same sense (i.e. has the same underlying meaning), it is considered to be a 'common range' (Borg 1977, p 87). A full discussion of the concept and properties of 'common range' is given by Borg (1977). For present purposes, it is sufficient to note that items of a questionnaire, or observations in general, should be unidirectional in relation to the range (in order to achieve this, items may, due to their wording, require reverse coding).

Additionally, it should be noted, as the common range defines the possible responses to the domain, it is an important facet in defining the nature of the study. For example in the present study, the common range for evaluation is "helps a great deal" to "hinders a great deal". This shows the evaluations to be descriptive. A range of very satisfactory to very dissatisfactory would represent a more affective assessment.

A1.4.2 Elements

Each facet consists of a number of elements. The elements of a facet may be defined as;

"the different values or the points that logically and completely describe all the variation of the dimension" (White and Mitchell, 1976, p 60).

Basically an element is a discrete component of a facet. An example may be the elements of male and female in a facet of "sex". Elements may also be numerical; for instance intelligence scores.

A1.4.3 Properties of Facets and Elements

There are a number of requirements which facets and their elements should fulfil (McGrath, 1967; Runkel and McGrath, 1972; White and Mitchell, 1976).

1. Each facet should consist of a mutually exclusive set of values or categories (elements). For example, a facet with the elements of male and female could not be included along

with a facet consisting of husband and wife. The elements within a facet should also be mutually exclusive.

2. Each facet should consist of a collectively exhaustive set of elements. That is, the elements should fully cover all possible categories of which the underlying concept of the facets consists. Of course it is likely that some facets will consist, potentially, of a vast number of elements. Consequently the researcher may decide to exclude some of the elements.

3. The facets should collectively exhaust the domain of interest. In the social sciences it is unlikely that the facets developed by a researcher will fully exhaust the aspects of the domain of interest. This requirement of the facets of a domain is an ideal, and something toward which the research is ultimately directed.

The present study provides a clear example of systematic progress toward achieving a more exhaustive coverage of a domain. In a previous study by Donald (1983) the mapping sentence for office evaluation consisted of two facets. In the present study additional facets are validated. The facets supported in the present study may also be added to those presented by Canter (1983) as part of a general model of place evaluation.

The next two requirements are not specifically concerned with the properties of the facets per se. They are

requirements placed on the researcher when he or she is proposing a facet study.

4. The logical relations among the elements of a facet should be specified.

5. The logical relations among the facets should be specified.

These latter two points relate to the second component of Guttman's definition of a theory. The researcher should a priori specify the expected relations between the facets and elements. Basically, this is a substantively based prediction of, and rationale for, the structural relationships within the data derived from instruments developed from the facets.

A1.4.4 Mapping Sentences

The background, domain, and range facets are linked together in the form of a mapping sentence. A number of examples of mapping sentences may be found in appendix 3, and throughout the text. Shye (1978) describes a mapping sentence as;

"A verbal statement of the domain and of the range of a mapping including connectives between facets as in ordinary language" (p 413).

Basically, a mapping sentence is a concise way of specifying the components of a research area and the relationships between them.

It should be noted that a mapping sentence in itself does not represent a hypothesis. As Shye (1978) notes;

"Various hypotheses may be stated in terms of the constituents of a mapping sentence and its features: its facets, the relationships among facets, the orderings of elements within a given facet, the relative degree of association between items that are formed in certain ways from facet elements, and so on. All these can enter into the formulation of hypotheses" (p 180).

It is clear that rather than representing a single hypothesis, many interrelated hypotheses are embedded in a mapping sentence.

There are numerous uses and advantages of mapping sentences. Before mentioning what these advantages are, it should be noted that even if a researcher does not wish to apply the particular analysis methods which have been associated with facet theory, the advantages nonetheless apply.

Levy (1976) outlines what she considers to be three principal uses of a mapping sentence;

1. The provision of a precise definition of the universe of observation,
2. an aid to the perception of systematic relationships,
3. the provision of a way of modifying aspects of facets or their interrelationships.

These uses have been echoed in the writings of other facet theorists. Guttman and Guttman (1976) state that mapping

sentences give more specific instructions on how to make observations, and provide a detailed definitional framework for the observations such that theory construction is facilitated.

Brown (1985) notes that mapping sentences, provide a succinct statement of the research design that is readily communicable, provide a template from which questionnaire and other observational items may be constructed, and facilitate the extension and reduction of the content of a domain by allowing the addition and collapse of facets.

The precision with which components of the domain are specified makes deletion and addition more systematic and apparent.

There are a number of examples of the facet approach aiding in the clarification of concepts and research content. Payne et al. (1976), for example, applied a facet framework to the area of job satisfaction. After applying the framework to the field they note that;

"some researchers have worked with mixtures of facets that are conceptually questionable and others have believed that they were operationalizing one conceptual type when they have actually operationalized another."
(p 59)

The authors are also able to go on to clearly reveal gaps in the literature and investigation of job satisfaction and organisational climate.

A1.4.5 Structuples and Multiple Classification

A structuple is technically defined as;

"an element of a cartesian set; it is a profile composed by selecting an element from each facet." (Shye, 1978a, pp 9-10).

Each structuple represents one possible item or observation in relation to the domain. A structuple is constructed by drawing one, and only one, element of each, and all, domain facets in the mapping sentence. By generating all possible structuples, one obtains a complete multiple classification of the domain and the observations to be made of it.

If for example, a mapping sentence consists of two facets, A and B, and each facet has two elements, A1 A2 and B1 B2, there are four (2x2) unique structuples; A1 B1, A1 B2, A2 B1, and A2 B2.

The structuples may be used to form the basis of observations or questionnaire items. In the case of a questionnaire item, it should be clear that each question will be formed by one element from all facets of a domain.

From the structuples which form the basis of the items, it is readily apparent exactly how each question is different and similar to each other question. In the text of the thesis there are examples of problems in the interpretation of research results which would not have occurred if the researchers had employed the facet approach. This is most apparent in the work of Marans and Spreskelmeyer (1986).

With regard to the use of structuples in forming the basis of observations or questionnaire items, it is preferable that an observation be made for each and every structuple. However, as Shye (1978a) notes, "there is nothing in the logic of theory construction that suggests that this must be so." (p 10). The generation of structuples can point to areas of research and conceptualisations of the domain which may require revision and close attention. To refer to Shye (1978a) once more;

"experience with applying facet analysis to research contents hints that it is useful to examine carefully all structuples that can be formed; often we would find that these complement the defined concept in an appealing way, inviting us to consider shaping the original concept accordingly." (p 10).

In effect, this process allows the logical test of the validity of one's conceptualisation of the domain prior to data collection. Of course, empirical validation is sought once the concept has been logically refined to an acceptable degree.

In addition to the systematic multiple classification of objects facilitating a clearer understanding of a domain, and facilitating conceptual precision, it can also prove to be more appropriate and fruitful than other methods of classification. McGrath, for example, argues that;

"Many theoretical efforts based on 'Type A' vs. 'Type B' typologies have failed to gain general usefulness because cases with the attributes of neither A nor B or of both A and B readily arise." (1967 p 194).

1.5 Principle of Contiguity

The extent to which a structuple, or item, is conceptually similar to another structuple, or item, is a function of the number of elements they have in common. The principle of contiguity states that items which are more similar in their conceptual content (the number of elements they have in common) will be more highly related empirically. Canter (1982) argues that it is the principle of contiguity which distinguishes facet theory from other multidimensional scaling procedures (p 148)

From this principle, it can be seen that, in the example provided above, structuple A1 B1 is equally related to A1 B2 and A2 B1; it differs in terms of one element in relation to each of the other two structuples. Further it can be seen that A1 B1 is least strongly related to A2 B2; they have no elements in common. Structuple A1 B2 is least strongly related to A2 B1. Empirically one would predict that the association between A1 B2 and A1 B1 would be greater than between A1 B1 and A2 B2. This assumption is, of course, the basis of Smallest Space Analysis, described in appendix 2.

With regard to background facets, a similar hypothesis may be specified. Basically, the more similar the structuples describing two individuals, the more similar one would expect their responses to a particular stimuli would be. This, of course, assumes that the facets describing the

population or context are valid. In relation to the domain facets, a similar assumption applies; if the facets represent valid constructs with regard to differentiating components of a domain, this will be shown empirically.

A1.6 Summary

The increasing complexity of research projects requires a method of specifying hypotheses and domains in a way in which the exact components of the domain are clearly observable. Facet theory provides a method by which this can be achieved.

In facet theory research domains are specified in the form of a mapping sentence. The mapping sentence consists of facets which describe fully the domain of interest. Each facet is a conceptual dimension of the domain. The facets consist of mutually exclusive elements which describe all the possible categories or values of which the facet is composed.

Questions or observations are formed by selecting one element from each domain facet included in the mapping sentence. The similarities and differences between each observation, or question, is clear as a consequence of this multifacet classification process.

Facet theory assumes that the more similar the conceptual content of observations, the more elements they have in common, the more similar they will be empirically. This

assumption forms the basis of Smallest Space Analysis.

APPENDIX 2

Analysis Methods

A2.1 Introduction

The principal analysis methods used in the present thesis, and those which may require a brief exposition, are Smallest Space Analysis (also referred to as Similarity Structure Analysis) and Partial Order Scalogram Analysis with base Coordinates (POSAC). SSA is used to examine the structural relationships between the items, elements and facets; the internal structure of the domains. The focus of POSAC is the variations between individuals in terms of their profiles across a number of items. In doing this POSAC allows an understanding of the differences between individuals, as well as between the items themselves, in relation to external or background variables, to be achieved.

A2.2 Smallest Space Analysis

A2.2.1 Advantages of SSA

Smallest Space Analysis grew out of a discontent with the factor analytical procedures (eg. Guttman, 1954a). Some of the criticisms levelled at factor analysis have direct relevance to the research reported in the present thesis. Factor analysis, for example, often places considerable emphasis on the orthogonality of the dimensions it derives. As Guttman (1981), however, points out;

"mathematicians know that...orthogonality is but an artifact created by the designer of experiments, and may have nothing to do with the interrelationships of natural phenomenon" (p 27).

The use of an oblique factor rotation is often considered a solution to the problem of imposed orthogonality. However, it has been contended that oblique factors depart from the mathematical conditions which are necessary for the validity of the factor model (Skemp, 1979). Whether an oblique factor rotation is accepted or not, there remains, however, a second problem with factor analysis in relation to the present study, which is that the factors are linear.

Clearly the purposive model hypothesises relationships which are not orthogonal or linear; specifically those between the elements of the referent and organisational unit facets, and between the referent and focus facets. Thus the imposition of a structure such as that given by factor analysis would be inappropriate. As the SSA allows the structure of relationships between aspects of the data to freely emerge, it is a more appropriate method than factor analysis

A2.2.2 The Procedure: What It Does

Smallest Space Analysis is principally used to analyse the structure of the domain facets. The first step in the procedure is the calculation of a matrix of associations between all of the items; every item is correlated with

every other item. In the present thesis these would be items from, for example, the office evaluation section of the questionnaire.

The program then plots each of the items into an m -dimensional space. Items are plotted in accord with the rank order of the correlation coefficients, and not their numerical value. The procedure is thus non-metric. The points or items are plotted in such a way that the distance between the points is the inverse of the correlations between the items, that is, the greater the distance between two points the lower their correlation.

A2.2.3 Regional Hypotheses and the Interpretation of SSA Plots

The SSA plots are partitioned into regions by the researcher. A region is an area of the space which contains items which are similar on conceptual content. In a facet design this means that items of a region are likely to share the same element of a particular facet. The other regions of the space should, assuming a valid facet, contain items composed of other elements from that facet. If a region for each element of a facet is evident then support for the facet is found. It should also be noted that the partition line for a particular region should not cross the boundaries of the other regions.

The rationale for the drawing of regions in such a manner is derived from the principle of contiguity; the more

similar items are in the conceptual content (or facet components) the more highly correlated they will be, and thus the closer together they should be located on a plot. It is clear from this that the a priori classification of items in terms of the facet elements of which they are composed is of considerable importance.

The second aspect of the partitioning which is of interest is the shape of the regions. Levy (1985) gives a full account of the different types of partitions and regions. However, it can be briefly noted that there are basically two types of relationship shown by the nature of the partitioning. The first is a quantitative order between the facet elements. In this case the partition lines will generally be parallel across the space. The second type of partitioning portrays qualitative relationships. In this case, the items, and regions, will be arranged in a circle around the space.

Depending on the relationship between the various facets, a number of structures can result from these two basic types. For example, a radex is formed by the combination of a circular arrangement of elements of one facet, and an ordered set of elements from another facet, when both facets are located on the same plane of the SSA space, and when the ordered facet modifies the unordered facet. Whether or not two facets will be found in the same plane of SSA space, and whether one facet will modify another, is a substantive issue. Levy (1985) covers these issues in

some detail, and is recommended for consultation.

A2.2.4 Dimensionality

The dimensionality of the SSA solution sought should be the lowest necessary to adequately represent the relationships in the data; hence smallest space analysis. A low dimensionality is desirable as it provides for a more parsimonious solution representing the full data by a smaller number of numerical parameters. Furthermore, the likelihood of a greater degree of reliability exists with a lower level of dimensionality (Shepard et al. 1972).

The relationship between the number of facets, and the dimensionality required to represent them, is not a simple one. The issue has been discussed by Borg (1977) who argues that as facets are qualitative and quantitative, that is not equivalent to real numbers, then the number of dimensions will not necessarily be the same as the number of facets. The actual number of dimensions necessary is, therefore a substantive question. If the facets and their relationships have been specified in advance, the dimensionality of the SSA should be apparent prior to the data analysis.

On a more pragmatic level, however, one guide to the required dimensionality is the measure of fit between the correlation matrix and its spatial representation. This measure is a measure of stress. One such stress measure is

provided by Guttman-Lingoes' coefficient of alienation. An acceptable level of alienation is often said to be around .15 (Bloombaum, 1970; Runkel and McGrath, 1972), although this level is proposed more as a "rule of thumb" than a strict guide. In practice, the level of stress which is acceptable is a function of several factors, including, for example, the number of items included in the analysis. Therefore, coefficients of approximately .2 can be accepted. If the stress level is around this figure, one can assume that the relationships in the correlation matrix are being adequately represented in the spatial plots.

In relation to an acceptable level of stress, Coxon (1982) has argued that one should select the dimensionality at which further increases in the number of dimensions does not significantly improve the stress level. In practice this means that if one plots stress values against the number dimensions, the point at which the curve bends and levels out, the "elbow", is the point at which further increases in dimensionality are wasteful.

It is clear that the issue of dimensionality is not a simple one. In reality the research must take into account measures such as stress, in conjunction with the important considerations of the substantive aspects of the data; there are no hard and fast rules. This may make the matter problematic to the researcher. However, if the basic rules of facet theory have been followed, the correct decision making will be facilitated.

A2.3 Partial Order Scalogram Analysis

Partial Order Scalogram Analysis (POSA) is basically an extension of the unidimensional procedure of Guttman Scaling (cf. Guttman, 1950). While a full understanding of Guttman Scales is not essential for understanding the following discussion, those unfamiliar with the basics of this concept are referred to a brief description by Oppenheim (1966 pp 143-151) and the fuller treatment by van der Ven (1980). When the concept being studied deviates from a unidimensional scale, Guttman Scaling proves to be inadequate. In order to overcome this problem Guttman and his colleagues developed the POSA procedure.

With a unidimensional scale all profiles across the scaled items are comparable; it is possible, for example to say that one individual is more satisfied with their environment, than another person is. In actual multivariate research, however, such unidimensionality amongst profiles is rather rare (Shye, 1978b). As a consequence it is often not possible to state simply that one person is, for example, more satisfied with their environment, than another individual; while two people may share a similar total degree of satisfaction, they may be very different in terms of the aspects of the environment with which they are satisfied. This difference between profiles can be considered to be qualitative.

POSA is an attempt to allow the study of sets profiles with a dimensionality greater than one. The analysis essentially consists of finding a partial order configuration that best accommodates the data whilst having a relatively simple structure (Shye, 1978b). In attempting to achieve this, the sets of profiles are represented spatially.

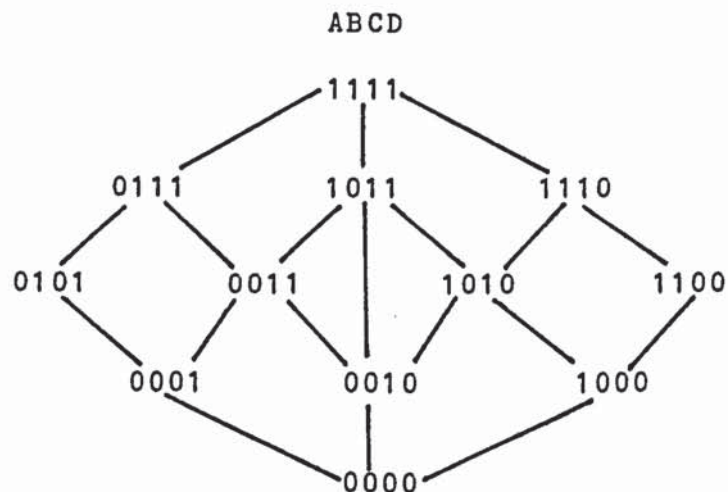
The original and best known form of representation of a POSA is the Hasse diagram. An example of a Hasse diagram consisting of four dichotomously scored items is given in figure A2.1. In a Hasse diagram profiles which are greater in terms of their sum across the items, are represented as a point higher in the diagram than those profiles which have a lower total score. Thus, for example, a total profile score of 3 in the diagram below, would be located at a higher level of the diagram than a score of 2. From this it is possible to see which profiles are greater than others in terms of their total. For example, if the profiles are measures of environmental satisfaction, those at the top of the diagram are the most satisfied, those at the bottom are the least satisfied.

The next issue is concerned with profiles which have the same total score, but different scores on particular items. In this case it is not possible to state that either is greater than the other; they are noncomparable. On the Hasse diagram presented in figure A2.1. this would apply to profiles 0111 and 1110. In a Hasse diagram profiles which are similar in total, but different in quality, are located

at the same vertical level, but separated horizontally.

Figure A2.1

Hasse Diagram of a Set of Hypothetical Profiles



Comparable and noncomparable profiles can be indicated on the Hasse diagram by line segments. Such line segments connect comparable profiles. Noncomparable profiles are not connected by the line segments. By observing the figure above, it can also be seen that profiles at similar vertical levels may also be noncomparable.

From the above it should be clear that a partial order representation of a set of profiles has two dimensions. The first dimension runs from top to bottom of the diagram and is simply the summation of the scores for each profile; it represents the amount of a particular quality, or satisfaction, an individual poses. This vertical axis is termed the joint axis, and the score on it is the joint

score.

The second dimension runs horizontally across the diagram and is the lateral axis. The lateral axis represents the qualitative difference between the profiles. Interpretation of the lateral axis is more complex than the joint axis, and represents a major challenge to the researcher using POSA. In order to interpret this axis it is necessary to discover which items of the profile account for the horizontal (qualitative) differentiation between profiles.

Profiles may thus differ quantitatively and qualitatively. It should be clear that a profile represents one or more individuals with a particular pattern of scores on a set of measures. In interpreting a POSA one is attempting to uncover groups of individuals who have profile characteristics in common. Thus one considers the distribution of individuals throughout the POSA in relation to the two axes. If a group of individuals who are located similarly on the POSA have a characteristic in common which is different to the characteristic of people located on different parts of the POSA, it can be suggested that that particular characteristic accounts for the differences in, for example, evaluation. The groups are considered in relation to the qualitative and quantitative axes.

Recently an alternative technique for the representation of partial orders has been developed which more readily facilitates the identification of the items defining the

structure of the POSA. This method, termed Partial Order Scalogram Analysis with base Coordinates (POSAC), plots the profiles in an m -dimensional space .

The procedure provides two basic sets of plots. The first plot shows the position of each profile in the space. The positioning of the profile is derived by comparisons between all the item scores. Profiles are located according to the principle of contiguity. Thus the more similar a profile, the closer in the space they will be. In relation to the Hasse diagram, the first plot basically represents the Hasse diagram rotated to the right by forty five degrees. In addition, a plot is provided for each item. This plot shows the score of each profile on that item. The position of the points remains constant throughout all of the plots.

The item diagrams are then partitioned, by the researcher, in such a way that the regions of the space contain profiles with the same score on that item. The partitioning of the plots for each item may be compared with the partitioning of each other item diagram in order to reveal their relationships. If two items, for example, partition in the same direction they are both measuring a similar dimension or concept.

The role played by an item is discerned by the shape of the partition line. There are four ideal roles or types of partitioning. Of course, these may not all be found in

practice. The four types of partitioning are:

1) Vertical; this type of partitioning constitutes one of the two ideal poles of the scalogram. The polar items are those which define the qualitative or lateral axis.

2) Horizontal; the horizontal partitioning provides the second of the scalogram poles.

3) L-shaped; the L-shape partitioned items are ideal moderators of the scalogram. In effect this means that high scores on this item are associated with middle values of the lateral scores.

4) Inverted L-shaped; this final shape of partition line is found with items playing the role of polarizers in the scalogram. In this case high values on this item are associated with the extreme values on the lateral axis.

As it is the two polar items which define the lateral or qualitative axis of the scalogram, it is these which are the most important from a substantive perspective. By a consideration of the content of the polar items the researcher can provide a meaningful interpretation of the qualitative dimension on which individuals differ.

Once the lateral axis has been established, the researcher can relate the individuals' position on the axis to other background variables in order to see if there is any correspondence between the two. This of course can also be

done in relation to the joint axis.

APPENDIX 3.

Evaluation Mapping Sentences Using the GHS

Table A3.1
Kenny and Canter's (1981) Mapping Sentence for
Nurses' Evaluations of Wards



Aston University

Illustration removed for copyright restrictions

Table A3.2
Canter and Rees' (1982) Mapping Sentence
for Housing Evaluation



Aston University

Illustration removed for copyright restrictions

Table A3.3
Donald's (1983) Mapping Sentence for
Office Evaluation



Aston University

Illustration removed for copyright restrictions

APPENDIX 4

Environmental Evaluation Pilot Questionnaire

Environmental Evaluation

Below are some questions which refer to your work environment. The questions are divided into two main sections. The first section asks you to evaluate your environment with regard to the extent to which it helps or hinders you in doing your job. Give your answer by putting a ring around the number which most represents your feelings. Please answer all questions.

Very Satisfied	Neither Satisfied nor Dissatisfied	Very Dissatisfied
1	4	7

In terms of doing your work
how satisfied are you with;

- | | | | | | | | |
|--|---|---|---|---|---|---|---|
| 1. The amount of light in your office..... | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 2. The degree of control you have over
the lighting at your desk/work station.... | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 3. The amount of light at your desk/work
station..... | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 4. The lighting in other places in the
building you may have to go to during
the course of your work..... | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 5. The level of heating in your office
(eg. to hot or cold to work)..... | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 6. The ventilation or air quality
at your desk (eg. is it too
stuffy to work)..... | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 7. The levels of visual distraction while
working at your desk..... | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 8. Your ability to hold confidential
conversations while at your desk..... | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 9. The amount of privacy in the office
generally..... | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 10. The ease with which you can tell the
status and role of people in the building
by their physical surroundings..... | 1 | 2 | 3 | 4 | 5 | 6 | 7 |

11. The availability of people in the building whom you need to talk to about work.....	1	2	3	4	5	6	7
12. The degree to which people in your office cooperate when working.....	1	2	3	4	5	6	7
13. The levels of noise you experience when you are working at your desk.....	1	2	3	4	5	6	7
14. The amount of space you have at your desk..	1	2	3	4	5	6	7
15. The amount of filing space at your desk....	1	2	3	4	5	6	7
16. The position of your desk.....	1	2	3	4	5	6	7
17. The amount of storage space in your office.....	1	2	3	4	5	6	7
18. The degree to which your department or section is spatially distinct.....	1	2	3	4	5	6	7
19. The layout of your office.....	1	2	3	4	5	6	7
20. The location of other departments and people in the building.....	1	2	3	4	5	6	7
21. The degree of visual privacy that you have at your desk.....	1	2	3	4	5	6	7
22. The location of facilities in the building generally.....	1	2	3	4	5	6	7
23. The provision of meeting places in your office for discussing work.....	1	2	3	4	5	6	7
24. The provision of meeting place in the building as a whole for discussing work matters.....	1	2	3	4	5	6	7

In this section the questions require you to evaluate your work environment in terms of your general comfort and well-being. For this section it does not matter whether the various aspects of the environment are good or bad for your work.

Again, please answer all questions and do so by putting a circle around the number which best describes your level of satisfaction.

Very satisfied

Neither satisfied
nor dissatisfied

Very dissatisfied

1

4

7

In terms of your general comfort
and well-being how satisfied are
you with:

25. The lighting levels at your desk.....1 2 3 4 5 6 7
26. The amount of daylight in your office.....1 2 3 4 5 6 7
27. The position of your desk in relation
to the windows.....1 2 3 4 5 6 7
28. The heating in your office.....1 2 3 4 5 6 7
29. The ease with which you can sit at
your desk without others being able
to watch you.....1 2 3 4 5 6 7
30. Freshness of the air in your office.....1 2 3 4 5 6 7
31. The air quality throughout the building
generally.....1 2 3 4 5 6 7
32. The extent to which you can modify
or rearrange your work area to suit
yourself.....1 2 3 4 5 6 7
33. The friendliness of people in
your office.....1 2 3 4 5 6 7
34. The visual privacy you have at your desk....1 2 3 4 5 6 7
35. People's respect for your privacy
generally in your office.....1 2 3 4 5 6 7
36. The extent to which you get on with
people in the building.....1 2 3 4 5 6 7
37. The general attitude of people in
your office toward you.....1 2 3 4 5 6 7

38. The extent to which you have chance encounters with people around the building with whom you can stop and have a chat.....1 2 3 4 5 6 7
39. The degree to which people from different departments mix socially with each other.....1 2 3 4 5 6 7
40. The extent to which your physical surroundings reflect your status.....1 2 3 4 5 6 7
41. The degree to which you are isolated at your desk.....1 2 3 4 5 6 7
42. The level of crowding in your office.....1 2 3 4 5 6 7
43. The layout of your office.....1 2 3 4 5 6 7
44. The amount you are allowed to personalise your work area.....1 2 3 4 5 6 7
45. The extent to which people's work areas in your office are demarcated.....1 2 3 4 5 6 7
46. The location of toilets in the building.....1 2 3 4 5 6 7
47. The provision of refreshment facilities in the building.....1 2 3 4 5 6 7
48. The comfort of your chair.....1 2 3 4 5 6 7
49. The decoration of your office.....1 2 3 4 5 6 7
50. The general appearance of the building throughout.....1 2 3 4 5 6 7
51. The extent to which people in your department mix socially.....1 2 3 4 5 6 7
52. The amount of acoustic or verbal privacy you have at your desk.....1 2 3 4 5 6 7

APPENDIX 5

Organisational Perception Pilot Questionnaire

In this section there are some questions which ask about aspects of your work and organisation. Please give a mark, again out of 7, which you think is most appropriate in describing your opinion.

1	2	3	4	5	6	7
Never			Neutral			Always

To what extent do you find that:

1. People in your organisation have clearly defined roles and positions.
2. People generally get on well together.
3. The organisation sticks to rules.
(eg. time keeping, appearance etc)
4. The people at the top of your organisation are isolated and out of touch.
5. People in different offices and departments form tight knit groups.
6. The people in your office or department form a tight knit group.
7. You are asked to participate in decisions about the organisation.
8. Suggestions you make about things affecting the organisation are listened to and taken notice of.
9. You are asked to participate in decisions regarding the physical environment in which you work.
10. When you make suggestions about your physical environment they are taken notice of.
11. When you have a question about your work, there is someone who you should officially talk to.
12. You talk to the officially designated person about problems about work.
13. People ask you questions about their work.

14. Dealing with the questions people ask
is seen officially as part of your job.
15. You can go directly to any
person you need to talk to about
problems regarding work.
16. Any questions or problems have
to go through a whole string of
people before getting to the right one.
17. Your job and tasks are clearly defined.
18. At work you stick to doing only the work
you are officially supposed to do.
19. The people who you actually talk to
about your work or job are located
conveniently.
20. When there is a question about your
work, there is someone who you can
talk to who knows more than the
person who you should officially talk to.
21. You worry about asking the officially
designated person about problems to do
with work, in case they think you can't
do your job.
22. You make most of your friendships at
work with people in your office.
23. You can tell the status of someone in
the organisation by looking at their
workspace or office.
24. There are informal meeting places
around the building.
25. The organisation cares about its employees.
26. The organisation is more concerned
with productivity than people.
27. You feel loyal to the company.
28. You feel that you are a small
cog in a big wheel at work.

29. You can sit thinking and relaxing
without feeling you are being watched.
30. You prefer to talk face-to-face with
people at work even when you could
'phone or write to them.
31. You are located close enough to people
to allow you to talk face-to-face with
them.
32. There are places around the building
where you feel you are intruding if
you go there, even though they are
not private offices.
33. Groups tend to form in physically
distinct areas of the building.

Please feel free to use the rest of the space available to make
any comments you have about the questionnaire.

Thank you very much for your help.

APPENDIX 6

Final Environmental Evaluation Questionnaire

In this section you are asked to assess the extent to which your physical environment at work helps or hinders the work or comfort of you, your department or group, and the organisation in general. In order to do this simply circle the number which best describes your opinion. The meaning of the numbers is as follows

Hinders a great deal	Hinders	Neither helps nor hinders	Helps	Helps a great deal
1	2	3	4	5
1. To what extent does the design of the surroundings immediately around your desk help or hinder when you want to hold private conversations			1 2 3 4 5	
2. Does the layout and space around your desk help or hinder to create a feeling that it is your own distinct place			1 2 3 4 5	
3. When you are at your desk how well does the heating help you to feel comfortable			1 2 3 4 5	
4. When you are at your desk to what extent does the lighting hinder or help you to carry out your work efficiently			1 2 3 4 5	
5. How well does the location of your desk in relation to windows help you to have sufficient access to daylight.			1 2 3 4 5	
6. To what extent does the amount of filing space you have at your desk help you to keep the papers you need within easy reach			1 2 3 4 5	
7. To what extent does the amount of space around your desk help or hinder the storage of your personal belongings			1 2 3 4 5	
8. To what extent does the design of your office help you feel that you are able to control the amount of access people can have to you			1 2 3 4 5	
9. How helpful is the location of your work area in preventing you from feeling isolated and cut off from others			1 2 3 4 5	

- | | | | | | |
|--|---|---|---|---|---|
| 10. To what extent does the lighting in your office help to provide you with a pleasant place in which to work | 1 | 2 | 3 | 4 | 5 |
| 11. How much does the amount of space in your office help you to store your personal belongings | 1 | 2 | 3 | 4 | 5 |
| 12. How well does the design and layout of your office help you to work efficiently without being distracted by other things that are going on in the office | 1 | 2 | 3 | 4 | 5 |
| 13. To what extent does the provision of restrooms coffee areas and so forth in the building help you to informally meet others your work with | 1 | 2 | 3 | 4 | 5 |
| 14. How well does the heating around the building help or hinder your feeling of comfort | 1 | 2 | 3 | 4 | 5 |
| 15. How well does the ventilation around the building help or hinder your feeling of comfort | 1 | 2 | 3 | 4 | 5 |
| 16. Does the design of the building help or hinder you getting to places without having to walk too far | 1 | 2 | 3 | 4 | 5 |
| 17. How much does where you sit in the office help you feel a part of your department or work group | 1 | 2 | 3 | 4 | 5 |
| 18. To what extent does the lighting around your desk help when you are working with others there | 1 | 2 | 3 | 4 | 5 |
| 19. How much does the layout of space at your desk help when people in your department or work group want to sit down and talk with you | 1 | 2 | 3 | 4 | 5 |
| 20. To what extent is the design of your office helpful in creating a feeling of unity and cohesion amongst people in your department or work group | 1 | 2 | 3 | 4 | 5 |
| 21. How helpful is the design and layout of your office in making your department or section distinct within the organisation | 1 | 2 | 3 | 4 | 5 |

- | | | | | | |
|--|---|---|---|---|---|
| 22. How well does the heating in your office help to make it a comfortable place for the group or department to work effectively | 1 | 2 | 3 | 4 | 5 |
| 23. How well does the ventilation in your office help to make it a comfortable place for the group or department to work effectively | 1 | 2 | 3 | 4 | 5 |
| 24. How helpful is the amount of space in your office in allowing people to work in it without feeling that they are crowding one another | 1 | 2 | 3 | 4 | 5 |
| 25. How helpful is the location of space for filing papers that people in your department generally need access to for their work | 1 | 2 | 3 | 4 | 5 |
| 26. How well does the design of the building help people to have chance meetings with one another | 1 | 2 | 3 | 4 | 5 |
| 27. How much does the heating throughout the building help make it a comfortable place for people to stand and talk to each other | 1 | 2 | 3 | 4 | 5 |
| 28. To what extent does the amount of space throughout the building help in providing meeting places for people | 1 | 2 | 3 | 4 | 5 |
| 29. How much does the design of your work space help people to recognise your role in the organisation | 1 | 2 | 3 | 4 | 5 |
| 30. How much does your work space help reflect your status in the organisation | 1 | 2 | 3 | 4 | 5 |
| 31. How much does the amount of space around your desk or workspace help people to have access to you | 1 | 2 | 3 | 4 | 5 |
| 32. How much does the design of your office help people from other parts of the organisation to enter it without feeling that they are intruding | 1 | 2 | 3 | 4 | 5 |
| 33. To what extent does the location and design of your office help to make people feel that your department fits in as a part of the whole organisation | 1 | 2 | 3 | 4 | 5 |

- | | | | | | |
|--|---|---|---|---|---|
| 34. To what extent does the space in your office help give other people in the organisation access to members of your department | 1 | 2 | 3 | 4 | 5 |
| 35. How much does the design of the building help people from the various departments in your organisation meet with each other | 1 | 2 | 3 | 4 | 5 |
| 36. How much does the lighting around the building help to create an environment which gives people the impression of an efficient and successful organisation | 1 | 2 | 3 | 4 | 5 |
| 37. To what extent does the location of departments around the building help them to communicate with each other conveniently | 1 | 2 | 3 | 4 | 5 |
| 38. How much does the design and layout of the building help in making people feel part of the organisation | 1 | 2 | 3 | 4 | 5 |
| 39. How much does the provision of informal meeting places such as eating places, washrooms and restrooms help in allowing people from different parts of the organisation meet with each other and feel part of the same organisation | 1 | 2 | 3 | 4 | 5 |
| 40. How much does the design and layout of the building help prevent people from feeling like they are a small and insignificant part of the organisation | 1 | 2 | 3 | 4 | 5 |
| 41. Generally how helpful is your physical environment for carrying out your day-to-day work | 1 | 2 | 3 | 4 | 5 |

APPENDIX 7

Final Organisational Perception Questionnaire

In this section there are a number of statements about how involved and flexible your department and organisation is with regard to various aspects of your life at work. All you need to do is to indicate the extent to which you agree with the statements as they apply to you. To do this simply circle the number which best represents your feelings. The meanings of the numbers are given below.

Strongly disagree 1	Disagree 2	Neither agree nor disagree 3	Agree 4	Strongly agree 5
1. When I have a question at work I can talk to anyone I want in my department about it			1	2 3 4 5
2. My department is happy for me to personalise or arrange my workspace /office however I want to			1	2 3 4 5
3. People in my department let me join in with them socially			1	2 3 4 5
4. My department allows me to carry out my work in the way I think is best			1	2 3 4 5
5. The people in my department will allow me to arrange my work so that it fits in with my life in general			1	2 3 4 5
6. If I have a personal problem which which affects the way I work the department will make allowances until I can sort it out			1	2 3 4 5
7. I am often called upon to play the role of a go between in my department			1	2 3 4 5
8. If a person has a question to ask someone else they will talk to me first or get me to ask the other person			1	2 3 4 5
9. I am asked to participate in decisions which are being made about the physical environment in my department			1	2 3 4 5
10. Most of my friends at work are people in my department			1	2 3 4 5

11. The department is interested in any views I have about the best way to do my job	1	2	3	4	5
12. The department is concerned about my general welfare even if it does not interfere with my work	1	2	3	4	5
13. If I have a question at work I can go straight to any one in the organisation to ask them about it	1	2	3	4	5
14. All questions in my organisation have to go through "proper channels".	1	2	3	4	5
15. People in my organisation have their physical surroundings specified according to rules and regulations	1	2	3	4	5
16. It is possible to tell the status or role of someone in my organisation by their physical surroundings	1	2	3	4	5
17. The organisation will generally let me carry out my work in the way that suits me best	1	2	3	4	5
18. The organisation will only sympathise with any personal problems I have as long as they do not affect my work	1	2	3	4	5
19. I often find myself being asked to act as a spokesperson for others in my organisation	1	2	3	4	5
20. People in the different sections or departments of my organisation only socialise with each other	1	2	3	4	5
21. My views about the way in which I carry out my work are listened to and respected in the organisation	1	2	3	4	5
22. The organisation cares about my general welfare and happiness	1	2	3	4	5
23. I am encouraged to play an important role in the work of my organisation	1	2	3	4	5
24. People at the top of my organisation are isolated and out of touch	1	2	3	4	5
25. People in my department form cliques	1	2	3	4	5

26. My company cares more about efficiency than people	1	2	3	4	5
27. My organisation expects me to carry out my work in clearly defined and prescribed ways	1	2	3	4	5
28. My views about things affecting the organisation generally are sought and listened to	1	2	3	4	5
29. If I have a question about my work there is an officially designated person whom I must ask	1	2	3	4	5
30. The way I am treated at work makes me feel like a small cog in a big wheel	1	2	3	4	5
31. If I had the chance to do the same work for the same pay but in a different department I would still want to stay where I am	1	2	3	4	5
32. The way I am treated in my department makes feel like I "belong"	1	2	3	4	5
33. Generally people in the department share the same goals	1	2	3	4	5
34. People in my department share similar interests	1	2	3	4	5

If you have any comments about this questionnaire, or about your organisation and physical environment which you think are important but have not already been included, please feel free to use the remaining space to make them.

Thank you very much for your time and co-operation

APPENDIX 8

Work Orientation Questionnaire

In this section there are a number of statements about your general approach to life at work. All you are required to do is to circle the number which best represents the extent to which you agree or disagree with the statement as it applies to you.

Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
1	2	3	4	5
1. I feel loyalty to the company I work for			1 2 3 4 5	
2. I enjoy getting involved in office politics			1 2 3 4 5	
3. I am only in the job for the money			1 2 3 4 5	
4. I like to be involved in the social life of the company			1 2 3 4 5	
5. I am quite disinterested in the decisions of higher management			1 2 3 4 5	
6. I like to work for a company where I do not have to get too involved.			1 2 3 4 5	
7. I feel frustrated if I can not have a say in things at work			1 2 3 4 5	
8. I try not to become too involved in things at work			1 2 3 4 5	
9. If I can't have my say in how things at work are done, I hope they go wrong			1 2 3 4 5	
10. I should take part in decisions at work which effect me			1 2 3 4 5	
11. I prefer to talk face to face with people at work even when it might be easier to telephone them			1 2 3 4 5	
12. If someone at work has a personal problem I would try to help them if I could			1 2 3 4 5	
13. I should have a say in the way my physical environment at work is designed			1 2 3 4 5	
14. It makes me feel good when I do my job well			1 2 3 4 5	

15. I am always looking for better ways to do my job	1	2	3	4	5
16. I try to work according to an established pattern	1	2	3	4	5
17. It is important for me to be consistent in my work decisions	1	2	3	4	5
18. Once my mind is made up about work I rarely change it	1	2	3	4	5
19. I find ambiguous situations at work very uncomfortable	1	2	3	4	5
20. I think that to compromise at work is a sign of weakness	1	2	3	4	5
21. If I can't do things at work the way I want I'd rather not do them at all	1	2	3	4	5
22. I need clearly defined rules to work successfully	1	2	3	4	5
23. I think that life at work is all about give and take	1	2	3	4	5
24. I believe that things never get done properly at work unless there are clear rules and guidelines on how to do them	1	2	3	4	5
25. I will cover for people at work if they are having personal problems	1	2	3	4	5
26. I can adapt myself to working in almost any physical conditions	1	2	3	4	5
27. Generally I can get on with anyone at work	1	2	3	4	5
28. I can always think of other ways of communicating when "official channels" don't work	1	2	3	4	5
29. I work better without rules and regulations to cramp my style	1	2	3	4	5
30. I like to be flexible in my approach to work	1	2	3	4	5
31. I generally like to get involved at work	1	2	3	4	5

APPENDIX 9

Complete Final Questionnaire

Office and Organisation Questionnaire

This questionnaire is part of an ongoing project on office design and evaluation. It is independent of your organisation.

It would be very helpful if you could please answer the following questions. All the information you give will be completely confidential and will only be seen by members of the research group.

It would be helpful if you could put your name on the questionnaire. However if you are uncomfortable about doing this it may be left off.

Instructions

Think of each question in relation to where you usually work.

In most cases you are given a number of options for your answer. All you need to do is put the number which most closely resembles your feelings in the space provided.

Some questions refer to the building in which you work. If your company occupies part of a larger building answer the question in relation to the part which it uses.

We are interested in your opinions so please try not to discuss the questions until you have completed them.

Do not spend too long on each question. Answer them as quickly as possible.

Do not worry about some questions being repeated. This is for statistical purposes.

Your completed questionnaire will be collected later this afternoon. If you have not completed the questionnaire by this time please mail it to us as soon as possible. A freepost envelope is provided. No stamp is necessary.

Please try to answer all questions.

Thank you very much for your time and co-operation.

Name..... Tel. Ext.....

Personal details

What is your age.....

What sex are you. 1.Female 2. Male

Which section or department do you work in.....

What is the highest qualifications you have (Please circle)

1.None 2.CSEs 3.O-levels 4.A-levels 5.Degree

How long have you worked for your present organisation

.....Yrs.....Months

How long have you worked in your present office.....Yrs.....Months

How long have you worked in offices generally.....Yrs.....Months

Below are a list of four office types. Following them are some questions. Please indicate which office applies to each question by putting the appropriate number in the space provided.

1. Open Plan (More than five people and screens)
2. Open Space (More than five people and no screens)
3. Small (Shared office with less than five people)
4. Private (Only one person)

Which of the above have you mainly worked in before

Which type of office do you work in now

Of the above which type of office do you prefer to work in

Which type of office do you like least

Physical Description

Approximately how far do you sit from a windowFeet

Can you see out of the windows from where you sit.

1.Yes 2.A little 3.No (please circle)

Approximately where do you work in the building.....

,.....

Approximately how large is the office in which you work

Approx.....sq.feet

Roughly how many people are in your office.....

Approximately how much floor space do you have.....sq feet

Approximately how far are other people from your desk.feet

Privacy and Partitions

Can other people overhear conversations you are having while you are at your desk.

1. Yes 2. Sometimes 3. No (please circle)

Can you be seen easily by others in your office when you work at your desk.

1. Yes 2. A little 3. No (please circle)

Generally do people of different ranks or doing different jobs have different furniture, space and so on.

1.Yes 2.No (please circle)

Do you share your office 1.Yes 2. No (please circle)

If there are other people in your office, do you have partitions around your desk

1. Yes 2. No (please circle)

If you have partitions, how many sides around your work space are enclosed.

1 2 3 4 (please circle)

What form do the partitions take on each side. Please put the appropriate number in the spaces.

1. Purpose built screens
2. Filing cabinets or other furniture
3. Window
4. Wall

Side 1. Side 2. Side 3. Side 4.

.....

How high are the partitions on each side.

1. Less than 4 feet 2. 4 to 5 feet
3. 5 to 6 feet 4. 6 feet or over

Side 1	Side 2	Side 3	Side 4
.....

Your Job

What position do you hold in your company (Job title, grade etc.)

Approximately how much time do you spend doing the following.
Circle the number which is most appropriate. The meanings of the numbers are

1	2	3	4	5
1 to 20%	21 to 40%	41 to 60%	61 to 80%	81 to 100%

If no time is spent on a particular activity do not circle a number for that activity.

1. Typing.....1 2 3 4 5
2. Using a word processor.....1 2 3 4 5
3. Using a computer.....1 2 3 4 5
4. Filing.....1 2 3 4 5
5. On the telephone.....1 2 3 4 5
6. Writing reports.....1 2 3 4 5
7. Filling out forms etc.....1 2 3 4 5
8. Dictating.....1 2 3 4 5
9. In meetings.....1 2 3 4 5
10. Talking face to face with people
in your department/office.....1 2 3 4 5
11. Talking face to face with people
from other offices/department.....1 2 3 4 5
12. Making decisions.....1 2 3 4 5

In this section you are asked to assess the extent to which your physical environment at work helps or hinders the work or comfort of you, your department or group, and the organisation in general. In order to do this simply circle the number which best describes your opinion. The meaning of the numbers is as follows

Hinders a great deal	Hinders	Neither helps nor hinders	Helps	Helps a great deal
1	2	3	4	5

1. To what extent does the design of the surroundings immediately around your desk help or hinder when you want to hold private conversations	1	2	3	4	5
---	---	---	---	---	---

2. Does the layout and space around your desk help or hinder to create a feeling that it is your own distinct place	1	2	3	4	5
---	---	---	---	---	---

3. When your are at your desk how well does the heating help you to feel comfortable	1	2	3	4	5
--	---	---	---	---	---

4. When your are at your desk to what extent does the lighting hinder or help you to carry out your work efficiently	1	2	3	4	5
--	---	---	---	---	---

5. How well does the location of your desk in relation to windows help you to have sufficient access to daylight.	1	2	3	4	5
---	---	---	---	---	---

6. To what extent does the amount of filing space you have at your desk help you to keep the papers you need within easy reach	1	2	3	4	5
--	---	---	---	---	---

7. To what extent does the amount of space around your desk help or hinder the storage of your personal belongings	1	2	3	4	5
--	---	---	---	---	---

8. To what extent does the design of your office help you feel that you are able to control the amount of access people can have to you	1	2	3	4	5
---	---	---	---	---	---

9. How helpful is the location of your work area in preventing you from feeling isolated and cut off from others	1	2	3	4	5
--	---	---	---	---	---

10. To what extent does the lighting in your office help to provide you with a pleasant place in which to work	1	2	3	4	5
11. How much does the amount of space in your office help you to store your personal belongings	1	2	3	4	5
12. How well does the design and layout of your office help you to work efficiently without being distracted by other things that are going on in the office	1	2	3	4	5
13. To what extent does the provision of restrooms coffee areas and so forth in the building help you to informally meet others your work with	1	2	3	4	5
14. How well does the heating around the building help or hinder your feeling of comfort	1	2	3	4	5
15. How well does the ventilation around the building help or hinder your feeling of comfort	1	2	3	4	5
16. Does the design of the building help or hinder you getting to places without having to walk too far	1	2	3	4	5
17. How much does where you sit in the office help you feel a part of your department or work group	1	2	3	4	5
18. To what extent does the lighting around your desk help when you are working with others there	1	2	3	4	5
19. How much does the layout of space at your desk help when people in your department or work group want to sit down and talk with you	1	2	3	4	5
20. To what extent is the design of your office helpful in creating a feeling of unity and cohesion amongst people in your department or work group	1	2	3	4	5
21. How helpful is the design and layout of your office in making your department or section distinct within the organisation	1	2	3	4	5

22. How well does the heating in your office help to make it a comfortable place for the group or department to work effectively	1	2	3	4	5
23. How well does the ventilation in your office help to make it a comfortable place for the group or department to work effectively	1	2	3	4	5
24. How helpful is the amount of space in your office in allowing people to work in it without feeling that they are crowding one another	1	2	3	4	5
25. How helpful is the location of space for filing papers that people in your department generally need access to for their work	1	2	3	4	5
26. How well does the design of the building help people to have chance meetings with one another	1	2	3	4	5
27. How much does the heating throughout the building help make it a comfortable place for people to stand and talk to each other	1	2	3	4	5
28. To what extent does the amount of space throughout the building help in providing meeting places for people	1	2	3	4	5
29. How much does the design of your work space help people to recognise your role in the organisation	1	2	3	4	5
30. How much does your work space help reflect your status in the organisation	1	2	3	4	5
31. How much does the amount of space around your desk or workspace help people to have access to you	1	2	3	4	5
32. How much does the design of your office help people from other parts of the organisation to enter it with out feeling that they are intruding	1	2	3	4	5
33. To what extent does the location and design of your office help to make people feel that your department fits in as a part of the whole organisation	1	2	3	4	5

- | | | | | | |
|--|---|---|---|---|---|
| 34. To what extent does the space in your office help give other people in the organisation access to members of your department | 1 | 2 | 3 | 4 | 5 |
| 35. How much does the design of the building help people from the various departments in your organisation meet with each other | 1 | 2 | 3 | 4 | 5 |
| 36. How much does the lighting around the building help to create an environment which gives people the impression of an efficient and successful organisation | 1 | 2 | 3 | 4 | 5 |
| 37. To what extent does the location of departments around the building help them to communicate with each other conveniently | 1 | 2 | 3 | 4 | 5 |
| 38. How much does the design and layout of the building help in making people feel part of the organisation | 1 | 2 | 3 | 4 | 5 |
| 39. How much does the provision of informal meeting places such as eating places, washrooms and restrooms help in allowing people from different parts of the organisation meet with each other and feel part of the same organisation | 1 | 2 | 3 | 4 | 5 |
| 40. How much does the design and layout of the building help prevent people from feeling like they are a small and insignificant part of the organisation | 1 | 2 | 3 | 4 | 5 |
| 41. Generally how helpful is your physical environment for carrying out your day-to-day work | 1 | 2 | 3 | 4 | 5 |

In the following section there are some statements about various aspects of work. Can you indicate the extent to which you agree with them by drawing a circle around the number which best describes your opinion. The meanings of the numbers are as follows.

Strongly Disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
1	2	3	4	5
1. My job is secure				
2. I recieve benefits such as sick leave, pensions, holidays and so on				
3. I have influence in the organisation				
4. I recieve proper recognition for doing my job well				
5. My office is comfortable				
6. I am valued as a person at work				
7. I have responsibility for others at work				
8. I am given fair chances of promotion				
9. I have an office, desk etc which reflect my status				
10. I have an influence over what work I do, and how I do it				
11. Fellow workers are friendly and helpful				
12. I do interesting work				
13. I know what role my work plays in that of the organisation				
14. I have a fair and considerate boss or supervisor				
15. I have a job with status				
16. I am proud to work for the company				

17. I have an opportunity to use my abilities and skills at work	1	2	3	4	5
18. I find my job interesting and enjoyable	1	2	3	4	5
19. I have independence at work	1	2	3	4	5
20. I have good level of pay	1	2	3	4	5
21. I find my hours of work convenient	1	2	3	4	5
22. My physical environment supports my work	1	2	3	4	5
23. The variety in my job is such that I do different things each day	1	2	3	4	5
24. I work in an office where I feel free and not watched	1	2	3	4	5
25. I am told how well I am doing at my job	1	2	3	4	5
26. I have a clearly defined job, so that I know what I will be doing each day	1	2	3	4	5
27. I am closely supervised when doing my job	1	2	3	4	5
28. I do a job which involves a lot of concentration	1	2	3	4	5
29. My job requires me to work closely with others	1	2	3	4	5
30. I need to be kept informed about what's going on in the organisation to do my job	1	2	3	4	5

In this section there are a number of statements about your general approach to life at work. All you are required to do is to circle the number which best represents the extent to which you agree or disagree with the statement as it applies to you.

Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
1	2	3	4	5
1. I feel loyalty to the company I work for			1 2 3 4 5	
2. I enjoy getting involved in office politics			1 2 3 4 5	
3. I am only in the job for the money			1 2 3 4 5	
4. I like to be involved in the social life of the company			1 2 3 4 5	
5. I am quite disinterested in the decisions of higher management			1 2 3 4 5	
6. I like to work for a company where I do not have to get too involved.			1 2 3 4 5	
7. I feel frustrated if I can not have a say in things at work			1 2 3 4 5	
8. I try not to become too involved in things at work			1 2 3 4 5	
9. If I can't have my say in how things at work are done, I hope they go wrong			1 2 3 4 5	
10. I should take part in decisions at work which effect me			1 2 3 4 5	
11. I prefer to talk face to face with people at work even when it might be easier to telephone them			1 2 3 4 5	
12. If someone at work has a personal problem I would try to help them if I could			1 2 3 4 5	
13. I should have a say in the way my physical environment at work is designed			1 2 3 4 5	
14. It makes me feel good when I do my job well			1 2 3 4 5	

15. I am always looking for better ways to do my job	1	2	3	4	5
16. I try to work according to an established pattern	1	2	3	4	5
17. It is important for me to be consistent in my work decisions	1	2	3	4	5
18. Once my mind is made up about work I rarely change it	1	2	3	4	5
19. I find ambiguous situations at work very uncomfortable	1	2	3	4	5
20. I think that to compromise at work is a sign of weakness	1	2	3	4	5
21. If I can't do things at work the way I want I'd rather not do them at all	1	2	3	4	5
22. I need clearly defined rules to work successfully	1	2	3	4	5
23. I think that life at work is all about give and take	1	2	3	4	5
24. I believe that things never get done properly at work unless there are clear rules and guidelines on how to do them	1	2	3	4	5
25. I will cover for people at work if they are having personal problems	1	2	3	4	5
26. I can adapt myself to working in almost any physical conditions	1	2	3	4	5
27. Generally I can get on with anyone at work	1	2	3	4	5
28. I can always think of other ways of communicating when "official channels" don't work	1	2	3	4	5
29. I work better without rules and regulations to cramp my style	1	2	3	4	5
30. I like to be flexible in my approach to work	1	2	3	4	5
31. I generally like to get involved at work	1	2	3	4	5

In this section there are a number of statements about how involved and flexible your department and organisation is with regard to various aspects of your life at work. All you need to do is to indicate the extent to which you agree with the statements as they apply to you. To do this simply circle the number which best represents your feelings. The meanings of the numbers are given below.

Strongly disagree 1	Disagree 2	Neither agree nor disagree 3	Agree 4	Strongly agree 5
1. When I have a question at work I can talk to anyone I want in my department about it			1	2 3 4 5
2. My department is happy for me to personalise or arrange my workspace /office however I want to			1	2 3 4 5
3. People in my department let me join in with them socially			1	2 3 4 5
4. My department allows me to carry out my work in the way I think is best			1	2 3 4 5
5. The people in my department will allow me to arrange my work so that it fits in with my life in general			1	2 3 4 5
6. If I have a personal problem which which affects the way I work the department will make allowances until I can sort it out			1	2 3 4 5
7. I am often called upon to play the role of a go between in my department			1	2 3 4 5
8. If a person has a question to ask someone else they will talk to me first or get me to ask the other person			1	2 3 4 5
9. I am asked to participate in decisions which are being made about the physical environment in my department			1	2 3 4 5
10. Most of my friends at work are people in my department			1	2 3 4 5

11. The department is interested in any views I have about the best way to do my job	1	2	3	4	5
12. The department is concerned about my general welfare even if it does not interfere with my work	1	2	3	4	5
13. If I have a question at work I can go straight to any one in the organisation to ask them about it	1	2	3	4	5
14. All questions in my organisation have to go through "proper channels".	1	2	3	4	5
15. People in my organisation have their physical surroundings specified according to rules and regulations	1	2	3	4	5
16. It is possible to tell the status or role of someone in my organisation by their physical surroundings	1	2	3	4	5
17. The organisation will generally let me carry out my work in the way that suits me best	1	2	3	4	5
18. The organisation will only sympathise with any personal problems I have as long as they do not affect my work	1	2	3	4	5
19. I often find myself being asked to act as a spokesperson for others in my organisation	1	2	3	4	5
20. People in the different sections or departments of my organisation only socialise with each other	1	2	3	4	5
21. My views about the way in which I carry out my work are listened to and respected in the organisation	1	2	3	4	5
22. The organisation cares about my general welfare and happiness	1	2	3	4	5
23. I am encouraged to play an important role in the work of my organisation	1	2	3	4	5
24. People at the top of my organisation are isolated and out of touch	1	2	3	4	5
25. People in my department form cliques	1	2	3	4	5

26. My company cares more about efficiency than people	1	2	3	4	5
27. My organisation expects me to carry out my work in clearly defined and prescribed ways	1	2	3	4	5
28. My views about things affecting the organisation generally are sought and listened to	1	2	3	4	5
29. If I have a question about my work there is an officially designated person whom I must ask	1	2	3	4	5
30. The way I am treated at work makes me feel like a small cog in a big wheel	1	2	3	4	5
31. If I had the chance to do the same work for the same pay but in a different department I would still want to stay where I am	1	2	3	4	5
32. The way I am treated in my department makes feel like I "belong"	1	2	3	4	5
33. Generally people in the department share the same goals	1	2	3	4	5
34. People in my department share similar interests	1	2	3	4	5

If you have any comments about this questionnaire, or about your organisation and physical environment which you think are important but have not already been included, please feel free to use the remaining space to make them.

Thank you very much for your time and co-operation

APPENDIX 10

Sample of the Letter Sent to Organisations
Inviting them to Participate in the Study

ASTON UNIVERSITY



THE MANAGEMENT CENTRE
APPLIED PSYCHOLOGY DIVISION

Head: N C Graham BA DipEd
BA MSc PhD ABPsS

Address
of
the
Organisation

Date

Dear X

I am carrying out research into the relationship between people's evaluations of their office environment and various aspects of their work and organisation. If it is possible, I would like the employees of xxxxxx xxx xxxxxxxx to participate in the study.

The study would involve members of your staff spending a few minutes completing a questionnaire containing questions regarding how they feel about their work and organisation, with a number of further questions referring to the design of their offices. The questionnaire has been designed to take the minimum time to produce useful information.

I have already spoken to your public relations officer, who has agreed in principle to participate. In accordance with her suggestion I have enclosed a draft copy of the questionnaire for your consideration and comment.

A report of the findings which, it is hoped, would be of considerable use to you in future decision making, will be available to you if you wish.

All the data collected will be treated as confidential, and the results will only be presented in statistical terms. The organisation will not be named and the individual questionnaires will only be seen by the research group at the university.

I will telephone you within the next few days to discuss the matter further.

Yours Sincerely

Ian Donald. M.Sc.

APPENDIX 11

Descriptions of the Data Collection Sites

A11.1 Collection Site 1

The building is occupied by an international estate agent dealing in commercial properties. The organisation moved to the building approximately two years prior to the study due to a twenty five per cent growth in the company. At the time of the study 500 people worked in the building.

The building itself, located in central London, consists of seven stories, the first five of which are occupied by the participating organisation; the top two floors are sub-let. The building was not purpose built. It is a modern building although no exact date of construction is available. There is wide use of screens, and offices are not crowded. The only people occupying cellular offices are "partners", that is, high ranking members of the organisation. Ceilings and floors are raised, ventilation is fan coiled centrally ducted, and lighting is provided by fluorescent tubing which produces shadows.

The impression gained of the building by the author was one of high quality and spaciousness. In terms of its ambient conditions, there appeared to be considerable glare and the temperature rather high.

A11.2 Collection Site 2

This site, located in the mid-north west of England, consists of two buildings. The first building at this site is large and modern, being opened in early 1984. Approximately 90% of the occupants are engineers, most of whom require drawing boards. Approximately 2000 people occupy the building. Around two thirds of the building is open plan. There is very little use of partitioning, either in the form of purpose built screens or furniture. The building is air conditioned and sealed. Uplighters provide illumination.

While the ambient conditions seemed quite pleasant to the author, there were localised areas which suffered from draughts. It was also on the whole extremely crowded. Vending machines and similar are provided around the building, but there seemed to be little provision of informal meeting places.

The second building of this site was a speculatively built in 1978, and consists of two floors. The office space is occupied by commercial staff and engineers who occupy the second and first floors respectively. Approximately 400 people work in the building.

The first floor consists of one open space. Most people use drawing boards which are organised in rows. Around the periphery of the space are a small number of desks. No partitioning is evident. The wide use of drawing boards

creates some visual screening. The floor is again extremely crowded.

The second floor is a contrast to the first. The density of workers is far less. There are potted plants around several of the spaces. Individuals do not have partitions around them. However, unlike the first floor, there are partitions, consisting of furniture, which separate various work groups. Generally it offered a more pleasant environment in which to work.

The organisation itself is a private company involved in the nuclear power industry.

A11.3 Collection Site 3

This site again consists of two buildings. The first of these was constructed 1971-1972 and lay vacant for a year until its present occupiers purchased it. It was occupied in 1974. The building was designed to be open plan, and with the exception of one floor, not covered in the study, is used as such. The building consists of nine floors. Approximately 400 people work in the building. The general condition of the building is rather poor.

The second building was constructed in the 1950s. The building has four stories and is inhabited by approximately 1000 people. The offices run down each side of the building with a corridor in the middle. Approximately 60% of the offices are cellular and 40% open plan. The open plan

offices, in which most people work, vary in the number of occupants from five to forty. Generally the building is quite spacious, although one does gain the impression that it is smaller than it actually is, perhaps because of the relatively small window size.

The organisation occupying the buildings is a county council in the North Midlands.

A11.4 Collection Site 4

Few details are available with regard to the fourth collection site. The building is located in Cardiff and houses two central government departments. The general quality of the building appears to be high. The office spaces are large open areas sub-divided at intervals by furniture or partitions. The offices are spacious. A number of cellular offices exist in the building; these were not surveyed. The facilities offered to the staff are high. Finally the building has won architectural competitions.

APPENDIX 12

Inter-Item Correlation Matrix of the 41 Environmental Evaluation Items (Full Data Set)

Table A12.1
Lower triangular Inter-Item Matrix of Correlations
Between Environmental Evaluation Items

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	
1	36																																							
2	21	26																																						
3	09	19	35																																					
4	07	13	12	40																																				
5	07	13	14	-03	03	15	26	05	74																															
6	13	14	-03	03	15	26	05	74																																
7	30	28	05	-03	10	05	12	19	08																															
8	37	23	14	10	06	13	15	34	15	32	05	14	-02																											
9	11	16	31	73	43	10	05	22	19	08																														
10	17	16	31	73	43	10	05	22	19	08																														
11	30	31	05	-03	05	47	86	16	19	08																														
12	34	37	16	17	15	13	25	41	-01	23	29																													
13	06	00	-05	-12	-12	20	18	00	06	-08	14	-03																												
14	15	17	52	34	17	-02	09	11	17	32	05	14	-02																											
15	18	19	64	32	24	64	14	13	15	34	15	26	05	74																										
16	06	07	03	11	11	06	06	03	13	13	09	06	03	19	16	17																								
17	10	23	16	20	05	13	10	14	49	16	09	06	03	19	16	17	17	20																						
18	06	17	26	70	34	14	32	15	19	01	31	21	23	21	20	17	17	20																						
19	16	10	03	17	24	32	15	19	01	31	21	23	21	20	17	17	20	17	20																					
20	17	32	18	13	05	31	25	15	40	12	24	12	19	10	09	04	19	08	13	05	20	27																		
21	11	22	04	13	05	31	25	15	40	12	24	12	19	10	09	04	19	08	13	05	20	27	31																	
22	16	21	76	32	17	06	16	13	56	11	52	03	19	03	67	12	05	22	30	20	24	06	31	25	06	62														
23	18	24	62	32	17	06	16	13	56	11	52	03	19	03	67	12	05	22	30	20	24	06	31	25	06	62	62													
24	28	23	06	05	13	22	24	09	38	06	35	31	14	09	06	12	05	22	30	20	24	06	31	25	06	62	62	62												
25	13	00	-04	-03	07	06	05	18	-02	34	31	25	03	09	06	12	05	22	30	20	24	06	31	25	06	62	62	62	62											
26	06	16	53	-05	-04	03	07	06	05	18	-02	34	31	25	03	09	06	12	05	22	30	20	24	06	31	25	06	62	62	62										
27	06	16	53	-05	-04	03	07	06	05	18	-02	34	31	25	03	09	06	12	05	22	30	20	24	06	31	25	06	62	62	62										
28	06	16	53	-05	-04	03	07	06	05	18	-02	34	31	25	03	09	06	12	05	22	30	20	24	06	31	25	06	62	62	62										
29	12	00	-05	-05	-05	12	27	26	19	07	11	-02	18	40	12	20	06	02	10	19	15	10	15	22	30	25	33	24												
30	18	20	00	-01	22	19	23	22	17	09	08	16	26	16	20	-03	09	05	12	-03	22	25	20	00	11	26	11	13	03											
31	19	22	14	-04	09	25	42	-04	36	-06	39	10	23	16	20	05	13	02	53	24	18	12	19	39	39	11	17	24	23											
32	04	11	03	07	16	11	17	-05	26	11	11	06	10	08	10	14	21	06	26	21	06	04	06	29	27	02	04	10	23	26										
33	11	30	19	16	02	12	16	12	30	17	12	14	11	28	19	21	30	28	15	24	27	19	16	17	39	24	17	21	32											
34	06	16	13	11	01	17	27	-09	35	00	21	00	12	1	16	07	27	09	23	27	19	16	17	39	24	17	21	32	07	05	46									
35	03	09	05	-04	04	09	17	-02	18	-03	16	10	26	12	14	01	07	02	26	23	13	10	09	28	25	37	17	47	22	17	29	34	48							
36	10	19	25	43	16	10	03	13	23	46	07	25	03	30	30	20	21	18	09	26	16	26	30	26	30	26	17	18	35	24	08	06	12	12	16	23	15	29		
37	09	15	16	09	16	21	28	26	19	36	23	15	21	21	47	33	25	37	30	31	43	32	21	10	24	17	24	29	25	40	12	41	45	14	23	29	22	32		
38	19	29	24	17	16	30	23	26	19	36	23	15	21	21	47	33	25	37	30	31	43	32	21	10	24	17	24	29	25	40	12	41	45	14	23	29	22	32		
39	23	22	09	08	07	08	25	31	10	45	07	10	19	15	18	17	44	17	04	03	07	-04	-01	15	16	06	10	05	14	-06	62	10	17	20	07	09	33	35		
40	17	23	24	17	16	30	21	04	23	27	05	06	14	15	35	24	28	36	18	20	21	16	06	19	10	27	12	13	24	13	20	17	13	12	25	23	51	26		

APPENDIX 13

Alpha Coefficients of the Environmental Evaluations Following the Deletion of Each Item

Table A13.1
Alpha Coefficients for the Environmental Evaluation
Questionnaire if Individual Items are Deleted

Item	Alpha if Item Deleted	Item	Alpha if Item Deleted
1	.90155	21	.90199
2	.90037	22	.89926
3	.90046	23	.89821
4	.90125	24	.89920
5	.90328	25	.90088
6	.90187	26	.90278
7	.90007	27	.89939
8	.90305	28	.90097
9	.89993	29	.90190
10	.90035	30	.90132
11	.90057	31	.90021
12	.90089	32	.90222
13	.90383	33	.89989
14	.89907	34	.90054
15	.89803	35	.90096
16	.90295	36	.89982
17	.90098	37	.90099
18	.90057	38	.89947
19	.90085	39	.90167
20	.89985	40	.90065
		41	.89828

N.B. The above alpha coefficients are not standardised. The non-standardised alpha coefficient for the full questionnaire is .90294.

APPENDIX 14

One-Way Analysis of Variance: Site by Environmental Evaluation

N.B. The "Groups" label on the tables refers to the Site.

Table A14.1 ANOVA of Site by Organisational Element of Evaluation

ANALYSIS OF VARIANCE									
SOURCE		D.F.	SUM OF SQUARES	MEAN SQUARES	F RATIO	F PROB.			
BETWEEN GROUPS		3	10.0197	3.3399	8.539	0.0000			
WITHIN GROUPS		212	81.9619	0.3866					
TOTAL		215	91.9816						
GROUP	COUNT	MEAN	STANDARD DEVIATION	STANDARD ERROR	MINIMUM	MAXIMUM	95 PCT CONF INT FOR MEAN		
GRP01	36	3.1944	0.7099	0.1183	1.0000	4.0000	2.5542	3.4346	
GRP02	45	2.8444	0.6013	0.0896	2.0000	4.0000	2.6638	3.0251	
GRP03	73	2.7671	0.5406	0.0633	2.0000	4.0000	2.6410	2.8933	
GRP04	62	3.2419	0.6699	0.0851	1.0000	5.0000	3.0718	3.4120	
TOTAL	216	2.9907	0.6541	0.0445	1.0000	5.0000	2.9030	3.0785	

Table A14.2 ANOVA of Site by Department Element of Evaluation

ANALYSIS OF VARIANCE							
	SOURCE	D.F.	SUM OF SQUARES	MEAN SQUARES	F RATIO	F PROB.	
	BETWEEN GROUPS	3	2.0253	0.6751	1.580	0.1953	
	WITHIN GROUPS	212	90.5996	0.4274			
	TOTAL	215	92.6249				
GROUP	COUNT	MEAN	STANDARD DEVIATION	STANDARD ERROR	MINIMUM	MAXIMUM	95 PCT CONF INT FOR MEAN
GRP01	36	3.2222	0.5404	0.0901	2.0000	4.0000	3.0394 TO 3.4051
GRP02	45	3.0000	0.6742	0.1005	1.0000	4.0000	2.7974 TO 3.2026
GRP03	73	2.9452	0.5384	0.0700	1.0000	4.0000	2.8056 TO 3.0848
GRP04	62	3.0806	0.7531	0.0956	1.0000	4.0000	2.8894 TO 3.2719
TOTAL	216	3.0417	0.6564	0.0447	1.0000	4.0000	2.9536 TO 3.1297

Table A14.3 ANOVA of Site by Self Element of Evaluation

ANALYSIS OF VARIANCE									
SOURCE		D.F.	SUM OF SQUARES	MEAN SQUARES	F RATIO	F PROB.			
BETWEEN GROUPS		3	5.2063	1.7354	3.264	0.0223			
WITHIN GROUPS		212	112.7196	0.5317					
TOTAL		215	117.9259						

GROUP	COUNT	MEAN	STANDARD DEVIATION	STANDARD ERROR	MINIMUM	MAXIMUM	95 PCI	CONF	INT	FCF	MEAN
GRF01	36	2.8056	0.6242	0.1040	2.0000	4.0000	2.5943	10			3.0188
GRP02	45	2.5111	0.8153	0.1215	1.0000	4.0000	2.2662	10			2.7533
GRP03	73	2.3562	0.6743	0.0789	1.0000	3.0000	2.1983	10			2.5135
GRF04	62	2.4194	0.7798	0.0998	1.0000	4.0000	2.2215	10			2.6114
TOTAL	216	2.4815	0.7406	0.0504	1.0000	4.0000	2.3622	10			2.5808

Table A14.4 ANOVA of Site by Building Element of Evaluation

ANALYSIS OF VARIANCE									
SOURCE		D.F.	SUM OF SQUARES	MEAN SQUARES	F RATIO	F PROB.			
BETWEEN GROUPS		3	13.2254	4.4085	11.383	0.0000			
WITHIN GROUPS		212	82.1079	0.3873					
TOTAL		215	95.3333						

GROUP	COUNT	MEAN	STANDARD DEVIATION	STANDARD ERROR	MINIMUM	MAXIMUM	95 PCT CONF INT FOR MEAN
GRP01	36	3.1944	0.6584	0.1114	2.0000	4.0000	2.9583 TO 3.4306
GRP02	45	2.8889	0.6113	0.0911	2.0000	4.0000	2.7052 TO 3.0726
GRP03	73	2.8082	0.5691	0.0686	2.0000	4.0000	2.6754 TO 2.9410
GRP04	62	3.3871	0.5617	0.0849	1.0000	5.0000	3.2191 TO 3.5551
TOTAL	216	3.0556	0.6659	0.0453	1.0000	5.0000	2.9663 TO 3.1449

Table A14.5 ANOVA of Site by Office Element of Evaluation

ANALYSIS OF VARIANCE

SOURCE	D.F.	SUM OF SQUARES	MEAN SQUARES	F RATIO	F PROB.
BETWEEN GROUPS	3	4.0619	1.3540	3.659	0.0133
WITHIN GROUPS	212	78.4380	0.3700		
TOTAL	215	82.4999			

GROUP	COUNT	MEAN	STANDARD DEVIATION	STANDARD ERROR	MINIMUM	MAXIMUM	95 PCT CONF INT FOR MEAN
GRP01	36	3.1667	0.4472	0.0743	2.0000	4.0000	3.0154 TO 3.3180
GRP02	45	2.9778	0.5834	0.0870	2.0000	4.0000	2.8025 TO 3.1531
GRP03	73	2.7671	0.5897	0.0890	1.0000	4.0000	2.6295 TO 2.9047
GRP04	62	2.9032	0.7177	0.0911	1.0000	4.0000	2.7210 TO 3.0855
TOTAL	216	2.9167	0.6195	0.0421	1.0000	4.0000	2.8336 TO 2.9997

Table A14.6 ANOVA of Site by Desk Element of Evaluation

ANALYSIS OF VARIANCE

SOURCE	D.F.	SUM OF SQUARES	MEAN SQUARES	F RATIO	F PROB.
BETWEEN GROUPS	3	2.9446	0.9815	2.752	0.0436
WITHIN GROUPS	212	75.6062	0.3555		
TOTAL	215	78.5508			

GROUP	COUNT	MEAN	STANDARD DEVIATION	STANDARD ERROR	MINIMUM	MAXIMUM	95 PCT CONF INT FOR MEAN
GRP01	36	3.1111	0.5225	0.0871	2.0000	4.0000	2.8343 TO 3.2879
GRP02	45	2.9323	0.5800	0.0863	2.0000	4.0000	2.7591 TO 3.1076
GRP03	73	2.7671	0.5406	0.0633	1.0000	4.0000	2.6410 TO 2.8933
GRP04	62	2.8871	0.7037	0.0894	1.0000	4.0000	2.7084 TO 3.0658
TOTAL	216	2.8935	0.6044	0.0411	1.0000	4.0000	2.8125 TO 2.9746

APPENDIX 15

One-Way Analysis of Variance: Site by External Domains

N.B. The "Groups" label on the tables refers to the Site.

Table A15.1 ANOVA of Site by Organisational Perception Element of Organisation

ANALYSIS OF VARIANCE									
SOURCE	D.F.	SUM OF SQUARES	MEAN SQUARES	F RATIO	F PROB.				
BETWEEN GROUPS	3	3.5731	1.1910	3.509	0.0162				
WITHIN GROUPS	212	71.9639	0.3395						
TOTAL	215	75.5370							

GROUP	COUNT	MEAN	STANDARD DEVIATION	STANDARD ERROR	MINIMUM	MAXIMUM	95 PCT CONF INT FOR MEAN
GRP01	36	3.3056	0.5767	0.0961	2.0000	5.0000	3.1104 TO 3.5007
GRP02	45	3.0889	0.5730	0.0854	1.0000	4.0000	2.7168 TO 3.0610
GRP03	73	3.0274	0.5767	0.0675	2.0000	4.0000	2.8928 TO 3.1619
GRP04	62	3.0323	0.5997	0.0762	1.0000	4.0000	2.8800 TO 3.1845
TOTAL	216	3.0463	0.5327	0.0403	1.0000	5.0000	2.8668 TO 3.1258

Table A15.2 ANOVA of Site by Organisational Perception Element of Department

ANALYSIS OF VARIANCE									
SOURCE	D.F.	SUM OF SQUARES	MEAN SQUARES	F RATIO	F PROB.				
BETWEEN GROUPS	3	0.3141	0.1047	0.272	0.8455				
WITHIN GROUPS	212	81.5702	0.3848						
TOTAL	215	81.8843							

GROUP	COUNT	MEAN	STANDARD DEVIATION	STANDARD ERROR	MINIMUM	MAXIMUM	95 PCT CONF INT FOR MEAN
GRP01	36	3.3056	0.6242	0.1040	2.0000	5.0000	3.0943 TO 3.5168
GRP02	45	3.2222	0.5174	0.0771	2.0000	4.0000	3.0668 TO 3.3777
GRP03	73	3.1918	0.6802	0.0795	1.0000	4.0000	3.0331 TO 3.3505
GRP04	62	3.2258	0.6119	0.0777	2.0000	4.0000	3.0704 TO 3.3812
TOTAL	216	3.2269	0.6171	0.0420	1.0000	5.0000	3.1441 TO 3.3098

Table A15.3 ANOVA of Site by Organisational Perception Element of Involvement

ANALYSIS OF VARIANCE									
SOURCE		D.F.	SUM OF SQUARES	MEAN SQUARES	F RATIO	F PROB.			
BETWEEN GROUPS		3	0.9740	0.3247	0.831	0.4783			
WITHIN GROUPS		212	82.8593	0.3908					
TOTAL		215	83.8333						
GROUP	COUNT	MEAN	STANDARD DEVIATION	STANDARD ERROR	MINIMUM	MAXIMUM	95 PCT CCNF INT FOR MEAN		
GRP01	36	2.5444	0.6299	0.1050	2.0000	5.0000	2.7313	TO	3.1576
GRP02	45	2.7333	0.5800	0.0865	1.0000	4.0000	2.5591	TO	2.9075
GRP03	73	2.7808	0.6508	0.0762	1.0000	4.0000	2.6290	TO	2.9327
GRP04	62	2.8065	0.6230	0.0791	1.0000	4.0000	2.6482	TO	2.9647
TOTAL	216	2.8056	0.6244	0.0425	1.0000	5.0000	2.7218	TO	2.8893

Table A15.4 ANOVA of Site by Organisational Perception Element of Flexibility

ANALYSIS OF VARIANCE									
SOURCE		D.F.	SUM OF SQUARES	MEAN SQUARES	F RATIO	F PROB.			
BETWEEN GROUPS		3	1.1204	0.3735	0.972	0.4069			
WITHIN GROUPS		212	81.4722	0.3843					
TOTAL		215	82.5926						
GROUP	COUNT	MEAN	STANDARD DEVIATION	STANDARD ERROR	MINIMUM	MAXIMUM	95 PCT CONF INT FOR MEAN		
GRP01	36	3.3333	0.6325	0.1054	2.0000	5.0000	3.1193	TO	3.5473
GRP02	45	3.1778	0.5756	0.0858	2.0000	4.0000	3.0148	TO	3.3507
GRP03	73	3.1781	0.6855	0.0685	2.0000	4.0000	3.0415	TO	3.3147
GRP04	62	3.1129	0.6500	0.0864	1.0000	5.0000	2.9402	TO	3.2856
TOTAL	216	3.1852	0.6198	0.0422	1.0000	5.0000	3.1021	TO	3.2693

Table A15.5 ANOVA of Site by Cohesion

ANALYSIS OF VARIANCE					
SOURCE	COUNT	MEAN	STANDARD DEVIATION	STANDARD ERROR	F RATIO
BETWEEN GROUPS	3				
WITHIN GROUPS	211				
TOTAL	214				

GROUP	COUNT	MEAN	STANDARD DEVIATION	STANDARD ERROR	MINIMUM	MAXIMUM	95 FCI CONF INT FOR MEAN
GRP01	36	3.4167	0.6492	0.1082	2.0000	5.0000	3.1970 TO 3.6363
GRP02	45	3.3111	0.5963	0.0889	2.0000	4.0000	3.1320 TO 3.4903
GRP03	73	3.1233	0.7060	0.0826	2.0000	5.0000	2.9586 TO 3.2980
GRP04	61	3.1639	0.8202	0.1050	1.0000	5.0000	2.9539 TO 3.3740
TOTAL	215	3.2233	0.7146	0.0487	1.0000	5.0000	3.1272 TO 3.3193

Table A15.6 ANOVA of Site by Work Orientation Element of Involvement

ANALYSIS OF VARIANCE					
SOURCE	COUNT	MEAN	STANDARD DEVIATION	STANDARD ERROR	F RATIO
BETWEEN GROUPS	3				
WITHIN GROUPS	212				
TOTAL	215				

GROUP	COUNT	MEAN	STANDARD DEVIATION	STANDARD ERROR	MINIMUM	MAXIMUM	95 FCI CONF INT FOR MEAN
GRP01	36	4.0833	0.2803	0.0467	4.0000	5.0000	3.9865 TO 4.1782
GRP02	45	3.9333	0.4472	0.0667	2.0000	5.0000	3.7390 TO 4.0677
GRP03	73	3.5452	0.4562	0.0548	3.0000	5.0000	3.4360 TO 4.0544
GRP04	62	3.9355	0.6744	0.0866	1.0000	5.0000	3.7642 TO 4.1027
TOTAL	216	3.9630	0.5090	0.0346	1.0000	5.0000	3.8947 TO 4.0312

Table A15.7 ANOVA of Site by Work Orientation Element of Flexibility

ANALYSIS OF VARIANCE									
GROUP	COUNT	MEAN	STANDARD DEVIATION	SUM OF SQUARES	MEAN SQUARES	F-RATIO	F PROB.	95 ICT CONF INT FOR MEAN	
SOURCE									
BETWEEN GROUPS	3			0.2950	0.0983	0.302	0.8235		
WITHIN GROUPS	212			69.0382	0.3257				
TOTAL	215			69.3333					
GROUP									
GRP01	30	3.4167	0.5000	0.0833	2.0000	4.0000	3.2475	TO	3.3852
GRP02	45	3.4000	0.5394	0.0604	2.0000	4.0000	3.2380	TO	3.5620
GRP03	72	3.4932	0.6033	0.9707	2.0000	5.0000	3.5223	TO	3.6740
GRP04	62	3.4355	0.5301	0.6743	2.0000	5.0000	3.2655	TO	3.5553
TOTAL	216	3.4444	0.5679	3.0320	2.0000	5.0000	3.3683	TO	3.5200

REFERENCES

- Altman, I. (1975). The Environment and Social Behavior. Monterey: Brooks/Cole.
- Allen, T.J. and Gerstberger, P.G. (1973). A Field Experiment to Improve Communications in a Product Engineering Department: The Nonterritorial Office. Human Factors, 15, 487-498.
- Allport, G.W. (1947). The Psychology of Participation. Psychological Review, 52, 117-132.
- American Society of Landscape Architects. (February, 1974). Priorities for ASLA. ASLA Bulletin.
- Anderson, A.B. (1975). Combined effects of Interpersonal Attraction and Goal Clarity on the Cohesiveness of Task Oriented Groups. Journal of Personality and Social Psychology, 31, 68-75.
- Argyle, M. (1980). The Analysis of Social Situations. In M. Brenner (Ed.). The Structure of Action. Oxford: Blackwell.
- Argyle, M., Furnham, A. and Graham, J.A. (Eds.) (1981). Social Situations. Cambridge: Cambridge University Press.
- Argyris, C. (1964). Integrating the Individual and the Organisation. London: Wiley.
- Armistead, N. (Ed.) (1974). Restructuring Social Psychology. Harmondsworth: Penguin.
- Asimov, M. (1962). Introduction to Design. Englewood Cliffs: Prentice Hall.
- Asprino, A., Broadbent, G. and Powell, J. (1981). A Critical Examination of Design Failures in Buildings and their Relation to Design Process. In R. Jacques and J. Powell (Eds.). Design: Science Method. Guildford: Westbury House.
- Backman, C.W. (1979). Epilogue: A New Paradigm ? In G.P. Ginsburg (Ed.), Emerging Strategies in Social Psychological Research. Chichester: Wiley.
- Barker, R.G. (1963). On the Nature of the Environment. Journal of Social Issues, 19, 17-34.
- Bauman, Z. (1978). Hermeneutics and Social Science. London: Hutchinson.

- Bechtel, R.B. and Srivastava, R.K. (1978). Post Occupancy Evaluation of Housing. Report Submitted to the Department of Housing and Urban Development.
- Becker, F.D. (1981). Workspace: Creating Environments in Organisations. New York: Preager.
- van Bergen, A. and Koekebakker, J. (1959). Group Cohesiveness in Laboratory Experiments. Acta Psychologica, 16, 81-98.
- Black, F.W. (1964). Desirable Temperatures in Offices: A Study of Occupant Reaction to the Heating Provided. Journal of the Institution of Heating and Ventilation Engineers. (November), 319-328.
- Bloombaum, M. (1970). Doing Smallest Space Analysis. Journal of Conflict Resolution, 14, 409-716.
- Borg, I. (1977). Some Basic Concepts in Facet Theory. In J.C. Lingoes, E.E. Roskam, and I. Borg (Eds.). Geometric Representations of Relational Data. Ann Arbor: Mathesis.
- Borg, I. (Ed.) (1981). Multidimensional Data Representations: When and Why. Ann Arbor: Mathesis.
- B.O.S.T.I. (1981). The Impact of Office Environment on Productivity and Quality of Working Life: Comprehensive Findings. New York: Buffalo Organisation for Social and Technological Innovation.
- Boyce, P.R. (1981). Human Factors in Lighting. London: Applied Science.
- Braverman, H. (1974). Labour and Monopoly Capital. New York: Monthly Review Press.
- Broady, M. (1975). Office Building. The Architects Journal, 162, 335-739.
- Brookes, M.J., and Kaplan, A. (1972). The Office Environment: Space Planning and Affective Behavior. Human Factors, 14, 373-391.
- Brown, B.B. (1987). Territoriality. In D. Stokols and I. Altman (Eds.). Handbook of Environmental Psychology. Chichester: Wiley
- Brown, J. (1985). An Introduction to the Uses of Facet Theory. In D. Canter (Ed.). Facet Theory: Approaches to Social Research. New York: Springer-Verlag.
- Bruner, J. (1976). Psychological Theories and the Image of Man. Herbert Spencer Lectures, University of Oxford.

- Brunswik, E. (1956). Perception and the Representative Design of Psychological Experiments. Berkeley: University of California.
- Buchanan, B. (1974). Building Organisational Commitment: The Socialization of Managers in Work. Administrative Science Quarterly, 19, 346-355.
- Building Performance Research Unit. (1972). Building Performance. London: Applied Science.
- Burlingame, G., Fuhrman, A. and Drescher, S. (1984). Scientific Inquiry into Small Group Process: A Multidimensional Approach. Small Group Behavior, 15, 441-470.
- Burnette, C. (1979). Making Information Useful to Architects. An Analysis and Compendium of Practical Forms for the Delivery of Information. In National Bureau of Standards, GCR, 78-158. Washington.
- Campbell, J.P., Dunnette, M.D., Lawler, E.E. and Weick, K.E. (1970). Managerial Behavior, Performance and Effectiveness. New York: McGraw-Hill
- Campbell, J.P., Dunnette, M.D., Lawler, E.E. and Weick, K.E. (1975). Environmental Variation and Managerial Effectiveness. In R.M. Steers and L.W. Porter (Eds.). Motivation and Work Behavior. New York: McGraw-Hill.
- Canter, D.V. (1969). The Psychological Implications of Office Size. Unpublished Ph.D. Dissertation. University of Liverpool.
- Canter, D.V. (1970). Architectural Psychology. London: Royal Institute of British Architects
- Canter, D.V. (1972). Reactions to Open-Plan Offices. Built Environment, 1, 465-467.
- Canter, D.V. (1977). The Psychology of Place. London: Architectural Press.
- Canter, D.V. (1982). Facet Approach to Applied Research. Perceptual and Motor Skills, 55, 143-154.
- Canter, D.V. (1983). The purposive Evaluation of Places: A Facet Approach. Environment and Behavior, 15, (6), 659-698.
- Canter, D.V. (1985). Facet Theory: Approaches to Social Research. New York: Springer-Verlag.
- Canter, D.V. (1985a). Applying Psychology. Inaugural Lecture (May 1): University of Surrey.

- Canter, D.V. (1986). Putting Situations in Their Place. In A. Furnham (Ed.). Social Behavior in Context. London: Allyn and Bacon.
- Canter, D.V., Brown, J., Kenny, C. and Donald, I.J. (1984). Facet Theory. Paper presented at Facet Theory in Action: 1st International Conference and Workshops on Facet Theory. University of Surrey, December 12-13.
- Canter, D.V., Brown, J. and Groat, L. (1985). A Multiple Sorting Procedure for Studying Conceptual Systems. In M. Brenner, J. Brown, and D. Canter (Eds.). The Research Interview: Academic press.
- Canter, D.V. and Craik, K.H. (1981). Environmental Psychology. Journal of Environmental Psychology, 1, 1-11.
- Canter, D.V., and Donald, I.J. (1983). Psychological and Health Aspects of Open-Plan Offices: A Review. Unpublished Report to British Petroleum. University of Surrey.
- Canter, D.V. and Donald, I.J. (1983a). Sign-Posting at the University of Surrey. Unpublished Report, Department of Psychology: University of Surrey.
- Canter, D.V. and Donald, I.J. (1985). Selection and Progress of Scientific Officers. Final Report to the Recruitment Research Unit. University of Surrey.
- Canter, D.V., and Donald, I.J. (1987). Environmental Psychology in the U.K. In D. Stokols and I. Altman, (Eds) Handbook of Environmental Psychology: Vol 2. Chichester: Wiley.
- Canter, D.V., and Kenny, C. (1981). The Multivariate Structure of Design Evaluation: A Cylindrex of Nurses' Conceptualizations. Multivariate Behavioral Research, 16, 214-236.
- Canter, D.V., and Kenny, C. (1982). Approaches to Environmental Evaluation. International Review of Applied Psychology, 31, 145-151.
- Canter, D.V. and Rees, C. (1982). A Multivariate Model of Housing Satisfaction. International Review of Applied Psychology, 31, 185-208.
- Canter, D.V. and Stringer, P. (1975). Environmental Interaction. London: University of Surrey Press.
- Canter, D.V., and Walker, E. (1980). Environmental Role and Conceptualizations of Housing. Journal of Architectural Research, 7, 30-35.

Carron, A.V. (1982). Cohesiveness in Sports Groups: Interpretations and Considerations. Journal of Sports Psychology, 4, 123-138.

Cartwright, D. (1968). The Nature of Group Cohesiveness. In D. Cartwright and A. Zander (Eds.). Group Dynamics: Research and Theory. New York: Harper Row.

Cartwright, D. and Zander, A. (Eds.). (1960). Group Dynamics: Research and Theory. New York: Harper Row.

Chaucer, G. (1386). The Canterbury Tales. Oxford: Oxford University Press.

Clearwater, Y. (1980). Comparison of Effects of Open and Closed Office Design on Job Satisfaction and Productivity. Unpublished Ph.D. Dissertation, University of California, Davis.

Clegg, S. and Dunkerley, D. (1980). Organisation, Class and Control. London: Routledge and Kegan Paul.

Coghill, N. (1950). The Canterbury Tales. (Translation). Harmondsworth: Penguin.

Cooper, I., and Crisp, V. (1983). Barriers to the Exploitation of Daylighting in Building Design: U.K. Experience. Paper presented at Pheonix International Daylighting Conference. USA, Pheonix.

Coxon, A.P.M. (1982). The User's Guide to Multidimensional Scaling. London: Heinemann.

Craig, M. (1981). Office Workers' Survival Handbook: A guide to Fighting Health Hazards in the Office. London: BSSRS.

Craik, K.H. and Appleyard, D. (1981). Streets of San Francisco: Brunswik's Lens Model Applied to Urban Influence and Assessment. Berkeley:IPAR

Craik, K.H. and McKechnie, G.E. (Eds.) (1978). Personality and the Environment. London: Sage.

Cronbach, L.J. (1951). Coefficient Alpha and the Internal Structure of Tests. Psychometrika, 16, 297-334.

Donald, I.J. (1983). The Multivariate Structure of Office Evaluations Unpublished M.Sc.Dissertation: University of Surrey

Donald, I.J. (1985). The Cylindrex of Place Evaluation. In D. Canter (Ed.) Facet Theory: Approaches to Social Research. New York: Springer-Verlag

Donald, I.J. (1987). Place Evaluation. In D. Canter, D. Stokols, and M. Krampen (Eds.) Ethnoscapes: Transcultural Studies in Action and Place. Aldershot: Gower.

Donald, I.J. (1987a). A Review of Workplaces. Journal of Environmental Psychology, 7, (In press).

Donald, I.J. (1987b). A Review of Behavioral Issues in Office Design. Journal of Environmental Psychology, 7, (Forthcoming)

Donald, I.J. and Canter, D.V. (1987). Psychology in the United Kingdom. In A.R. Gilgen and C.K. Gilgen (Eds.). International Handbook of Psychology. Westport, CT: Greenwood Press.

Donald, I.J. and Canter, D.V. (1986). Lawful Facets of Place Evaluation. Paper presented to 21st International Congress of Applied Psychology: Jerusalem (July 13-18).

Donald, I.J. and Hedge, A. (1984). Office Evaluation: Sterile Research on a Fertile Topic ? In M. Krampen (Ed.). Environment and Human Action: Proceedings of the 8th International Conference of the International Association for the Study of People and their Physical Settings. West Berlin: Hochschule der Kunste.

Drescher, S., Burlingame, G. and Fuhrman, A. (1985). Cohesion: An Odyssey in Empirical Understanding. Small Group Behavior, 16, 3-30.

Duffy, F. (1974). Office Design and Organisations: 1. Theoretical Basis. Environment and Planning B, 1, 105-118.

Duffy, F. (1974). Office Design and Organisations: 2. The Testing of a Hypothetical Model. Environment and Planning B, 1, 217-235.

Duffy, F. (1979). Burolandschaft '58-'78. The Architectural Review, CLXV, January, 54-58.

Duffy, F. (1980). Office Building and Organisational Change. In A.D. King (Ed.). Buildings and Society: Essays on the Social Development of the Built Environment. London: Routledge and Kegan Paul.

Elder, J., Turner, G., and Rubin, A. (1979). Post-Occupancy Evaluation: A Case Study of the Evaluation Process. (NBSIR 79-1780). Washington, DC: Center for Building Technology, National Bureau of Standards.

Ellis, P. (1986). Functional, Aesthetic, and Symbolic Aspects of Office Lighting. In J.D. Wineman (Ed.). Behavioral Issues in Office Design. New York: Van Nostrand Reinhold.

- Ellis, P., and Duffy, F. (1982). Building for Better Labour Relations. Management Today, July.
- Etzioni, A. (1961). Complex organisations. New York: Holt, Rinehart and Winston.
- Evans, N.J. and Jarvis, P.A. (1980). Group Cohesion: A Review and Reevaluation. Small Group Behavior, 11, 359-370.
- Ferguson, G.S., and Weisman, G.D. (1986). Alternative Approaches to the Assessment of Employee Satisfaction with the Office Environment. In J.D. Wineman (Ed.). Behavioral Issues in Office Design. New York: Van Nostrand Reinhold.
- Festinger, L., Schachter, S. and Back, K. (1950). Social Pressures in Informal Groups: A Study of Human Factors in Housing. New York: Harper Row.
- Finnegan, M.C. and Solomon, L.Z. (1981). Work Attitudes in Windowed Vs. Windowless Environments. Journal of Social Psychology, 15, 291-292.
- Fisher, R.A. (1949). The Design of Experiments. London: Oliver and Boyd.
- Foa, U.G. (1965). New Developments in Facet Design. Psychological Review, 72, 262-274.
- Forgas, J.P. (1979). Multidimensional Scaling: A Discovery Method in Social Psychology. In G.P. Ginsburg (Ed.). Emerging Strategies in Social Psychological Research. Chichester: Wiley.
- Fox, A. (1974). Beyond Contract: Work, Power, and Trust relations. London: Faber and Faber.
- Friedman, A., Zimring, C., and Zube, E. (Eds.) (1978). Environmental Design Evaluation. New York: Plenum.
- Friedman, J.L. (1975). Crowding and Behavior. Columbia: Jonathan L. Freedman.
- Furnham, A. (Ed.) (1986). Social Behavior in Context. London: Allyn and Bacon.
- Gergen, K.J. (1973). Social Psychology as History. Journal of Personality and Social Psychology, 26, 309-326.
- Gerst, M. and Moos, R. (1972). The Social Ecology of University Student Residences. Journal of Educational Psychology, 63, 513-522.
- Giddens, A. (1987). Social Theory and Modern Sociology. Cambridge: Polity.

- Girogi, A. (1970). Toward Phenomenologically Based Research in Psychology. Journal of Phenomenological Psychology, 1, 75-96.
- Goodey, J., and Matthew, K. (1971). Architects and Information. Research Paper 1. Institute of Advanced Architectural Studies, University of York.
- Goffman, E. (1959). The Presentation of Self in Everyday Life. New York: Doubleday Anchor.
- Goffman, E. (1961). Asylums: Essays on the Social Institution of Mental Patients and Other Inmates. New York: Doubleday Anchor.
- Goffman, E. (1974). Frame Analysis. New York: Harper.
- Goffman, E. (1981). Forms of Talk. Oxford: Blackwell.
- Goodrich, R. (1982). Seven Office Evaluations: A Review. Environment and Behavior, 14, 353-378.
- Goodrich, R. (1986). The Perceived Office: The Office Environment as Experienced by its Users. In J.D. Wineman (Ed.). Behavioral Issues in Office Design. New York: Van Nostrand Reinhold.
- Gould, C.C. (1983). Beyond Causality in the Social Sciences: Reciprocity as a Model of Non-exploitative Social Relations. In R.S. Cohen and M.W. Wartofsky (Eds.), Epistemology, Methodology, and the Social Sciences. Boston: Reidel.
- Grainger, B. (1980). A Study of Concepts in Building Design Process. Unpublished M.Sc. Dissertation: University of Surrey.
- Gratch, H. (1973). Twenty Five Years of Social Research in Israel. Jerusalem: Jerusalem Academic Press.
- Guttman, L. (1950). The Basics of Scalogram Analysis. In S.A. Stouffer (Ed.). Measurement and Prediction. Princeton, NJ: Princeton University Press.
- Guttman, L. (1953). What Lies Ahead for Factor Analysis ? Educational and Psychological Measurement, 18, 497-515.
- Guttman, L. (1954). Anew Approach to Factor Analysis: The Radex. In P.F. Lazarsfeld (Ed.). Mathematical Thinking in the Social Sciences. New York: Free Press.
- Guttman, L. (1954a). An Outline of Some New Methodology for Social Research. Public Opinion Quarterly, 18, 394-404.

- Guttman, L. (1981). What is Not What in Statistics. In I. Borg (Ed.). Multidimensional Data Representations: When and Why. Ann Arbor: Mathesis.
- Guttman, L. (1981a). What is Not What in Theory Construction. In I. Borg (Ed.). Multidimensional Data Representations: When and Why. Ann Arbor: Mathesis.
- Guttman, L. and Guttman, R. (1976). The Theory of Generality and Specificity During Mold Stress. Behavioral Science, 21, 469-477.
- Hanson, A. (1978). Effects of a Move to an Open Landscape Office. Dissertation Abstracts International, 39, 3046B.
- Harre, R. (1979). Social Being. Oxford: Blackwell.
- Harre, R. and Secord, P.F. (1972). The Explanation of Social Behaviour. Oxford: Blackwell.
- Hedge, A. (1980). Office Design: User Reactions to Open Plan. In R. Thorne and S. Arden (Eds.). People and the Man-Made Environment: Building Urban and Landscape Design Related to Human Behaviour. Sydney: University of Sydney.
- Hedge, A. (1982). The Open-Plan Office: A Systematic Investigation of Employee Reactions to their Environment. Environment and Behavior, 14, 519-542.
- Hedge, A. (1984). Ill Health Among Office Workers: An Examination of the Relationship Between Office Design and Employee Well-being. In E. Grandjean (Ed.). Ergonomics and Health in Modern Offices. London: Taylor and Francis.
- Hedge, A. (1984a). Evidence of a Relationship Between Office Design and Self-Report of Ill Health Among Office Workers in the U.K. Journal of Architectural and Planning Research, 1, 163-174.
- Hedge, A. (1986). Open versus Enclosed Workspaces: The Impact of Design to Employee Reactions to Their Offices. In J.D. Wineman (Ed.). Behavioral Issues in Office Design. New York: Van Nostrand Reinhold.
- Hedge, A. (1987). Office Hazards: An Annotated Bibliography. Ergonomics, 30, 733-772.
- Heidmats, M. and Nitt, T. (1982). An Activity Analysis of Office Environments: Reality and Preferences. Paper presented at 20th International Congress of Applied Psychology. International Association of Applied Psychology. Edinburgh, July 25-31.

Hensley, W.E. (1982). Professor Proxemics: Personality and Job Demands as Factors of Faculty Office Arrangement. Environment and Behavior, 14, 581-591.

Herzberg, F. (1966). Work and the Nature of Man. Cleveland: World Publishing,.

Holahan, C.J. (1986). Environmental Psychology. Annual Review of Psychology, 37, 381-407.

Homans, G.C. (1950). The Human Group. New York: Harcourt, Brace and World.

Hopf, H.A. (1931). Physical Factors. In W.J. Donald (Ed.). Handbook of Business Administration. New York: McGraw-Hill.

van Hoogdalem, H. (1984). Comparative Floorplan Analysis as a Means to Develop Spatial Organisational Concepts in the Briefing Stage of the Design Process. In M. Krampen (Ed.) Environment and Human Action: Proceedings, 8th International Conference of the IAPS. West Berlin: Hochschule der Kunste.

van Hoogdalem, H., van der Voordt, T.J.M. and van Wegen, B.R. (1985). Comparative Floorplan-Analysis as a Means to Develop Design Guidelines. Journal of Environmental Psychology, 5, 153-179.

Huber, J., Sixsmith, J. and Sixsmith, A. (1984). The Implications of Action as a Unit of Analysis in Environmental Psychology. Paper presented at the conference, Theory of Action: A New Perspective in Environmental Psychology. University of Surrey, May 11-12.

Israel, J. (1972). Stipulation and Construction in the Social Sciences. In J. Israel and H. Tajfel (Eds.). The Context of Social Psychology. London: Academic Press.

Israel, J. and Tajfel, M. (1972). The Context of Social Psychology: A Critical Assessment. London: Academic Press.

Ittelson, W.H. (1973). Environmental Perception and Contemporary Perceptual Theory. In W.H. Ittelson (Ed.). Environment and Cognition. New York: Seminar Press.

Ittelson, W., Proshansky, H. and Rivlin, L. (1970). The Environmental Psychology of the Psychiatric Ward. In H. Proshansky, W. Ittelson, and L. Rivlin (Eds.). Environmental Psychology: Man and His Physical Setting. New York: Holt, Rinehart and Winston.

- Jockusch, P. (1982). Towards a Redefinition of the Standards of the Quality of Working Life. Paper presented at 20th International Congress of Applied Psychology, International Association of Applied Psychology. Edinburgh, July 25-31.
- Johannesson, R.E. (1973). Some Problems in the Measurement of Organisational Climate. Organizational Behavior and Human Performance, 10, 118-144.
- Joiner, D. (1971). Social Ritual and Architectural Space. Architectural Research and Teaching, 1, 11-22.
- Justa, F.C., and Golan, M.B. (1977). Office Design: Is Privacy Still a Problem ? Journal of Architectural Research, 6, 5-12.
- Kanungo, R. (1979). The Concepts of Alienation and Involvement Revisited. Psychological Bulletin, 86, 119-138.
- Kanungo, R. (1981). Work Alienation and Involvement: problems and Prospects. International Review of Applied Psychology, 30, 1-15.
- Kanungo, R. (1982). Measurement of Job and Work Involvement. Journal of Applied Psychology, 67, 341-349.
- Kaplan, R. (1978). Patterns of Environmental Preference. In K.H. Craik and G.E. McKechnie (Eds.). Personality and the Environment. London: Sage.
- Kaplan, S. (1983). A Model of Person-Environment Compatibility. Environment and Behavior, 15, 311-332.
- Kast, F.E., and Rosenzweig, J.E. (1979). Organisation and Management. New York: McGraw-Hill.
- Katz, D., and Kahn, R.L. (1978). The Social Psychology of Organizations. 2nd Edition. Chichester: Wiley.
- Katz, R.L. (1981). Acoustical Design. Navy Civil Engineering, 21, 9-12.
- Kelly, G.A. (1955). The Psychology of Personal Constructs: Volume 1. New York: Norton.
- Kenny, C. (1983). A Multivariate Model of Hospital Ward Evaluation. Unpublished Ph.D. Dissertation: University of Surrey.
- Kenny, C. and Canter, D.V. (1981). A Facet Structure for Nurses' Evaluations of Ward Designs. Journal of Occupational Psychology, 54, 93-108.

Keys, C. and Wener, R. (1980). Organizational Intervention Issues: A Four-Phase Approach to Post-Occupancy Evaluation. Environment and Behavior, 12, 533-540.

Kimura, M. (1986). Comparison of Experiences and Uses of Living Rooms in Guildford and Oyama. Unpublished Ph.D. Dissertation: University of Surrey.

Kleeman, W.B. (1986). The Office of the Future. In J.D. Wineman (Ed.). Behavioral Issue in Office Design. New York: Van Nostrand Reinhold.

Konar, E. and Sundstrom, E. (1986). Status Demarcation and Office Design. In J.D. Wineman (Ed.). Behavioral Issue in Office Design. New York: Van Nostrand Reinhold.

Kruse, L. and Graumann, C.F. (1987). Environmental Psychology in Germany. In D. Stokols and I. Altman (Eds.). Handbook of Environmental Psychology: Volume 2. Chichester: Wiley.

Kuhn, T.S. (1970). The Structure of Scientific Revolutions (2nd Edition). Chicago: Chicago University Press.

Langdon, J.B. (1963). The Design of Mechanized Offices. A User Study. Architects Journal, 137, 943-947.

Langdon, J.B. (1966). The Social and Physical Environment: A Social Scientist's View. R.I.B.A. Journal, 73, 460-464.

Langdon, J. (1966a). Modern Offices. A User Survey. London: H.M.S.O.

Langdon, F.J. and Keighley, E.C. (1965). User Research in Office Design. Architects Journal, 141, 333-359.

Lee, T.R. (1954). A Study of Neighbourhood. Unpublished Ph.D. Dissertation, University of Cambridge.

Lee, T.R. (1968). Urban Neighbourhood as a Socio-Spatial Schema. Human Relations, 21, 241-267.

Lee, T.R. (1970). Do We Need a Theory ? In D. Canter (Ed.). Architectural Psychology. Royal Institute of British Architects.

Lee, T.R. (1976). Psychology and the Environment. London: Methuen.

Lera, S. (1982). At the Point of Decision. Building, (May 28), 47-48.

Lera, S., Cooper, I., and Powell, J. (1984). Designers and Information. In J. Powell, I. Cooper, and S. Lera (Eds.). Designing for Building Utilisation. London: SPON.

- Levine, M. (1974). Scientific Method and the Adversary Model. American Psychologist, 29, 661-667.
- Levy, S. (1976). Use of the Mapping Sentence for Coordinating Theory and Research: A Cross Cultural Example. Quality and Quantity, 10, 117-125.
- Levy, S. (1985). Lawful Roles of Facets in Social Theories. In D. Canter (Ed.). Facet Theory: Approaches to Social Research. New York: Springer-Verlag.
- Levy, S. (1986). The Structure of Social Values. Jerusalem: The Israel Institute of Applied Social Research, Publication No. SL/917/E.
- Levy-Leboyer, C. (1978). Etude Psychologique due Cadre de Vie. Paris: Editions du Centre National de la Reserche Scientifique.
- Lewin, K. (1948). Resolving Social Conflicts. New York: Harper and Row.
- Lewin, K. (1951). Field Theory in Social Science. New York: Harper and Row.
- Libo, L.M. (1953). Measuring Group Cohesiveness. Ann Arbor: University of Mitchigan Research Centre for Group Dynamics.
- Lockwood, D. (1958). The Black-Coated Worker. London: Allen and Unwin.
- Lodahl, T.M. (1965). The Definition and Measurement of Job Involvement. Journal of Applied Psychology, 49, 24-33.
- Lorenzen, H.J. and Jaeger, D. (1968). The Office Landscape: A Systems Concept. Contract, 9, 164-173.
- Louis Harris and Associates Inc. (1978) The Steelcase National Study of Office Environments: Do They Work ? Grand Rapids, MI: Steelcase.
- Louis Harris and Associates Inc. (1980). The Steelcase National Study of Office Environments No. II: Comfort and Productivity in the Office of the 80s. Grand Rapids, MI: Steelcase.
- Luthans, F., McCaul, H.S. and Dodd, N.G. (1985). Organisational Commitment: A Comparison of American, Japanese and Korean Employees. Academy of Management Journal, 28, 213-219.
- Mackinder, M., and Marvin, H. (1982). Design Decision Making in Architectural Practice. Information Paper 11/82, Building Research Establishment.

- Makower, J. (1981). Office Hazards: How Your Job Can Make You Sick. New York: Tilden.
- Manning, P. (Ed.) (1965). Office Design: A Study of Environment. Liverpool: Pilkington Research Unit: University of Liverpool.
- Marans, R.W. and Rodgers, W. (1975). Towards an Understanding of Community Satisfaction. In A. Hawley and V. Rock (Eds.). Metropolitan American in Contemporary Perspectives. New York: Halsted Press.
- Marans, R.W. and Spreckelmeyer, K.F. (1982). Evaluating Open and Conventional Office Design. Environment and Behavior, 14, 333-351.
- Marans, R.W. and Spreckelmeyer, K.F. (1986). A Conceptual Model for Evaluating Work Environments. In J.D. Wineman (Ed.). Behavioral Issue in Office Design. New York: Van Nostrand Reinhold.
- Marcus, T.A. (1967). The Function of Windows: A Reappraisal. Building Science, 2, 97-121.
- Marcus, T.A. (1969). Design Research: Co-operations, Not Conflict. CONRAD, July 1. 35-38.
- Maslow, A.H. (1943). A Theory of Human Motivation. Psychological Review, 50, 370-396.
- McElroy, J.C. and Morrow, P.C. (1982). Desk Placement in the Faculty Office. Psychological Reports, 50, 675-678.
- McGrath, J.E. (1967). A Multifacet Approach to Classification of Individual, Group, and Organisation Concepts. In B.P. Indik and K.F. Berrien (Eds.). People, Groups, and Organisations. New York: Columbia University.
- McGuire, W.S. (1973). The Yin and Yang of Progress in Social Psychology: Seven Koan. Journal of Personality and Social Psychology, 26, 446-456.
- McKechnie, G. (1974). Manual for the Environmental Response Inventory (ERI). Port Alto, CA: Consulting Psychologists Press.
- Mercer, A. (1979). Office Environments and Clerical Behaviour. Environment and Planning B, 6, 29-39.
- Moos, R. (1974). Evaluating Treatment Environments: A Social Ecology Approach. New York: Wiley,

Moos, R. (1968). The Assessment of the Social Climates of Correctional Institutions. Journal of Research in Crime and Delinquency, 5, 174-188.

Murray, H. (1938). Explorations in Personality. Oxford: Oxford University Press.

Narayanan, V.K., and Nath, R. (1984). The Influence of Group Cohesion on Some Changes Induced by Flexitime: A Quasi-Experiment. Journal of Applied Behavioral Science, 20, 265-276.

Nemecek, J. and Granjean, E. (1973). Results of an Ergonomic Investigation of Large-Space Offices. Human Factors, 15, 111-124.

Nitt, T., Heidmets, M. and Kruusvall, J. (1987). Environmental Psychology in the Soviet Union. In D. Stokols and I. Altman (Eds.). Handbook of Environmental Psychology: Volume 2. Chichester: Wiley.

Nunnally, J. (1967). Psychometric Theory. London: McGraw-Hill.

Oldham, G. and Brass, D. (1979). Employee Reactions to an Open-Plan Office: A Naturally Occurring Quasi Experiment. Administrative Science Quarterly, 24, 267-284.

Oppenheim, A.N. (1966). Questionnaire Design and Attitude Measurement. London: Heinemann.

Osrin, N. and Mauer, K.F. (1984). A Standardised Office Facilities Questionnaire. Paper present at Environment and Human Action 8th International Conference of the International Association for the Study of People and their Physical Settings. West-Berlin, July 25-29.

Payne, R.L., Fineman, S. and Wall, T.D. (1976). Organisational Climate and Job Satisfaction: A Conceptual Synthesis. Organisational Behavior and Human Performance, 16, 45-62.

Payne R.L. and Pugh, D. (1978). Organisational as Psychological Environments. In P.B. Warr (Ed.). Psychology at Work (2nd Edition). Harmondsworth: Penguin.

Peled, A. (1974). The Spatiality of Situations. Unpublished Ph.D. Dissertation: University of Strathclyde.

Peled, A. (1976). The Place as a Metaphoric Body. Technion, Haifa. Israel.

Peterson, G. (1976). Perceived Quality of Scenic and Recreational Environments Research Needs and Priorities. In K. Craik and E. Zube (Eds.). Perceiving Environmental Quality: Research and Applications. London: Plenum.

Pile, J. (1976). Interiors 3rd Book of Offices. New York: Watson-Guptill.

Porter, L.W. and Lawler, E.E. (1968). Managerial Attitudes and Performance. Homewood: Irwin-Dorsey.

Porter, L., Lawler, E., and Hackman, J. (1975). Behavior in Organisations. California: McGraw-Hill.

Porter, L.W., Steers, R.M., Mowday, R.T. and Boulian, P.V. (1974). Organisational Commitment, Job Satisfaction, and Turnover Among Psychiatric Technicians. Journal of Applied Psychology, 59, 603-609.

Rabinowitz, S. (1981). Towards a Developmental Model of Job Involvement. International Review of Applied Psychology, 30, 31-50.

Rabinowitz, S. and Hall, D.T. (1977). Organisational Research on Job Involvement. Psychological Bulletin, 84, 265-288.

Rapoport, A. (1977). Human Aspects of Urban Form. Oxford: Pergamon.

Richards, C.B., and Dobyns, H.F. (1957). Topography and Culture: The Case of the Changing Cage. Human Organisation, 16, 16-20

Robbins, S.P. (1986). Organizational Behavior: Concepts, Controversies, and Applications. (3rd Edition). London: Prentice-Hall.

Robertson, A.S., and Burge, P.S. (1985). Building Sickness. The Practitioner, 229, 531-534.

Roethlisberger, F.J., and Dickson, W.J. (1949). Management and the Worker. Cambridge, MA: Harvard University Press.

Royal Institute of British Architects. (1965). Management Handbook. London: R.I.B.A.

Runkel, P.J and McGrath, J.E. (1972). Research on Human Behavior: A Systematic Guide to Method. New York: Hold Rinehart and Winston.

Russell, J.A., and Lanius, U.F. (1986). Adaption Level and the Affective Appraisal of Environments. Journal of Environmental Psychology, 4, 119-135.

- Russell, J.A., and Pratt, G. (1980). A Description of the Affective Quality Attributed to Environments. Journal of Personality and Social Psychology, 38, 311-322.
- Russell, J.A., and Snodgrass, J. (1987). Emotion and the Environment. In D. Stokols, and I. Altman (Eds.). Handbook of Environmental Psychology, Vol. 1. New York: Wiley.
- Russell, J.A., and Ward, L.M. (1982). Environmental Psychology. Annual Review of Psychology, 33, 651-688.
- Saleh, S.D. (1981). A Structural View of Job Involvement and its Differentiation from Satisfaction and Motivation. International Review of Applied Psychology, 30, 17-29.
- Saleh, S.D. and Hosek, J. (1976). Job Involvement: Concepts and Measurements. Academy of Management Journal, 19, 213-224.
- Sanui, J., and Inui, M. (1984). Towards a Phenomenological Model of Urban Housing Evaluation. In M. Krampen (Ed.) Environment and Human Action: Proceedings, 8th International Conference of the International Association for the Study of People and their Physical Settings. West-Berlin: Hochschule der Künste.
- Schein, E.H. (1980). Organisational Psychology. 3rd Edition. Englewood Cliffs, N.J.: Prentice-Hall.
- Schriesheim, J.F. (1980). The Social Context of Leader-Subordinate Relations: An Investigation of the Effects of Group Cohesiveness. Journal of Applied Psychology, 65, 183-194.
- Schulze, J.W. (1919). Office Administration. New York: McGraw, Hill.
- Seashore, S.E. (1954). Group Cohesiveness in the Industrial Work Group. Ann Arbor: University of Michigan.
- Sharma, R.A. (1982). Organisational Theory and Behaviour. New Delhi: Tata McGraw-Hill.
- Shattock, L (1987). Models of Patient Care and the Design and Evaluation of Hospital Wards. Unpublished M.Sc. Dissertation: University of Surrey.
- Shepard, R.N. (1974). Representation of Structure in Similarity Data: Problems and Prospects. Psychometrika, 39, 373-421.
- Shepard, R., Romney, A., and Nerlove, S. Multidimensional Scaling: Theory and Applications: Vol 1: Theory. San Francisco: Seminar Press.

- Shibley, R.G. (1985). Building Evaluation in the Main Stream. Environment and Behavior, 17, 7-24.
- Shye, S. (Ed.) (1978). Theory Construction and Data Analysis in the Behavioral Sciences. San Francisco: Jossey Bass.
- Shye, S. (1978a). On the Search for Laws in the Behavioral Sciences. In S. Shye (Ed.). Theory Construction and Data Analysis in the Behavioral Sciences. San Francisco: Jossey Bass.
- Shye, S. (1978b). Partial Order Scalogram Analysis. In S. Shye (Ed.). Theory Construction and Data Analysis in the Behavioral Sciences. San Francisco: Jossey Bass.
- Shye, S. (1978c). The Mapping Sentence Technique for Research Design and Content Analysis. In S. Shye, (Ed.) (1978). Theory Construction and Data Analysis in the Behavioral Sciences. San Francisco: Jossey Bass.
- Shye, S (1985). Partial-Order Scalogram Analysis by Base Coordinates and Lattice Mapping of the Items by Their Scalogram Roles. In D. Canter (Ed.). Facet Theory: Approaches to Social Research. New York: Springer-Verlag.
- Sime, J.D. (1985). Designing for People of Ball-bearings ? Design Studies, 6, 163-168.
- Sime, J.D. (1986). Creating Places or Designing Spaces ? Journal of Environmental Psychology, 6, 49-63.
- Skemp, R.R. (1979). Intelligence, Learning and Action. Chichester: Wiley.
- Spearman, C. (1927). The Abilities of Man. New York: Macmillan.
- Starbuck, J.C. (1976). Open-Plan Offices (office landscaping): A Chronological Bibliography of Magazine Articles in English. Council of Planning Librarians, Exchange Bibliography 1119, 1-6.
- Steele, F. (1986). The Dynamics of Power and Influence in Workplace Design and Management. In J.D. Wineman (Ed.). Behavioral Issues in Office Design. New York: Van Nostrand Reinhold.
- Steele, F. and Jenks, S. (1977). The Feeling of the Work Place: Understanding and Improving Organisational Climate. London: Addison-Wesley.
- Stern, G.G. (1970) People in Context: Measuring Person-Environment Congruence in Education and Industry. New York: Wiley.

- Steers, R.M. (1977). Antecedents and Consequences of Organisational Commitment. Administrative Science Quarterly, 22, 46-56.
- Stogdill, R.M. (1972). Group Productivity, Drive and Cohesiveness. Organizational Behavior and Human Performance, 8, 26-43.
- Stokols, D. (1978). Environmental Psychology. Annual Review of Psychology, 29, 253-295.
- Stokols, D. and Altman, I. (Eds.) (1987). Handbook of Environmental Psychology: Volume 1. Chichester: Wiley.
- Stokols, D. and Shumaker, S.A. (1981). People in Place: A Transactional View of Settings. In J.H. Harvey (Ed.). Cognition Social Behavior and the Environment. Hillsdale, NJ: Lawrence Erlbaum.
- Strauss, A. (1964). Psychiatric Institutions and Ideologies. New York: Free Press.
- Suchman, E. (1969). Evaluating Educational Programs. The Urban Review, 3, 15-17.
- Sundstrom, E. (1987). Work Environments: Office and Factories. In D. Stokols and I. Altman (Eds.). Handbook of Environmental Psychology: Volume 1. Chichester: Wiley.
- Sundstrom, E. (1986). Work Places: The Psychology of The Physical Environment in Offices and Factories. Cambridge: Cambridge University Press.
- Sundstrom, E. (1986a). Privacy in the Office. In J.D. Wineman (Ed.). Behavioral Issues in Office Design. New York: Van Nostrand Reinhold.
- Sundstrom, E., Herbert, R. and Brown, D. (1982). Privacy and Communication in an Open-Plan Office: A Case Study. Environment and Behavior, 14, 379-392.
- Sundstrom, E., Town, J., Brown, D., Forman, A. and McGee, C. (1982). Physical Enclosure, Type of Job and Privacy in the Office. Environment and Behavior, 14, 543-559.
- Szilagyi, A.D., and Holland, W.E. (1980). Changes in Social Density: Relationships With Functional Interaction and Perceptions of Job Characteristics, Role Stress, and Work Satisfaction. Journal of Applied Psychology, 65, 28-33.
- Taylor, F.W. (1911). Scientific Management Comprising Shop Management, the Principles of Scientific Management, Testimony Before the Special House Committee. New York: Harper and Row.

Thurstone, L.L. (1951). Psychological Implications of Factor Analysis. In M.H. Marx (Ed.). Psychological Theory. New York: Macmillan.

Trist, E., Higgins, G., Murray, H., and Pollack, A. (1963). Organisational Choice. London: Tavistock.

Trites, D., Galbraith, F., Sturdavant, M. and Leckwort, J. (1970). The Influence of Nursing-Unit Design on the Activities and Subjective Feelings of Nursing Personnel. Environment and Behavior, 2, 303-334.

Turiel, I., Hollowell, C.D., Miksch, R.R., Rudy, J.V., and Young, R.A. (1983). The Effects of Reduced Ventilation on Indoor Air Quality in an Office Building. Atmospheric Environment, 17, 51-64.

Tziner, A. (1982). Differential Effects of Group Cohesiveness Types: A Clarifying Overview. Social Behavior and Personality, 10, 227-239.

van der Ven, A.H.G.S. (1980). Introduction to Scaling. Chichester: Wiley.

Vernon, H.M. (1919). The Influence of Hours of Work and of Ventilation and of Output in Tinplate Manufacture. Industrial Fatigue Research Board, Report No. 1, London: HMSO.

Vilmar, F. (1973). Menschenwurde in Betrieb. Hamburg: Rowolt.

Weber, M. (1947). The Theory of Social and Economic Organisation. (translated by A.M. Henderson and T. Parsons). New York: The Free Press.

Wells, B.W.P. (1965). The Psycho-Social Influence of Building Environment: Sociometric Findings in Large and Small Office Spaces. Building Science, 1, 153-165.

Wener, R. (1982). Standardizing of Testing in Environmental Evaluations. In P. Bart, A. Chen and G. Francescato (Eds.). Knowledge for Design. Proceedings of the 13th International Conference of the Environmental Design Research Association. (April 17-20). Maryland: EDRA.

White, S. and Mitchell, T. (1976). Organization Development: A Review of Research Content and Research Design. Academy of Management Review, 1, 57-73.

Wicker, A.W. (1979). An Introduction to Ecological Psychology. Monterey, CA: Books/Cole.

Wilson, M.A. and Canter, D.V. (1986). Initial Reactions to Architecture: A Lawful Facet ? Paper presented at 21st International Congress of Applied Psychology, Jerusalem (July 13-18): International Association of Applied Psychology.

Wilson, S. and Hedge, A. (1987). The Office Environment Survey: A Study of Building Sickness. London: Building Use Studies Ltd.

Wiggins, J.S. (1973). Personality and Prediction: Principles of Personality Assessment. London: Addison-Wesley.

Wiggins, J.S. (1979). A Psychological Taxonomy of Trait-Descriptive Terms: The Interpersonal Domain. Journal of Personality and Social Psychology, 37, 395-412.

Wineman, J.D. (1982). Office Design and Evaluation: An Overview. Environment and Behavior, 14, 271-298.

Wineman, J.D. (Ed.) (1986). Behavioral Issues in Office Design. New York: Van Nostrand Reinhold.

Wineman, J.D. (1986a). Current Issues and Future Directions. In J.D. Wineman (Ed.). Behavioural Issues in Office Design. New York: Van Nostrand Reinhold.

Wohlwill, J.F. (1976). Environmental Aesthetics: The Environment as a Source of Affect. In I. Altman and J. Wohlwill (Eds.). Human Behavior: Theory and Research 1. New York: Plenum.

Yancey, W.L. (1972). Architecture, Interaction and Social Control: The Case of a Large Scale Housing Project. In J.F. Wohlwill and D.H. Carson (Eds.). Environment and the Social Sciences: Perspectives and Applications. Washington, DC: American Psychological Association.

Young, D. (1978). The Interpretation of Form: Meaning and Ambiguities in Contemporary Architecture. Unpublished M.Sc. Dissertation, University of Surrey.

Yuan, S.M. and Bennett, C.A. (1980). The Acceptability of HID Task-Ambient Lighting for Offices. Lighting and Design Application, 10, 50-56.

Yukelson, D., and Weinberg, R. and Jackson, A. (1984). A Multidimensional Group Cohesion Instrument for Intercollegiate Basketball Teams. Journal of Sport Psychology, 6, 103-117.

Zalesny, M.D., Farace, R.V. and Kurchner-Hawkins, R. (1985). Determinants of Employee Work Perceptions and Attitudes: Perceived Work Environment and Organizational Level. Environment and Behavior, 17, 567-592.

Ziebland, S. (1986). Radical Environmentalism and the Petite Bourgeoisie: A Survey of Whole and Health Food Shop Proprietors. Unpublished M.Sc. Dissertation: University of Surrey.

Zimring, C. and Reizenstein, S. (1980). Post-Occupancy Evaluation: an Overview. Environment and Behavior, 12, 429-450.

Zimring, C. and Wener, R. (1985). Evaluating Evaluation. Environment and Behavior, 17, 97-117.

Zweigenhaft, R.L. (1976). Personal Space in the Faculty Office: Desk Placement and the Student-Faculty Interaction. Journal of Applied Psychology, 61, 529-532.