

INNOVATION IN ELDERLY CARE ORGANIZATIONS

PROCESS AND ATTITUDES

VOLUME ONE OF TWO

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## DECLARATION

The following publications have arisen from work contained in this thesis:

West, M.A. and N. KING, (1987). "Managing Innovation", In T. Megaw (Ed.) *Ergonomics Working for Society*, Basingstoke, Hants: Taylor and Francis.

KING, N. and M.A. West, (1987). "Experiences of innovation at work", *Journal of Managerial Psychology*, Vol.2, No.3. pp. 6-10

KING, N. (1990) "Innovation at Work: The Research Literature", In M.A. West and J. Farr (Eds) *Innovation and Creativity at Work: Psychological Approaches*, New York: John Wiley.

KING, N. and N. Anderson, (1990). "Innovation in Working Groups", In M.A. West and J. Farr (Eds) *Innovation and Creativity at Work: Psychological Approaches*, New York: John Wiley.

## SUMMARY

The importance of innovation as an academic research field and for society in general is stated, and existing definitions of the concept discussed. A new definition is proposed emphasizing the social nature of innovation and distinguishing it from creativity and non-innovative change. The innovation research literature is reviewed in relation to the two main approaches: 'antecedent factors' and 'process'. Conclusions from these reviews, and from a preliminary study of experiences of innovation, guide the design of the main research program. Three field studies are described. The first, carried out in two Homes for the Elderly, examines the sequence of the innovation process, influences on it, and staff attitudes towards it. Data are collected through semi-structured interviews, incorporating verbally-administered questionnaires. Findings regarding the effect of involvement in the innovation process upon attitudes towards innovations are followed up in the second study, again in two Homes for the Elderly. A longitudinal questionnaire design is used. The third study is in a psycho-geriatric ward, using a participant observation methodology to follow the development of innovations as they occur. An overview of all the findings is presented in the final discussion chapter. Three areas are highlighted. (1) Attitudes to innovation: the primary importance of involvement in change processes is emphasized. (2) Influences on the innovation process: differences in perceptions according to phase of the process, and between staff groups, are interpreted in terms of individual and group role in the process. Possibilities of attributional bias are also raised. (3) The development of the process: the problems in identifying discrete stages are discussed and variations in the process for different innovation types are described. Building on these findings, especially in the third area, a general model of the innovation process is proposed. Its implications for future research are outlined.

## CHAPTER ONE: INTRODUCTION AND ISSUES OF DEFINITION

"The importance of new ideas cannot be understated. Ideas and their manifestations as practices or products are at the core of social change." (Zaltman, Duncan and Holbek, 1973; p.6).

### 1. INTRODUCTION: USAGE OF THE TERM 'INNOVATION'

Consider the following four extracts from job advertisements, all taken from a single issue of a national newspaper; all emphasize innovation, but there is considerable variation in how the term is used.

"An interesting opportunity for a well educated *innovative* person to join the Sales Promotion team of an internationally renowned publisher of scientific information services." [Sales Promotion Assistant, Derwent Publications]

"Brentwood Council is one of the most *innovative* and progressive local authorities, with many 'firsts' to its credit...we are one of the few authorities in Britain which has made great strides towards introducing a totally 'paperless office' by careful use of computer technology; the first to appoint a Neighbourhood Watch Co-ordinator to help the Police combat crime; the first to produce and distribute door-to-door a crime prevention manual; and have been instrumental in retaining the services of our local hospital through a bold and imaginative scheme of funding." [Various posts, Brentwood District Council]

"Our success is the best illustration of our *innovative* philosophy to market high quality products at low cost." [Graduate Marketing Trainees, Conoco]

"Central to our success has been the introduction of *innovative* employee communications...and that's where you come in...Of

graduate calibre you will be an *innovator* with an up-to-date knowledge of the latest employee communications techniques. You will have a proven record of taking concepts through from inception to completion and have the ability to "sell" your ideas to line management." [Employee Communications Manager, Peugeot]

[*"The Guardian"*: Saturday, June 10th; present author's italics]

These extracts illustrate the four main ways in which the term innovation is used, both in society generally and by social scientists working in the area: innovation as a characteristic of the individual, as a characteristic of the organization, as a product, and as a process. The distinctions between the uses are clarified below.

#### **Innovation as a characteristic of the individual**

This usage of the term assumes innovation to be a personal characteristic, which will manifest itself in the production of new ideas appropriate to the area concerned. Thus in the above advertisements, Derwent Publications require an "innovative person" to develop Desktop Publishing activities, while Peugeot ask for "an innovator" to introduce new ideas in employee communications. Used in this way, the term innovation is effectively synonymous with creativity. (A later section of this chapter examines the creativity - innovation distinction in some depth).

#### **Innovation as a characteristic of the organization**

Here, innovation is taken to be an attribute of the organization, either as a whole (e.g. Brentwood District Council's description of themselves as an "innovative" local authority) or in a particular aspect of its activities (e.g. Conoco's "innovative" philosophy regarding marketing). This usage is very close to Nicholson's (1990), when he discusses research into "innovation as climate".

### **Innovation as a product**

The term is used in this way in the Peugeot advertisement, when they describe their employee communications system as "innovative". It should be noted that "product" is meant to be understood here in its broadest sense - as anything having an observable, individual existence, not just as a physical manufactured object. A new nursing shift system, a new service for the public in a museum, or a major re-organization of a company's structure would all be considered innovations under this usage of the term.

### **Innovation as a process**

The final usage of the term innovation is to refer to the process by which a change is introduced into a group, organization, culture or population. This is implied in the Peugeot advertisement where it talks about "taking concepts through from inception to completion...", and on to acceptance by the relevant managers. Innovation is the sequence of events of which this process is constituted, rather than the product passing through the process or a characteristic of either the individual(s) guiding it or the organization in which it occurs.

It may be seen that although these four usages are distinct from each other they are not necessarily opposed to one another. In fact, the different usages are often used consecutively in the same context, implying a high level of identity between them (Nicholson, 1989). Thus in the Brentwood District Council advertisement, the Council describes itself as "innovative" (i.e. characteristic of the organization) but justifies this claim with examples of actual innovations it has introduced (i.e. products). Similarly the Peugeot advertisement asks for "an innovator" (i.e. characteristic of the individual) but illustrates what abilities are expected of such a person in innovation process terms: initiation; completion; 'selling' ideas.

The task for innovation researchers is not to judge whether particular ways of using the term are 'right' or 'wrong'; rather it is to attempt to define the range of phenomena - from those commonly described as

"innovations" or "innovative" - which should be the subject of social scientific enquiry. A vital part of this boundary-drawing process must be a consideration of the purpose of innovation research. This is presented in the following section, leading into a brief review of existing definitions of innovation in the literature, at the end of which the definition to be used in this thesis is stated. The final part of the chapter looks at distinctions between the concepts of innovation, creativity, and social and organizational change.

## 2. WHY STUDY INNOVATION?

It is unquestionably the case that innovation has become something of a buzz-word, especially amongst managers, politicians, and the writers of popular texts on business. This has been matched in the academic world by a great expansion of interest in the subject amongst social scientists over the last two decades. Published papers specifically on innovation certainly number many thousand, quite possibly tens of thousands, and researchers from many different disciplines have turned their attention to the area; occupational and social psychologists, organizational behaviourists, sociologists, management scientists, and so on.

To a considerable extent, academic interest in innovation is a response to its perceived importance in the eyes of decision-makers and opinion leaders in the public and private sectors, which in turn can be attributed to the political and economic climate. The most recent stimulus has been the focusing of attention on 1992 and the single European market; politicians and others are frequently to be heard exhorting organizations to respond to this challenge 'innovatively'. A climate has been created whereby innovation has become a 'fashionable' topic of research, with the practical benefit of increasing the availability of funding for innovation research.

The political and economic context within which innovation research is carried out should not be disregarded, as it inevitably has a strong

influence on the level and type of research. However, it would be overly cynical to state that innovation research has grown in popularity simply because of fashion and financial renumeration. Three main sets of motivation for innovation research may be determined: organizational effectiveness; humanistic reasons; and its position within the whole field of occupational and organizational research.

#### **Organizational effectiveness**

A frequently stated aim of innovation research is to improve some aspect(s) of organizational effectiveness, often focusing on the need of organizations to adapt to changes in their environments. At its narrowest this can simply mean financial profit, but effectiveness can also be interpreted more broadly to include issues such as communications and standards of client service.

#### **Humanistic reasons**

There are reasons which may loosely be termed humanistic for studying innovation. For the individual, innovation can be seen as a means of empowerment - of enabling him or her to assert control over the work environment, and thereby increase psychological well-being (Nicholson and West, 1987; Bunce and West, 1989). Innovation may also be necessary to overcome institutionalised social problems (West and Farr, 1989); the desegregation of American schools in the 1960s is an example of an attempt to tackle social injustice with innovative organizational change.

#### **Position within occupational/organizational research**

Innovation is a potentially rewarding research area because it occupies an important place in the scientific study of behaviour in organizations, crossing disciplinary boundaries and including work at all levels of analysis (cultural, organizational, group and individual). As Staw (1984) states;

"In my view, probably the best current candidate for progress in integrating micro and macro research is the examination of

organizational innovation...Although multilevel research is fraught with methodological and conceptual difficulties, it is, I would argue, where the future of the field lies." (p.659).

Most of the existing innovation research has been motivated by the first of the above sets of reasons - a concern with improving organizational effectiveness. This has sometimes had detrimental consequences for the development of the field. In particular, innovation is often examined solely from the perspective of those controlling it, identifying what is good for innovation with what is good for management. There is also a tendency for the assumption to be made that improving effectiveness is entirely a matter of increasing the overall level of innovation - Rogers (1983) calls this "pro-innovation bias" - an assumption that does not stand up to any degree of questioning (see Kimberly, 1981). Research motivated by humanistic reasons may also suffer from this bias, if it assumes *a priori* that innovation always leads to improved well-being.

The position this thesis takes is that innovation is a subject worthy of research because it is a ubiquitous phenomenon that can have significant positive *and* negative effects at all levels - for the individual, the work-group, the organization and the wider society. Innovation is viewed as intrinsically social - it occurs within a social context such as a work-group, organization, or a specific population - and therefore needs to be distinguished from the purely mental process of creativity. Research should take into account the perspectives of all those involved in an innovation attempt, not just those controlling it, and must avoid the assumption that innovation is an unqualified good in all circumstances.

### 3. DEFINING INNOVATION

Since the term innovation is used in a variety of ways to describe a wide range of activities, products and attributes, to devise a

definition which would receive consensual agreement is an impossible task. As stated at the end of section 1 of this chapter, the aim of definition should rather be to set some kind of boundary to the range of phenomena that are to be studied. The danger is that the precise location of the boundary may appear arbitrary. If the researcher allows his definition to be guided by an explicit statement of his or her overall objectives and orientation to the field, and if he or she pays close attention to the implications of including in (or excluding from) the definition particular elements, then the problem of arbitrariness can at least be alleviated. We have already looked at usage of the term innovation, and at the reasons for studying innovation - as discernable in the literature, and in the case of this thesis. The final step before proposing a working definition of innovation is therefore to examine how innovation has been defined in the past.

Although four usages of the term innovation have been identified, definitions of the concept almost without exception relate to just two of these - product and process. This is because of the assumed identity between innovation as a characteristic (of an individual or organization) and innovation as product or process (Nicholson, 1989; and see section 1 above). The review of existing definitions in the next section therefore is divided into two parts - product and process.

### 3.1 A Brief Review of Innovation Definitions

#### 3.1.1. Product Definitions

Three dimensions can be distinguished upon which most product definitions of innovation can be categorized. These are: the type of novelty required; whether a particular effect is stipulated (and if so whether actual or intended effect); and whether the definition applies to a specific area, or to innovation in general. Examples from the literature will be used to examine the advantages and disadvantages of each type of definition.

### **Novelty: absolute or relative?**

All innovation definitions stipulate some degree of novelty, but a distinction can be made between definitions requiring absolute and relative novelty. For instance, Barnett (1953) defines innovation as; "...any thought, behaviour or thing that is new because it is qualitatively different from existing forms." Here absolute novelty is required, as the definition does not allow an innovation to be merely perceived as new, nor does it say that an innovation need only qualitatively differ from existing forms within particular situations or for particular units of adoption. In contrast, Zaltman, Duncan and Holbek (1973) present a relative novelty definition, maintaining that an innovation is "any idea, practice or material artifact perceived to be new by the relevant unit of adoption".

Kimberly (1981) is one of the foremost advocates of the absolute novelty approach. He is concerned specifically with "managerial innovation", and defines it as follows;

"A managerial innovation is any program, product or technique which represents a significant departure from the state of the art of management at the time it first appears and which affects the nature, location, quality, or quantity of information that is available in the decision-making process." (p.86).

He goes on to make it explicit that it does not allow the main criterion of newness to be the perceptions of potential adopters, in the way that those of Zaltman et al (1973 - see above), Rogers (1983) and many others do. For something to be considered an innovation it must be seen objectively to depart from the state of the art, not merely seem to do so to those adopting it. Kimberly sees a major advantage of this approach as being its practical utility for research;

"It is necessary to define newness independently from the perceptions of potential adopters because the goal is to understand why different innovations diffuse at different rates

and diffuse more or less completely, as well as why a given organization adopts certain innovations while rejecting others." (p.86).

Thus potential adopters' perceptions of newness should be studied as a factor which may influence the diffusion and adoption of an innovation, rather than used as a criterion for judging whether or not something is an innovation.

The main difficulty posed by this type of definition is in obtaining an objective judgement of newness. This is likely to be easier with technological inventions; no one would doubt that the first computer-operated lathe was new and different from the manual ones that existed previously, but the more the innovation is concerned with inter-personal arrangements and other non-technological matters, the more difficult it becomes. Kimberly suggests the use of acknowledged experts to define absolute novelty, but this is simply replacing one set of subjective judgements - those of organizational members - with another (i.e. those of outside experts).

For relative novelty definitions, the difficulty, perhaps impossibility, of objectively evaluating newness is not a problem - instead it is viewed as integral to the nature of innovation; what may appear innovative to one unit of adoption may be quite routine to another. (Knight, 1967; Hage and Aiken, 1970; Rogers, 1983; Damanpour and Evan, 1984). In doing so, such definitions emphasize innovation as a social phenomenon; innovation cannot be separated from the perceptions of people in particular environments or units of adoption, as the absolute novelty approach would have it.

Problems may still occur with practical applications of relative novelty definitions. If, for instance, innovation is being studied at the level of the organization, should a change be considered innovative if it involves something which is new to one half of an organization's membership but not the other half? A decision rule could be built into a definition to cover this eventuality, but it

would surely be impossible to include all situations in which the researcher might have doubts as to whether something should be considered an innovation. Applied psychology is not like mathematics; at some point even the best definition will be inadequate and the researcher will have to rely on an intuitive 'feel' about the situation; however, for 'innovation as product' definitions, the addition of other criteria to that of novelty can help clarify judgements.

#### Effects: actual or intended?

Some definitions only identify a product as innovative if it has certain specified effects on the unit of adoption or its environment. Kimberly's (1981) definition, quoted earlier, is of this kind as he states that a managerial innovation "affects the nature, location, quality or quantity of information..." Others include Wilson (1966) who includes the criterion that innovation must bring about "fundamental change", and Hagen (1962) who refers to innovation as being an improvement over old ways. The major advantage of including a stipulation regarding its actual effect in the definition of innovation is that it can emphasize the essentially social nature of the phenomenon, by insisting that innovation has observable consequences. Strictly speaking definitions such as Barnett's (1953), quoted earlier, allow any passing idea in someone's head to be called an innovation, so long as it fits some criterion such as being "qualitatively different" from what has gone before. This not only broadens the potential scope of the area to an unmanageable degree, but also encourages a conceptual confusion between innovation and creativity.

There are major problems with defining innovation in terms of actual effects. Firstly, the same problems about obtaining 'objective' judgements occur as were noted for definitions based on absolute novelty; perceptions of whether a particular effect has taken place may very well differ amongst those involved. Secondly, because stipulated effects are almost always positive, there is a danger that using this type of definition will reinforce the "pro-innovation bias"

(Rogers, 1983), by only defining as innovations changes which have been successful. Thirdly, these definitions are implicitly retrospective - something can only be called an innovation after certain effects have been observed. This has a practical problem for researchers, as it may not be clear how long to wait before assessing the impact of a change. In addition, if innovations can only be recognised as such after they have happened, longitudinal research examining antecedents of innovation adoption is precluded.

An alternative to basing definitions on impact is to focus on the intended effects of the innovation. West and Farr (1989) do so by insisting that an innovation must be; "...designed to significantly benefit role performance, the group, the organization or the wider society" (p.16). A similar requirement is made in the definition proposed by Merritt and Merritt (1985). Because the intended effects stipulated here are of a social nature, these definitions share the social emphasis of the definitions in the previous section, without the disadvantage of only being usable retrospectively. The situation whereby innovation is by definition successful is avoided; there is no requirement that the intended effects actually occur. A further advantage of specifying intended effects is that it ensures that innovation is defined as intentional behaviour. This is important in distinguishing innovation from organizational change in general - a point developed in section 4.2 of this chapter.

It should be made clear that including a specification of intended effects does not guarantee that innovation is conceptualized in social terms; the intended effects may, for instance, be that the new idea must in some way concern itself with 'problem-solving'. However, it can be seen that in such cases there is usually reference to the problem-solving occurring within a social or organizational context (eg. Kanter, 1983).

#### **Area: general or specific?**

Definitions can be categorised according to whether they refer to innovation in general, or in a specific area. A typical general

definition is that proposed by Zaltman, Duncan and Holbek (1973); "...we consider as an innovation any idea, practice, or material artifact perceived to be new by the relevant unit of adoption" (p.10; original authors' italics). Others include those of Barnett (1953), Rogers and Shoemaker (1971), and West and Farr (1987). In contrast, Kimberly's (1981) definition is specific in area to "managerial innovation", while that of Walker (1969) is only concerned with program or policy innovation.

The problem for general definitions is in remaining applicable in fundamentally different contexts, without being framed so broadly as to be useless for setting boundaries to the scope of research. It is indeed a daunting task to create a definition which would apply equally to the development of a neonatal oxygen monitoring system (Shaw, 1985), the implementation of a new role model for teachers (Gross, Giacquinta and Bernstein, 1971), and the introduction and diffusion of the snowmobile in the arctic (Rogers, 1983). Nevertheless, to treat phenomena described as "innovations" in different areas as intrinsically different, by using different definitions, would prevent research from developing in one of its most potentially rewarding directions - the comparison of innovations across varying settings in terms of antecedents, process and outcomes. General definitions are therefore preferable.

### 3.1.2. Innovation as a Process

In the 'process' approach, innovation is defined as the sequence of events, steps or stages through which a new idea or change passes. Process-based definitions can be divided into three broad categories: those which do not specify what the stages of the process are; those which define innovation in terms of a single process stage; and those which require the existence of particular stages. Each of these will be looked at in turn below. It may be noted that most process-based definitions include a 'product' element; that is, they make some kind of stipulation about the nature of the thing which is passing through the process, such as that it must be novel and appropriate. Some of

the definitions referred to have therefore already been mentioned in the discussion of 'product' definitions.

#### **Definitions where stages are not specified**

Definitions in this category may be of two types. Firstly, they may make no reference to steps or stages, and simply say (in one way or another) that innovation is the enaction of change or the translation of an idea into reality. An example comes from Kingston (quoted in Rickards, 1985); "To invent is to find a new thing; to innovate is to get the new thing done." Others of this type include Merritt and Merritt (1985) and Mohr (1969). Secondly, definitions may state that there are stages involved, but not what they are. For instance, the Central Advisory Council on Science and Technology in 1968 defined innovation as;

"...the technical, industrial and commercial steps which lead to the marketing of new manufactured products and to the commercial use of new technical processes and equipment." (Rickards, 1985; p.11).

Although this category is distinguished by the fact that stages are unspecified, in some cases it is at least implied that certain stages are *not* part of the innovation process. The Kingston definition given above makes it explicit that invention is not considered to be part of the innovation process, rather it is a separate process preceding it.

The most likely problem for definitions of this type is that they may not provide any clear criteria for distinguishing innovation from organizational or social change generally. This drawback may be avoided by including stipulations regarding the type of 'product' which must pass through the process for innovation to be identified, thereby delineating the particular sorts of changes which should be called innovations.

#### **Definitions in terms of a single process stage**

The process stage which commonly appears on its own as defining innovation is adoption. Such definitions do not make any requirements about where the change or new idea comes from, nor do they concern themselves with its implementation or use. A good example is Knight (1967); "An innovation is the adoption of a change which is new to the organization and to the relevant environment." In some instances (eg. Bell, 1963; Becker and Whisler, 1967) innovation is defined as the early adoption of new ideas existing in the relevant social system.

Because adoption-only definitions do not require invention to have taken place, they are likely if they include a 'product' element to require only relative novelty. This is the case in Knight's (1967) definition. Any process definition which includes invention as a stage implies the absolute novelty of the idea, product or procedure involved.

The problem with not including an implementation element in process definitions is that sometimes an innovation may be adopted - i.e. agreement to introduce it has been reached - but never implemented (Kimberly, 1981). An adoption-only definition would not distinguish such cases from those where the new idea has been fully accepted and absorbed into the life of the unit of adoption; both would constitute 'successful' innovation.

#### **Definitions specifying two or more stages**

Comparing definitions which specify a series of stages is made difficult by the variety of terms used. Examination of how writers explain and utilise their stages makes it clear though that many of these different terms refer to very similar activities. "Invention", "generation" and "conceptualization" are all ways of describing the step of coming up with a new idea, while "application" and "utilization" both refer to bringing something new into routine usage.

There are many multi-stage definitions to be found in the literature. They differ mainly according to whether they include invention (or one

of its synonyms) as part of the innovation process. West and Farr's (1989) does not, as it refers to "introduction and application"; Pierce and Delbecq (1977) also view innovation as starting after invention. The majority though favour including invention (e.g. Kanter, 1983; Isaacs, 1984). A well-known example is that of Myers and Marquis (1969), who define innovation as;

"...a complex activity which proceeds from the conceptualization of a new idea to a solution of the problem and then to the actual utilization of economic or social value." (p.1).

Clearly, all innovations must originate from an initial idea for change. The question here is whether the process of devising that idea should be deemed to be part of the innovation process. To explicitly include it shifts emphasis away from the social to the cognitive, drawing innovation research closer to the creativity tradition. This thesis argues that it is advantageous to maintain a distinction between innovation and creativity, and for that reason process definitions which do not specify an invention stage are considered more appropriate.

A danger here is that definitions specifying stages may effectively set themselves up as models. The precise nature of the innovation process is a question for theoretical speculation and empirical investigation, but if a definition is too detailed in its specification of stages, it may become a self-fulfilling prophecy. This is not an argument against process definitions as a whole, rather it is a warning that caution must be exercised in the specification of stages. Naturally this is not a problem for process definitions which do not specify stages.

### 3.2. The Definition of Innovation to be used in this Thesis

On the basis of the implications of different types of definition, as discussed above, the features desirable in the defintion to be used in

this thesis are identified in section 3.2.1. The new definition is stated and clarified in section 3.2.2.

### 3.2.1. The Type of Definition

#### 'Product' or 'process'?

When deciding on the kind of definition to use, the first choice to make is between 'innovation as a product' and 'innovation as a process'. The literature is fairly evenly divided between the two approaches, with perhaps a slight preponderance of process definitions. The type of definition used does not inescapably commit the researcher to a particular type of research. Kimberly (1981) for instance argues in favour of a product definition, but talks about a "life-cycle" of innovation in process terms: invention, diffusion, adoption, implementation. However, the product - process choice is important as it can help to indicate the direction of a program of research. Defining innovation as a product tends to focus attention on the actual thing which is introduced, while process definitions focus on the actions and perceptions of the social unit within which the innovation occurs. As the orientation of this thesis is towards innovation as a social phenomenon, a process-based definition will be used. Because of the danger of the definition taking on the appearance of a process model, it will not specify a particular sequence of steps or stages.

#### The 'product' element: characteristics

Although innovation is to be defined in process terms, it is felt necessary to include a product element in the defintion, in order to distinguish innovation from all other kinds of organizational and social change. The characteristics of the product element will be as follows:

- (1) Relative novelty rather than absolute novelty is required. Relative novelty definitions have an implicit social emphasis, because of their grounding in the perceptions of those involved in an innovation. They also avoid the extreme difficulty of

'objectively' judging whether something is absolutely new to a unit of adoption.

(2) Intended effects are included. This stresses that innovation is intentional behaviour, but does not rely on a retrospective view before the definition can be applied - unlike definitions stipulating actual observed effects.

(3) The definition is general in area; it is applicable to any social unit, with any function(s). Specifying an area would be too limiting to the development of the research.

All these points have been covered in more depth in the review of definitions (section 3.1).

### 3.2.2. A New Definition of Innovation

In this thesis innovation will be defined as below:

Innovation is the sequence of activities by which a new element is introduced into a social unit, with the intention of benefiting the unit, some part of it, or the wider society. The element need not be entirely novel or unfamiliar to members of the unit, but it must involve some discernable change or challenge to the status quo.

The definition is largely self-explanatory, but a few points of clarification may be of help to the reader. Firstly an individual is not considered here as "a social unit". For something to be considered an innovation it must have an impact (or intended impact) on people other than the individual introducing it. Work-role innovation (Schein, 1971; Nicholson, 1984) is included, as work roles are aspects of an organization, and changing them changes the organization. Secondly, intentionality of benefit is stipulated to ensure that purely destructive, accidental or maturational changes are not

labelled innovative (see King and West, 1987; West and Farr, 1989). This point is discussed further in the examination of the relationship between innovation and social/organizational change (section 4.2). Thirdly, an innovation must at least challenge the status quo; it may however fail to actually effect change. Innovation is thus not synonymous with successful change.

#### 4. INNOVATION, CREATIVITY AND CHANGE: ISSUES OF DISTINCTION

Confusion between innovation, creativity, and social or organizational change is frequently seen in the literature. To some extent this is inevitable, as the concepts are related, but if innovation research is to develop as a field with an identity of its own, distinctions between the three terms must be made. In section 4.1., below, the relationship between innovation and creativity is discussed, while section 4.2. examines that between innovation and change.

##### 4.1 Innovation and Creativity

###### 4.1.1. Defining Creativity

It is not within the scope of this thesis to attempt a review of existing definitions of creativity along the lines of what has been done for innovation. Instead a working definition will be given which includes the main elements of most existing definitions (e.g. Carl Rogers, 1954; Amabile, 1983; Weisberg, 1986); this will be used to highlight the distinctions between the concepts of creativity and innovation.

Creativity is the process by which an individual responds to a task in a way which is both novel to him or her and appropriate to the task.

It can be seen that this definition is based around the elements of novelty and appropriateness; this reflects the very wide support in

the literature for their inclusion as key characteristics. Some brief points of clarification need to be made before proceeding with a comparison of the concepts of creativity and innovation.

The definition requires that the response be absolutely novel to the individual him- or herself, but not that it be unique. As Weisberg (1986) stresses, "...any solution which is novel for an individual, regardless of how many other individuals arrive at the same solution, is creative" (p.4). It must be realised, though, that this means new to the individual's knowledge, not just to his or her behaviour; if someone were to independently 'invent' logarithms to solve a mathematical problem it would certainly constitute creativity, but if he or she were simply to use a logarithmic table for the first time it would not.

The definition above conceptualizes creativity as a process, while many definitions in the literature are based upon the creative person or product. The latter cases do not, however, deny that creativity is a process; they merely reflect the fact that we cannot get at the process directly. Creativity - the process - is either what produces the creative product, or what certain people do that enables us to identify them as creative. There are difficulties with 'person' definitions, as they are based upon conceptions of creativity as a single personality trait which have been seriously challenged (Nicholls, 1972; Weisberg, 1986). 'Product' definitions are even more problematic because they rely upon the dubious assumption that objective judgements of 'creativeness' are possible.

#### 4.1.2. Comparison of Innovation and Creativity

These concepts, as defined here, are similar in two important ways. Firstly, they are both concerned with the production of something new. Secondly, both require appropriateness; the product of creativity must be "appropriate to the task" while the product of innovation must have been intended to be "of benefit". Note also that neither of the

definitions require that the products of the respective processes actually succeed in meeting their aims.

Despite these similarities, there are three crucial differences between innovation and creativity, in the areas of the type of novelty demanded, the direction of benefit, and the type of process described.

(1) Type of novelty: Although creativity does not demand uniqueness, it does demand absolute novelty on the part of the individual. Innovation only requires relative novelty. To take a hypothetical example, a manager moving into a new company and introducing a practice which was novel there, but routine in his or her old company, would not be considered creative, but he or she would be considered innovative.

(2) Direction of benefit: Innovation must always be aimed at accruing benefit more widely than the individual innovator. This is not the case for creativity; an individual may engage in creative activities purely for personal satisfaction, without having (or aiming to have) an impact on other people.

(3) The type of process: Perhaps most important of all, and following on from (2), creativity is an individual cognitive process, while innovation is a social process. Even social psychological approaches to creativity (notably Amabile, 1983) only regard social factors as influences on the mental processes.

#### 4.1.3. Invention, Innovation and Creativity

A further clarification which is necessary concerns invention. As discussed in section 3.1.2., some process definitions of innovation include invention as the first stage, but in this thesis the process is conceptualized as beginning after invention. This is because the approach taken here is to regard innovation as a social process, distinct from creativity, whereas invention is a special case of creativity. Invention may, perhaps, best be thought of as applied creativity; while creativity always has an element of problem-solving

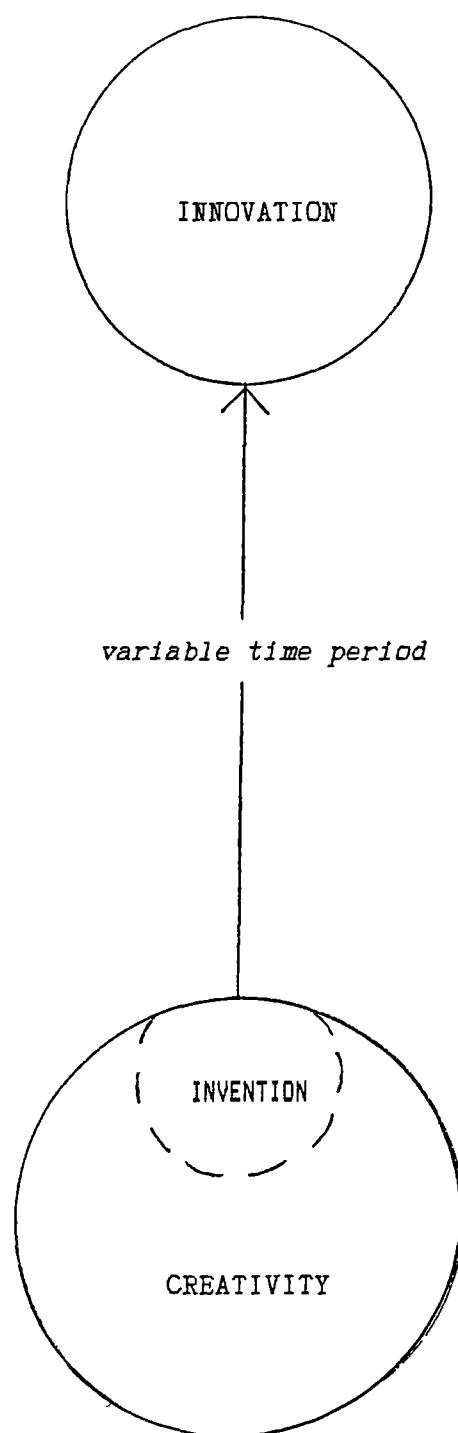
involved, invention is the case where creativity is applied specifically to solving an external problem. The distinction is a fine one and requires illustration. A poet writing a sonnet in response, say, to an incident or a landscape, might be considered creative rather than inventive; however, if he or she was to design an entirely new poetic form within which to convey the experience we would call this an invention.

#### 4.1.4. The Relationship between Innovation and Creativity

I have argued that innovation and creativity should not be considered as synonyms for a single process. In this section I will propose that the relationship between the two concepts is best conceived of as a temporal one. Again, a hypothetical example is useful. If a medical general practitioner introduces a community nurse into his or her practice, this *is* innovation, but certainly *is not* creativity; the GP did not invent the idea of community nurses in general practice, he or she only introduced it into a new social setting (and hence was innovative). However, somewhere down the line someone *did* invent the idea, and that person *was* creative. Thus creativity always precedes innovation, but not necessarily within the same social setting, and the distance in time may be considerable. Written language was invented centuries Before Christ in the ancient Middle-East, but did not reach the Incas of Peru until the Spanish conquest in the sixteenth century. Of course, the other extreme is quite possible - a problem may occur in an organization, to which a member produces a solution, which is then implemented and utilized.

Figure 1.1 shows the relationship between creativity and innovation diagrammatically. Through invention - a special case of creativity - a new 'product' (in the broad sense of the word) is brought into existence. A variable period of time elapses, after which first attempts to introduce the 'product' within a particular social unit take place, and we can say that the innovation process within that particular unit of adoption has commenced. The length of the time

Figure 1.1: The relationship between innovation and creativity



interval between invention and the start of the innovation process is determined by factors too numerous and diverse to specify, but a crucial one is likely to be whether or not invention occurred within the unit of adoption.

#### 4.2 Innovation and Change

The relationship between innovation and change is quite different from that between innovation and creativity. As innovation involves the introduction and use of something new, all innovation must be change. The issue here is therefore to distinguish where social or organizational change is *not* innovation. From the definition presented in this thesis, three sets of circumstances may be identified in which a change would not be considered innovative.

(1) Where the change is *not* intentionally introduced. This may happen when a change is the direct result of accident or of circumstances entirely beyond the control of the unit of adoption. West and Farr (1989) give the example of a reduction of working time in a factory as a result of a particularly hot summer.

(2) Where there is *no* intention of benefit to the unit of adoption, its constituent parts, or the wider society. This is the criterion which Merritt and Merritt (1985) use to distinguish innovation from 'ordinary' change; "Innovations...are intended as improvements."

(3) Where the change is *routine* and/or *maturational*, and therefore does not disturb the status quo; for instance, replacing a member of staff who has retired is not an innovation.

Much of the literature on planned change is concerned with changes which fit the definition of innovation; the difference between this and the innovation literature *per se* is that the former tends to be

concerned with societal or cultural level changes, while the latter tends to take a somewhat more micro-level approach, with the bulk of research being at the organizational level and rarely going beyond particular sectors or industries. (This difference of emphasis can be seen by comparing the contents of Zaltman, Duncan and Holbek's (1973) book "Innovations and Organizations" with those of Zaltman and Duncan's (1977) book "Strategies for Planned Change"). The term "planned organizational change" is in practice almost always synonymous with innovation (e.g. Gross, Giacquinta and Bernstein, 1970).

## 5. CONCLUSIONS

This chapter has presented a definition of innovation based upon a review of existing definitions in the light of the stated aims of the program of research to be described in this thesis. There are three crucial elements of the definition: it views innovation as a social process; it insists that innovation shows intentionality of benefit; and it requires only relative novelty - it does not have to be entirely unfamiliar to the unit of adoption as a whole so long as it represents some kind of change or challenge to the status quo. Innovation is conceptualised as distinct from creativity and invention - though invention precedes every innovation - and as a special case of social or organizational change (i.e. all innovation is change but not all change is innovation).

The discussion of definitional issues sets the scene for the whole program of research which follows. Two further steps enabled the scope to be narrowed down to the particular areas and issues focussed upon in the main empirical studies described in chapters five to eight. An extensive review of the innovation literature was carried out, which is presented in chapters two and three. At the same time as this was being compiled, a small-scale exploratory study was undertaken, using unstructured interviews to elicit accounts of experiences of innovation from twenty-seven men and women in a wide range of

predominantly professional and managerial positions. This study is described in chapter four.

## CHAPTER TWO: THE INNOVATION PROCESS - A REVIEW OF THE LITERATURE

### 1. THE STRUCTURE OF THE REVIEW CHAPTERS

Two main approaches to the study of innovation can be identified; the antecedent factors - or "variance" (Rogers, 1983) - approach and the process approach. Antecedent factors research is much more common than process, and is concerned with identifying facilitators and inhibitors of innovation. Cross-sectional methods have predominated. In contrast, process research chiefly uses longitudinal or retrospective case-studies to study the sequence of events which constitute the process of innovation. For reasons made apparent in the previous chapter, the overall orientation of this thesis is towards viewing innovation as a social process in which many people other than those initiating and managing the innovation are involved. I will therefore review the literature covering the process of innovation first, in the present chapter. The much larger antecedent factors literature will be examined in somewhat less depth in chapter three. In both chapters, Staw's (1984) division of research into individual, group and organizational levels of analysis will be followed.

### 2. A REVIEW OF THE INNOVATION PROCESS LITERATURE

#### 2.1 Introduction

The lack of attention paid by most researchers to the nature of the innovation process is of detriment to the field as a whole, as Schroeder, Van de Ven, Scudder and Polley (1986) point out;

"As a consequence, very little is known theoretically or empirically about the innovating process. Yet an appreciation of the temporal sequence of activities that occur in developing and implementing new ideas is fundamental to the management of innovation." (p.1).

Where such work does exist it tends to be theoretical. This is to a large extent due to the practical difficulties of studying empirically the whole innovation process; it requires an indefinite commitment of research resources, with the risk that the target innovation effort might be aborted before the process is completed, or that the cooperation of the organization with the researcher might cease for reasons beyond his or her control.

In the following three sections, individual, group and organizational level work on the nature of the process will be examined in detail. The final section of the chapter will discuss relevant directions for future research emerging from the review.

## 2.2 Research at the Individual Level

At the individual level there are relatively few descriptive models of the innovation process, in contrast to the organizational level where there is an abundance. The situation is somewhat deceptive because individual innovation is often treated as more or less synonymous with creativity and creative problem solving. While chapter one has argued for a clear distinction between these concepts, the degree of overlap in usage makes it necessary to examine descriptive models of individual creativity, although a comprehensive review of the area is beyond the scope of this thesis. Four models of theoretical and/or historical importance will be described here: Wallas (1926); Basadur, Graen and Green (1982); Amabile (1983, 1986); and Rogers (1983).

### 2.2.1. Wallas' (1926) Model of Creative Thinking

The starting point for any discussion of the sequence of events involved in individual creativity or creative problem solving is almost inevitably the model proposed by Wallas (1926) in his book, "The Art of Thought". Wallas identified four stages of creative thinking, based largely on introspective accounts such as Poincare's (1924) descriptions of his own mathematical creativity. Many later

researchers in this field have based their work on Wallas' model (eg Nystrom, 1979) and empirical evidence both supporting and refuting its accuracy continues to be produced. An outline of the stages is given below.

(1) Preparation: In this first stage, the person addresses his or her mind to the problem at hand, examining relevant information from the task environment and from their own experience. An important part of this is clarifying what the goal actually is;

" Our mind is not likely to give us a clear answer to any particular problem unless we set it a clear question, and we are more likely to notice the significance of any new piece of evidence, or new association of ideas, if we have formed a definite conception of a case to be proved or disproved." (Wallas, 1926; p.81).

(2) Incubation: Here, fully conscious work on the problem ceases; the mind may switch its attention to another problem, or a period of relaxation may ensue. During this period of incubation, Wallas suggests that; "a series of unconscious and involuntary (or foreconscious and forevoluntary) mental events may take place" in relation to the problem.

(3) Illumination: The non-conscious work on the problem which occurs during incubation culminates in illumination. This is the "Eureka!" moment, when the core (or even the whole) of the solution to the problem suddenly springs into awareness. Kekule's dream of snakes biting their own tails, which enabled him to solve the previously intractable problem of the structure of benzene, is one of the most famous examples of this. A good example of the sheer force with which illumination can strike is given by Tchaikovsky;

"Generally speaking, the germ of a future composition comes suddenly and unexpectedly. If the soil is ready - that is to say,

if the disposition for work is there - it takes root with extraordinary force and rapidity, shoots up through the earth, puts forth branches, leaves and, finally, blossoms...I forget everything and behave like a madman." (Newmarch, 1906; in Vernon, 1970; p.57).

(4) Verification: The final stage is verification, where the individual uses logical and rational thought processes to turn the sudden insight of illumination into a correct or appropriate solution, apparent as such to other people. In some cases, illumination may provide the entire solution and verification may be carried out only for the sake of others. Poincare's solution of the problem of Fuchsian functions was of this sort. In other cases, illumination provides only the germ of an idea, enabling its working out to be carried out in the verification stage.

There is little disagreement that Wallas' model is too rigid in its stages (Vernon, 1970); they have been found in reality to overlap considerably (Eindhoven and Vinacke, 1952). Debate continues over the existence and influence of the incubation stage. Fulgosi and Guilford (1968) and Dreistadt (1969) found at least partial evidence for the facilitating effect of unconscious incubation, while studies by Olton and Johnson (1976) and Read and Bruce (1982) failed to support it. Weisberg (1986) strongly rejects the notion of unconscious incubation in creative thinking;

"It is simply a story that many people believe without consideration of its merits; in the face of contradictory results, however, it is a story that should be put aside." (p.34).

He suggests that some of the apparent affects of incubation might be due to brief episodes of mulling over a problem, apparent in studies such as those of Patrick (1935, 1937) - what Olton (1979) calls "creative worrying". However, he and other critics appear to have

neglected the fact that the model does not insist that incubation always occurs entirely unconsciously. Wallas actually says that it may

"...take place (with 'risings' or 'fallings' of consciousness as success seems to approach or retire), in that periphery or 'fringe' of consciousness which surrounds our 'focal' consciousness as the sun's corona surrounds the disk of full luminosity." (Wallas, 1926; p.95).

Wallas' model is of little direct relevance to innovation as it is purely cognitive; its importance lies in the influence it has had on other models both in the creativity and innovation fields. Its continued prominence after more than sixty years may be attributed to the fact that it still "rings true" to many people's experiences of creativity.

#### 2.2.2. Basadur, Graen and Green's (1982) model of creative problem-solving

Basadur et al's (1982) model of the "complete process of creative problem solving" differs considerably from Wallas' (1926) model. There are three stages to it; problem finding, problem solving and solution implementation. At each stage, a two-step process of ideation-evaluation occurs; ideation is the uncritical generation of ideas, while evaluation is the application of judgement to select the best of the generated ideas.

The authors used the model to derive hypotheses about creativity training which they tested in a field experiment, with qualified success. One unpredicted finding was that while creativity training did lead to increased practice of, and performance at ideation, preference for ideation in problem-finding did not increase as expected. By way of explanation, Basadur et al suggest; "It may be that one is able to get participants to *do* problem finding (cognitive and behavioural) yet still not to *like* problem finding (attitudinal)." (p.67; original authors' italics).

Basadur et al's model is more sophisticated than Wallas' in that it distinguishes between the behaviours that occur in creative problem solving (problem finding, problem solving, solution implementation) and the thought processes involved (ideation and evaluation); Wallas' model is only concerned with thought processes. It is also more directly applicable to the work environment, reflecting the authors' concern with creativity training in organizations. The model is, however, largely asocial as it allows no place for the influence of factors outside of the individual.

#### 2.2.3. Amabile's (1983) Social Psychological Model of Creativity

The two models discussed above are both little concerned with the part played by social factors, though Basadur et al's inclusion of "solution implementation" and their use of a creativity training perspective do at least acknowledge that the model should be applied within a social setting. This reflects a relative lack of attention paid to social factors within the individual-level creativity and innovation literatures. The work of Teresa Amabile in presenting a "Social Psychology of Creativity" (1983) is therefore important. Her model proposes five stages to the innovation process, which are variously affected by three "individual components". The first component is "intrinsic motivation to do the task". It is central to Amabile's theoretical position that intrinsic motivation is positively related to creativity while extrinsic motivation is negatively related. The other two components are concerned with the skills the individual possesses. "Skills in the task domain" include knowledge about the area of the task, relevant technical skills and any special 'talent' for the area; "skills in creative thinking" are such things as appropriate cognitive and work styles, and an implicit or explicit understanding and use of what Amabile calls "heuristics for generating novel ideas". Her five proposed stages, and the role of the components at each of them, are described below.

- (1) Task presentation: This is where the task to be undertaken or the problem to be solved is presented to the individual, either by another person ('external source') or by the person him or

herself ('internal source'). The individual is more likely to attempt to solve the problem creatively if intrinsic motivation is high, which in turn is generally more likely if the problem is from an "internal source".

(2) Preparation: At this stage, prior to the generation of responses or solutions, the individual, in Amabile's words, "builds up or reactivates a store of information relevant to the problem or task". Skills in the task domain therefore play a major role here.

(3) Idea generation: Here, the individual produces possible responses in the search for solutions or ideas appropriate to the task in hand. The individual's skills in creative thinking will determine both the quality and quantity of ideas generated. Intrinsic, rather than extrinsic, task motivation will also facilitate idea generation.

(4) Idea validation: Each idea generated at stage (3) is checked for its appropriateness or correctness for the task at hand, by reference to the "knowledge and assessment criteria included within domain-relevant skills."

(5) Outcome assessment: As a result of the check against task criteria carried out in stage (4), a decision is made about the potential task solution. If it is accepted ("success") or rejected ("failure"), the process ends here. If, however, the response is not wholly appropriate but does constitute significant progress towards solution, the process returns to stage (1), and the "information gained from the trial will be added to the existing repertoire of domain-relevant skills".

There is much to recommend in Amabile's model, in particular in the way it suggests how - and where - the skills and motivation of the individual affect the progress of the process. It should be noted that in her recent work (1986), she applies this model to small group as

well as individual creativity, and also includes it as part of a wider model of organizational innovation. However, although Amabile's is a social psychological model, social factors only have an indirect effect on the process described. That is, they have an effect on the three "components" (motivation, task-domain skills and skills in creative thinking) which in turn influence the progress of the process. For instance, rewards and penalties for performance at a task will lead to the person being extrinsically motivated and thus to less likelihood of a creative response to the task and a reduction in the quantity and quality of ideas generated. A truly social psychological model of individual creativity or innovation would need to incorporate social influences and interactions within its description of the sequence of events which constitutes the process.

#### 2.2.4. Rogers' (1983) Model of the Innovation-Decision Process

Within the diffusion research tradition, Rogers (1983) proposes a five-stage model of "the innovation-decision process"; that is, the stages which an individual passes through in deciding whether or not to adopt and utilise a new idea.

(1) **Knowledge:** This is where the individual is first exposed to the innovation. In some cases contact may come about through normal communication channels, in others a need for change may lead the individual to actively seek for innovations.

(2) **Persuasion:** Here the individual forms an attitude to the innovation. The main mental activity is "affective (or feeling)" whereas at the knowledge stage it was "cognitive (or knowing)". The ability to think hypothetically is important at this stage, as is the eliciting of peer opinion.

(3) **Decision:** A decision whether to adopt or reject the innovation is made. Often this will be on the basis of some sort of trial adoption, though trial of the innovation by a peer may act as a substitute.

(4) **Implementation:** If the individual decides to adopt the innovation, it is then put into use. He or she may implement the innovation in its existing form, or may "re-invent" it, to suit his or her particular circumstances.

(5) **Confirmation:** Once the innovation is in use, the individual seeks confirmation that he or she was right to have adopted it. Actions are guided by a desire to avoid cognitive dissonance (Festinger, 1957).

As with the other three models discussed here, Rogers' is more concerned with mental events than actions in a social context. Factors outside the individual do appear though; "norms of the social system" and "socio-economic characteristics" of the individual are included as influences on his or her propensity to obtain knowledge about the innovation (the start of the process), and Rogers stresses that "implementation involves overt behavioural change". There is also a strong emphasis on the role of inter-personal communication channels. One serious limitation of the model as it stands is that it is not applicable to cases where an individual invents an innovation rather than adopts one from his or her environment.

Rogers addresses the issue of whether there is evidence to support the notion that the innovation process has distinct stages - a seriously neglected point in the whole innovation literature. Examining existing case study evidence, he concludes that there is some support for it, (Beal and Rogers, 1960; Coleman et al, 1966), the strongest being for the knowledge and decision stages, and the weakest for the persuasion stage.

#### 2.2.5. Summary: Process Research into Individual Innovation

Process-based studies of individual innovation are greatly outnumbered by those taking an antecedent approach. What work there is has mostly remained closely tied to the creativity tradition, typified by Wallas' (1926) model, and has therefore been highly cognitive in nature. Factors outside the individual appear as influences on motivation

(Amabile, 1983), awareness of innovations (Rogers, 1983), or not at all (Basadur et al, 1982).

There are strong similarities between the models examined in many of the actual stages proposed; all but Rogers' start with the identification of a task or problem, and all but Basadur et al's end with confirmation or verification. However, little empirical investigation of the sequence of stages in the process has been carried out.

### 2.3 Research at the Group Level

Within the innovation literature there is very little research at the group level of analysis, and models describing the innovation process at the group level are virtually non-existent. It might be suggested that this is simply a reflection of the relatively minor importance of the group level in this field; against this it should be pointed out that teams or work groups play a significant role in the lives of most organizations, and that major decisions involving change are frequently taken by groups rather than individuals - committees, project management teams, boards of directors and so on. A more convincing explanation of the lack of group level research is that academic interest in innovation and related areas such as creative problem solving has tended to come on the one hand from those concerned with micro-issues such as individual thinking styles or personality traits of creative persons, and on the other hand, from those concerned with macro-issues such as organizational structure, climate and culture. Social Psychologists with an interest in groups and group processes have mostly concentrated their efforts in other areas.

#### 2.3.1. Sources for Group-Level Process Models

In the absence of models designed specifically for the group level innovation process, we must look elsewhere in the literature for work

which might suggest the kinds of model which could be developed. There are two potential sources; firstly, other areas of the innovation literature, and secondly, the group decision-making literature.

#### **From other areas of the innovation literature**

Some writers interested in individual or organizational level innovation have applied their models to the group level. In her recent work Amabile (1986) states that her social psychological model of individual creativity is applicable to small groups as well. She does not, however, offer any evidence or explanation to support this position, but merely refers to "individual or small group creativity" instead of "individual creativity". Similarly, Rogers' (1983) "innovation-decision process" model may be applied to "decision-making units" other than the individual, but as with Amabile, the discussion remains in individualistic terms and there is no attempt to identify how the process might differ for groups.

Nystrom (1979) extends his use of Wallas' model of the creative process to group and company (ie. organizational) creativity. He restricts his interest in the group level to small, informal groups of "spontaneously interacting individuals" involved in problem solving, and says that group interaction "may be seen as a factor intervening between individual and company creativity". Nystrom's main concern is therefore to identify the aspects of group interaction which may help or hinder individual creativity within companies - his observations are discussed in chapter three.

It is difficult to accept that unmodified individual-level models are sufficient to describe the group level process; our knowledge of the social psychology of groups indicates intra-group factors which might be expected to be of influence. To take an example from Amabile's model; the "components" of motivation, task-skills and creative thinking skills all affect the progress of innovation. If the model is applied to groups, we need to know how individual members' varying levels of these components combine to form the group components. We might also ask how the group goes about selecting from alternative

ideas generated by different individuals, and what the consequences of such choices might be in terms of power and status. These are questions which are meaningless at the individual level but crucial at the group level.

#### **From the group decision-making literature**

Another potential source for models of group level innovation is the literature on group decision-making. The innovation process, as defined in chapter one, can be seen as involving a series of decisions, such as "choices to innovate or not, to select different innovations, to use different methods of implementation and so on" (Zaltman, Duncan and Holbek, 1973; p.53). The nature of innovation means that such decisions are likely to be of the "non-programmed" sort (Simon, 1960) - that is, novel and unstructured, and as Ivancevich and Matteson (1987) point out, this type of decision within organizations is commonly taken by a group rather than an individual.

Drawing upon much of the existing literature in the field (e.g. Harrison, 1975), Ivancevich and Matteson provide a general model of the decision-making process. It should be noted that although the authors' concern is with decision-making in organizations, the model is not aimed at any specific level of analysis. Also, it is intended to be descriptive of "the normal progression that leads to a decision", rather than prescriptive. The seven stages proposed are: (1) Establishing specific goals and objectives; (2) Identifying problems; (3) Developing alternatives; (4) Evaluating alternatives; (5) Choosing an alternative; (6) Implementing the decision; and (7) Control and evaluation. The authors stress that the process, though sequential, is not a series of fixed steps. The model includes a feedback system whereby the decision-maker may "revise" the progress of the process at any stage; unfortunately, the authors never explain how or why this revision of the process happens.

There are strong similarities between this model and process models of creative problem solving and innovation. Perhaps the closest parallel is with Basadur, Graen and Green's (1982) model of creative problem

solving, as table 2.1 illustrates. Given that "developing", "evaluating" and "choosing" alternatives can all be seen as part of a single "problem solving" stage, the major difference in the stages of the models is that Ivancevich and Matteson's includes the setting of goals and objectives and the control and evaluation of the decision's effects. This is important because it emphasizes that decision making cannot be divorced from the wider context of its social environment.

Table 2.1: Parallels between Basadur et al's (1982) model of creative problem-solving and Ivancevich and Matteson's (1987) model of decision-making

<u>Basadur et al stage</u>	<u>Ivancevich and Matteson stage</u>
	Establishing goals and objectives
Problem finding	Identifying problems
Problem solving	Developing alternatives Evaluating alternatives Choosing an alternative
Solution implementation	Implementing the decision  Controlling and evaluating

Having shown that there is considerable overlap between non-programmed decision making, as described by Ivancevich and Matteson's model, and innovation, it remains to be seen how relevant the former is to the group level innovation process. It has been noted that their model is not aimed at any particular level of analysis, but rather is intended to apply to all decision making in organizations. Earlier, Amabile (1986) was criticized for applying her individual level model unmodified to small groups. There is less of a problem in this case, largely because Ivancevich and Matteson contend that non-programmed decisions are generally made by groups anyway, and base their model on this observation. Nevertheless, the first stage does appear to be beyond the process within the group; organizational goals and

objectives are related to such factors as organizational strategy, climate and culture; a single group is very unlikely to be able to set these for itself. An alternative first stage for a group level model might be group interpretation of the organization's goals and objectives. The authors state that the implementation stage is normally the responsibility of a single manager, even when the decision is made by a group. This suggests that implementation should not be included as part of the group level innovation process; however, it must be recognised that Ivancevich and Matteson's contention reflects their particular concern with large, American commercial organizations. In other settings, groups or teams are involved in implementing decisions, for instance in the health service (Wallace, 1987). On this point, Ivancevich and Matteson's model is probably more applicable to groups than they themselves allow.

Ivancevich and Matteson argue for the superiority of groups over individuals in most cases of non-programmed decision making, on the grounds that groups can draw upon greater intellectual resources and that group members are more likely to accept a decision they participated in than one imposed on them. While these are important points, the authors do underplay the potential problems of group decision making. "Groupthink" (Janis, 1972) is one such hazard, where the group becomes so concerned with protecting its identity and convivial atmosphere that potential problems are ignored or glossed over, often leading to poor quality decisions. Harrison (1975) identifies some other liabilities: "acceptance of solutions" - the tendency for the first solution achieving majority or consensual support to be accepted without other, possibly better, solutions being considered; and "individual domination", whereby one person has a disproportionate amount of influence on the decision. A group level innovation model could include some of these intra-group phenomena in the process described, showing when they are likely to occur and how they might be resolved. There is a danger though that a model aiming to depict the normal sequence of events in the process might effectively become prescriptive, dictating how the process should happen (at times, Ivancevich and Matteson come close to this).

Although there is much that can be drawn from decision making models to apply to the group level innovation process, a crucial point must be borne in mind - that innovation is fundamentally concerned with the content of decisions. If a group decides not to change something, or to introduce something which is not new to themselves or the organization, we cannot say that innovation has taken place.

#### 2.3.2. Summary: Process Research into Group-Level Innovation

It has been seen that models of the group-level innovation process are conspicuous by their absence, and that this state of affairs is not due to the group level of analysis being unimportant - much innovation in organizations occurs in groups. Some writers have attempted to apply individual or cross-level models to the group level, but have not taken account of distinctive features of groups (Amabile, 1983; Rogers, 1983; Nystrom, 1979). Turning elsewhere for relevant work, parallels have been drawn with decision-making models, such as that of Ivancevich and Matteson (1987), suggesting that these could inform the development of group-level innovation process models. However, it must be stressed that innovation and decision-making processes are not identical; in particular, innovation is centrally concerned with the content of decisions (i.e. by the definition used in this thesis, the new idea must be of intended benefit and change or challenge the status quo).

### 2.4 Research at the Organizational Level

Considerably more attention has been paid to the process of innovation at the organizational level than at any other level, and there are numerous models proposing the stages or event sequences comprising the process. As the stages suggested are mostly quite similar, the type of approach taken can be illustrated by describing one well-known model in some detail; that of Zaltman, Duncan and Holbek (1973). This is done in section 2.4.1., below, followed by a comparison of six important models (including Zaltman et al's) in section 2.4.2. A

recent challenge to the traditional type of model by Schroeder, Van de Ven, Scudder and Polley (1986) is examined in section 2.4.3.

2.4.1. Zaltman, Duncan and Holbek's Model of the Innovation Process  
Zaltman et al divide the innovation process into two main stages - "initiation" and "implementation". These are then divided into a total of five substages; the initiation stage consists of "knowledge-awareness", "formation of attitudes" and "decision", while implementation comprises "initial implementation" and "continued-sustained implementation". These are described below, in turn.

#### Initiation stage

(1) Knowledge-awareness substage: The authors state that "...before any innovation can take place or be adopted, potential adopters must be aware that the innovation exists and that there is an opportunity to utilize the innovation in the organization." (p.60). This raises the question of whether the need for change causes the organization to actively search for appropriate innovations, or whether knowledge of an innovation stimulates the perceived need to adopt it. Empirical evidence does not give a clear answer (Rogers and Shoemaker, 1971).

Zaltman et al suggest that the concept of the performance gap can help resolve this issue. Both need for and awareness of an innovation may lead to the perception of a performance gap, which in turn stimulates the start of the innovation process. Thus, economic (or other) changes in the environment may cause organizational decision-makers to perceive a performance gap, and the resultant increased search for alternatives makes them aware of potentially useful innovations. Here need for change precedes awareness of innovations. The opposite case can occur where knowledge of a previously unknown innovation leads to the perception of a performance gap. Zaltman et al give the hypothetical example of a data-processing department which believes that it is functioning well and efficiently, but as a result of sending personnel to conferences becomes aware of innovations in

hardware and software which could greatly increase its performance. The authors do not examine the question of whether the process can be expected to differ in any way according to whether the performance gap was perceived as a result of need for change or of awareness of a potential innovation.

Zaltman et al's discussion of the knowledge-awareness substage implies that organizations will find appropriate innovations in the environment rather than generate them internally, an assumption which we have seen is commonplace in the literature but which leads to a restricted view of innovation in organizations.

(2) Formation of attitudes substage: At the second substage organizational members exhibit their attitudes to the proposed innovation on two main dimensions. Firstly, there is "openness to the innovation", which has three major components; (1) willingness to consider the innovation, (2) skepticism about the innovation, and (3) expectations of whether the innovation will improve organizational performance. These components are not explained in any detail, and there would appear to be a degree of tautology in the definitions given (especially for 1 and 2). The second attitudinal dimension is "perception of potential for innovation". It focuses on whether members of the organization perceive (1) a capability within the organization for using the innovation, (2) that the organization has been successful in at least some past innovations, and (3) that there is some commitment amongst organizational members to working for the innovation.

Borrowing from Rogers and Shoemaker (1971), the authors apply Festinger's (1957) concept of cognitive dissonance to the formation of attitudes to an innovation (what they call "innovation dissonance"). An individual may be a dissonant adopter or rejector; in the former case, he or she has an unfavourable attitude to an innovation when the organization demands overt adoption, while in the latter the individual is favourable to the innovation but the organization rejects it. Dissonance may be reduced either by a change of attitudes

or (for dissonant adopters) by discontinuing, misusing or circumventing the innovation. Presumably a third possibility is that the individual leaves the organization. The conceptual and empirical problems with innovation dissonance are the same as those that face the original cognitive dissonance theory (see Brown, 1965). In particular, the authors ignore the possibility that an individual will accept the innovation as something they cannot change and remain in their job, perhaps with a decrease in job satisfaction and/or commitment.

The major weakness of this stage of Zaltman et al's model is that it implies that all organizational members form their attitudes to the innovation here, and consequently that members' attitudes only affect the process at this point. In a highly authoritarian and hierachical organization it is quite likely that in many instances those in the lower levels wouldn't hear about an innovation until after the decision to adopt had been made; and research on implementation has shown how attitudes can change and affect the outcome of the process after adoption (e.g. Gross, Giacquinta and Bernstein, 1971).

(3) Decision substage: This is the point at which organizational decision-makers evaluate the potential innovation and determine whether or not to proceed with implementation. Zaltman et al (1973) emphasize the importance of information-processing, and stress the need for "effective channels of communication".

The authors state that favourable attitudes towards the innovation amongst organizational decision-makers will facilitate the move to implementation. However, they do not comment on how the attitudes of other organizational members might affect decision-making at this point; the links between this substage and the preceding one - "formation of attitudes" - thus do not appear to have been fully worked-out.

### **Implementation stage**

Once the decision to adopt is made, the initiation stage is completed, and we enter implementation. Zaltman et al split this part of the process into two substages - "initial" and "continued-sustained", as described below.

(4) **Initial implementation substage:** Here the first attempts to utilize the innovation are made by the organization, often on some sort of trial basis. If initial implementation is successful, "...in that organizational members understand it, have information about implementation, and experienced few significant problems" (p.67) the innovation should continue in use.

(5) **Continued-sustained implementation substage:** The process ends when the innovation is fully implemented and considered as part of organizational life. This is commonly referred to as "routinizing" in the literature (Hage and Aiken, 1970; Rogers, 1983).

The authors' division of the implementation stage may be considered simplistic (compared for instance to Rogers', 1983). They do draw attention to the work of intervention theorists and practitioners who have detailed sequences of tasks that need to be performed by change-agents (eg. Lippitt, Watson and Westley, 1958; Beckhard, 1969), but they argue that most are based on particular case studies and are not easily generalizable;

"The present state of the art in intervention theory does not allow for a clear-cut sequencing of phases during the stage of "implementation", because such a sequence varies with the strategy chosen and because few objective "rules" exist for choosing between strategies." (p.69).

There are difficulties in establishing a clear boundary between the two implementation substages in this model. There is no problem when the initial implementation substage consists of a formal trial or test-period; here the acceptance of the innovation at the end of the

period can be taken as the start of the last substage. What Zaltman et al do not make clear is how this boundary can be recognised in cases where there is no such test-period.

#### Application of the model

Their model of the stages in the innovation process forms the basis of Zaltman et al's theory of organizational innovation. For them, the concept of the "innovation dilemma" is central; the observation that certain structural variables may affect innovation positively during the initiation stage but negatively during implementation. The authors also point to mediating variables which can nullify the effects of the dilemma. This aspect of their work, as it concerns antecedents of innovation, will be discussed in chapter three.

Zaltman et al emphasize that the five substages of the model do not represent "a necessary or invariant order of events" and acknowledge that the process may often be "circular" with the outcomes feeding back into the organization as new problems or opportunities stimulating further innovation. However, if the model is to be of any practical use, then it must at least be a close approximation to reality in a majority of cases. There is a suspicion that the authors are attempting to have their cake and eat it, by using the model as the basis for their "innovation dilemma" theory, but disclaiming any need to test the proposed sequence of events empirically.

#### 2.4.2. A Comparison of Models of the Organizational-Level Innovation Process

In this section, six influential models of the organizational-level innovation process are compared. In addition to Zaltman et al's model, they include Wilson (1966), Harvey and Mills (1970), Hage and Aiken (1970), Kimberly (1981), and Rogers (1983). The stages proposed are summarised in table 2.2, with equivalent stages presented as far as possible in parallel; for example, "proposing change" in Wilson's (1966) model is equivalent to the "decision substage" in Zaltman, Duncan and Holbeck's (1973) model, but precedes "choice of solution" in Harvey and Mills (1970). Naturally such parallels can only be

Table 2.2 A comparison of organizational level innovation process models

Wilson (1966)	Harvey & Mills (1970)	Hage & Aiken (1970)	Zaltman et al (1973)	Kimberly (1981)	Rogers (1983)
CONCEPTION OF CHANGE	ISSUE PERCEPTION	EVALUATION	INITIATION	INITIATION	INITIATION
PROPOSING CHANGE	FORMATION OF GOALS		Knowledge-awareness	Agenda-setting	
IMPLEMENTATION	SEARCH		Formation of attitudes	Matching	
ADOPTION AND IMPLEMENTATION	CHOICE OF SOLUTION		Decision		
	REDEFINITION			IMPLEMENTATION	IMPLEMENTATION
			ADOPTION ←	Initial	Redefining/ restructuring
					Clarifying
				ROUTINIZATION	Routinizing
				UTILIZATION	EXNOVATION
				Continued/ sustained	

approximate. It must be pointed out here that Kimberly (1981) does not consider innovation to be a process, rather it is the product of a "life cycle" of adoption, utilization and exnovation processes. In effect though this is only a difference in the usage of terms and what he has to say about the innovation life cycle is entirely relevant to the discussion here. The comparison of the models will focus on three areas: the relative emphasis on pre- and post-adoption stages, the start of the process, and the end of the process.

#### Relative emphasis on pre- and post-adoption phases

The models vary quite considerably in the extent to which the focus on the process before and after the adoption of an innovation - what might be called the initiation-implementation balance. Wilson (1966) and Harvey and Mills (1970) are mainly concerned with the process leading up to adoption, and to a lesser extent the same is true for Zaltman, Duncan and Holbeck (1973), who we have seen only distinguish between "initial" and "continued-sustained" implementation. Hage and Aiken (1970) and Rogers (1983) are more balanced in their attention to the pre- and post-adoption parts, while Kimberly's (1981) innovation "life cycle" is at the opposite extreme to the first two, as it subsumes all that happens before an innovation is utilized under the single heading "adoption".

The overall pattern in the literature is for most work, empirical and theoretical, to concentrate on the events in the process leading up to the innovation's adoption. In part this may be because implementation has tended to attract the interest of scholars of planned change and intervention (e.g. Schein, 1969; Beyer and Trice, 1978), who have a rather different orientation to the subject than organizational innovation researchers (see Zaltman et al, 1973; pp.66-70). Neglecting the implementation part of the process can only lead to an incomplete picture of innovation; in particular it encourages a tendency to see the innovation process purely in terms of problem-solving and decision-making, and thus to focus excessively on the actions of key decision makers. When it is recognised that implementation is an integral part of the process, we cannot escape recognizing the fact

that innovation is a social process; for it is during implementation that the innovation impacts directly upon the social system of the organization, and vice versa. Recommendations for practice which ignore this fact must be of questionable value.

#### The start of the process

How and why the process starts is a vital question for all attempts to describe innovation. Zaltman et al's favoured explanation in terms of the performance gap is popular (e.g. Rogers, 1983; Hage and Aiken, 1970), but though the concept is a useful one, and can be applied successfully in many cases, there remain situations where it is not applicable, unless the term is used so broadly that it is taken to refer to any perceived opportunity to improve some aspect of organizational performance. Rogers (1983) maintains that opportunistic scanning of the environment is responsible for at least as many innovations as the detection of specific performance gaps. Other circumstances where innovation may occur without the existence of a performance gap include legislative dictate - such as the banning of inflammable foam in household furniture, forcing manufacturers to use new materials - and invention, in which someone within the organization devises a new procedure or product where the possibility of change had previously not been recognised.

Most of the models focus primarily or entirely on innovations imported from outside the organization rather than internally-generated innovations. In fact, only Wilson's (1966) refers explicitly to the conception of innovations by organizational members. There is evidence to suggest that this tendency, which will be termed diffusion bias, obscures important differences in the process between internally generated and imported innovations. Pelz(1981), testing the existence of process stages very similar to Rogers' (1983) found clear support for the expected time-order of stages when the innovation was imported from outside, but much more ambiguous evidence in cases of internally-generated innovation. As the import of external innovations is likely to be the responsibility of people with considerable status and power in the organization, while the generation of innovations within the

organization could occur at much lower levels, the diffusion bias in the literature may contribute to the generally managerial perspective apparent in innovation research.

### The end of the process

Within the literature, most models present some form of routinization as the last stage in the innovation process; that is, after a sustained period of use, the innovation becomes absorbed into the routine life of the organization and ceases to be perceived as innovative (Hage and Aiken, 1970; Zaltman et al, 1973; Rogers, 1983). Kimberly (1981) goes a step further than this, and proposes "exnovation" as the final point in the innovation "life cycle" - the process by which an organization consciously divests itself of an existing, fully implemented innovation, generally to be replaced by a fresh innovation. Because failure to exnovate will inhibit future innovation, this is a subject of great importance to organizations, but as yet little research has been carried out on it.

#### 2.4.3. Schroeder, Van de Ven, Scudder and Polley's (1986) model

Schroeder et al claim that existing process models of innovation are inadequate, on two grounds. Firstly, they point out that most are derived or borrowed from models of other individual, group or organizational decision or change processes, and do not clearly distinguish innovation from these. Secondly, they argue that models are generally constructed with little or no empirical evidence to validate them. One result of this is an unquestioning acceptance of discrete developmental stages in the innovation process. Schroeder et al warn that such models "...quite easily become self-fulfilling prophecies when researchers use a-priori stages or phases to design their research and to collect and analyze their data" (p.4).

In the light of these criticisms, Schroeder et al derived their model from case studies of seven on-going innovations (three administrative and four technological). The methodology used for the case studies consisted of regular questionnaires and interviews, and observation of relevant meetings.

For each innovation a case history was developed. Taking as a starting point initial observations based on the research literature and on preliminary reports from one case study (they do not specify which), the four authors evaluated each of the cases independently, attempting to find evidence for their initial observations. They then jointly discussed all their independent observations until mutually agreed conclusions regarding these were reached. At the end of this analysis, they were able to make six general observations about the innovation process. The observations are summarised below. Schroeder et al state that in the case studies the most general evidence is found for "Surprises and Setbacks" (observation 3) and "Restructuring" (observation 5), though it is relatively strong for all of them.

OBSERVATION 1: "Innovation is stimulated by shocks, either internal or external to the organization."

Very often, some form of shock is necessary before an organization comes up with new ideas or acts upon new ideas already in existence. 'Shock' is defined very widely and is not viewed as necessarily a negative event; changes in leadership, product failure, financial crisis and offers of cooperation from other organizations are all quoted as examples.

OBSERVATION 2: "An initial idea tends to proliferate into several ideas during the innovation process."

In all the case studies, the initial idea which started the innovation process proliferated into an increasing number of alternative paths. Also in most cases the innovation could not be said to consist of a single new procedure, product or device. Proliferation makes management of the innovation increasingly complex, as more and more people are involved in it or affected by it. The authors quote one manager as saying; "The problem is like trying to grow an oak tree when there are inexorable pressures to grow a bramble bush" (p.15).

OBSERVATION 3: "In managing an innovation effort, unpredictable setbacks and surprises are inevitable. Learning occurs whenever the innovation continues to develop."

It is impossible to predict all the factors which will affect the innovation process, or the effects the innovation will have. Learning from setbacks and surprises is thus very important; in one of the innovations studied, a naval weapons systems, a major product failure led to significant developments in human resource management.

OBSERVATION 4: "As an innovation develops, the old and the new exist concurrently, and over time they are linked together."

When an innovation enters an organization, it initially exists alongside the established order. Thus, in the two medical product cases the authors studied (cochlear implant and therapeutic apheresis), newer versions of the product were developed alongside older versions. In two of the administrative case histories (human resources and school-based management) the authors hypothesize that implementation was delayed because of the failure to create sufficient links between the old ways and the new.

OBSERVATION 5: "Restructuring of the organization often occurs during the innovation process."

Managers often attempt to deal with innovation characteristics such as proliferation and the co-existence of the old and the new by some form of restructuring of the organization. This may be formal or informal, permanent or temporary, and includes such things as creating new teams, committees or departments, and changing peoples' responsibilities within the organization.

OBSERVATION 6: "Hands-on top management involvement occurs during innovation. One or two levels of management removed from the innovation itself are directly involved in all major decisions."

In all the cases, a considerable degree of active involvement by top management was found. It was noted that this tended to be most apparent early in the innovation process, diminishing as it progressed.

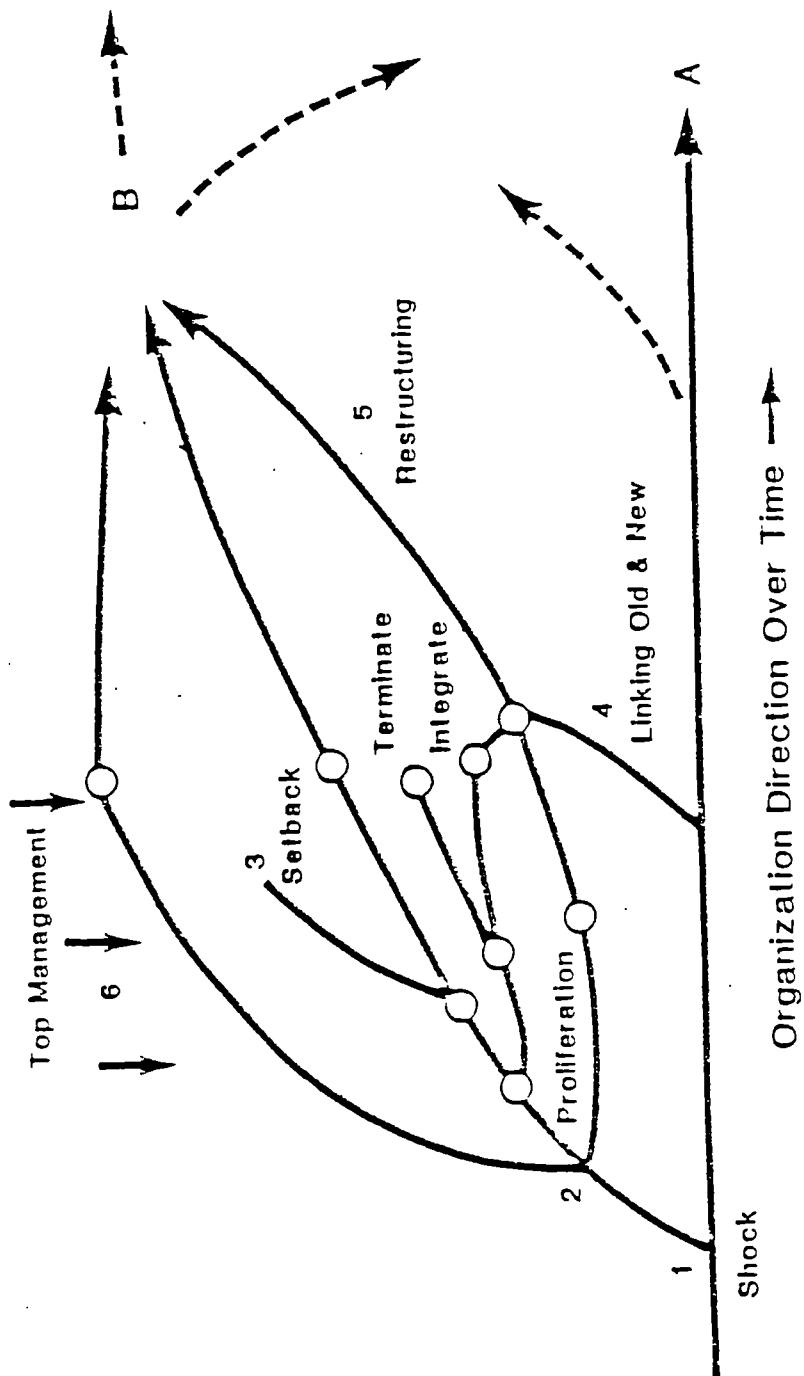
Schroeder et al take these six observations and unify them to form a model of the innovation process, shown in figure 2.1. The model may be summarised as follows. The organization is moving in the general direction of 'A', as indicated by the arrow at the bottom of the diagram. At point '1', referred to (somewhat confusingly) as "time zero" some form of shock propels the organization into commencing the innovation process. The innovation represents a discontinuity with the existing state of affairs in the organization, indicated by its movement towards point 'B'. Immediately after the start of implementation of the innovation, proliferation occurs, perhaps 'spin-offs' of the original idea, or further innovations that are found to be required for the successful implementation of the original one. As the process progresses, setbacks and surprises will occur (point 3), which might delay or even terminate the innovation. If and when such problems are resolved, further progression results in linkages between old and new, which may be of three kinds;

"(1) the old organization can be moved toward point B...as a result of the innovation, or (2) the innovation can be moved toward point A and blended into the old organization, or (3) the old and new can coexist simultaneously with linkages between the old and the new." (p.21)..)

Restructuring of the organization may be required at any point, and top management maintains a "hands-on" involvement throughout, though particularly in the earlier part of the process. Because the seven innovations on which the model is based are still in progress, the

Figure 2.1 Schroeder et al.'s (1986) model of the innovation process

Emerging Innovation Process Model



Source: R. Schroeder, A. Van de Ven, G. Scudder, & D. Polley, "Observations Leading to a Process Model of Innovation," University of Minnesota SMRC Discussion Paper # 48 (February, 1986).

authors are not able yet to provide an indication of how the process ends.

There are some problems of clarity in Schroeder et al's explication of their model, not helped by the rather confusing diagram (shown here as figure 2.1). The authors claim that innovation results in the organization "changing direction" but do not explain what they mean by this - are they saying that the organization changes its goals, its strategies, its culture, or all of these? A very similar criticism can be made about the observation that there is a "linkage of old and new". The term "linkage" - like "organizational direction" - is somewhat vague. To take one of their seven innovations as an example, the development of a new hybrid wheat, old and new strains may "coexist" in that they are being developed in parallel, but it is not clear how this constitutes a "linkage".

Questions can be raised about the generalisability of the model. Although the case histories include quite a wide range of innovations and organizations, it is arguable that seven cases cannot provide a representative enough sample to base a general innovation process model on. For instance, all the examples are major initiatives of considerable importance to their organization as a whole. It is possible that innovations of more localized importance within the organization might not have attracted the kind of "hands-on" top management involvement that the authors observed in these cases. This criticism should be tempered by the fact that none of the other models considered above is grounded directly in observations of actual innovations.

Schroeder et al's model is an important challenge to the normal approach to representation of the organizational-level innovation process. It indicates that although the comparison of a variety of on-going innovations does uncover common elements in the process, these do not appear to fall into discrete development stages, as has traditionally been proposed. Future research should both examine the generalisability of Schroeder et al's six observations, and compare

the accuracy and utility of their model with the stage-based approach (which has up to now received almost no empirical testing).

#### 2.4.4. Summary: Process Research into Organizational-Level Innovation

The bulk of process research into innovation has been at the organizational level, and unlike other levels, models describing the sequence of the process proliferate here. Zaltman et al's (1973) model has been described in detail as representative of the conventional approach, portraying the process as an ordered series of steps or stages. In their case the stages proposed are: initiation, comprising knowledge-awareness, formation of attitudes and decision substages; and implementation, comprising initial and continued-sustained implementation substages.

A comparison of six influential models of the process (table 2.2) has shown that there are considerable similarities between them, though differences in three main areas can be identified:

(1) Initiation-implementation balance: Some models emphasize the pre-adoption stages more than the post-adoption (e.g. Wilson, 1966; Harvey and Mills, 1970) while in others the situation is reversed (e.g. Kimberly, 1981). Bias towards initiation is the dominant trend in the literature. This has the danger of leading to a neglect of social and other factors influencing the development and outcome of innovation after adoption.

(2) Start of the process: Several of the models describe the start of the process in terms of perception of a performance gap - a difference between potential and actual performance. There is a tendency to imply or assume that organizations will respond to a performance gap by searching for appropriate innovations in their environment; only Wilson (1966) explicitly refers to new ideas coming from within the organization.

(3) End of the process: Mostly, models describe the process as ending with the "routinisation" of the innovation. Of the six

looked at here, only Kimberly (1981) goes beyond this, to what he calls "exnovation" - the conscious divestment of an existing innovation by an organization.

Schroeder et al (1986) have challenged the assumption of discrete developmental stages in the process. They criticize existing models for not being grounded in observation of actual innovations, and propose an alternative, more fluid model, based on their study of seven on-going innovations. The model presents six observations about the innovation process, though not in a single linear sequence. Schroeder et al's model is an important development, though at present there are some problems regarding clarity and questions about generalisability to be addressed.

### 3. DIRECTIONS FOR FUTURE RESEARCH INTO THE PROCESS OF INNOVATION

Before discussing particular areas, the first recommendation to make regarding process research is that we need more of it. The field as a whole is still dominated by the search for facilitators and inhibitors of innovation, and by cross-sectional antecedent factors designs, though there are signs that that is beginning to change (Rogers, 1983; Schroeder et al, 1986; Nicholson, 1989). Suggestions as to how process research might profitably develop are made below. The individual and group levels are looked at together, followed by the organizational. The concluding two sections make cross-level recommendations in two areas; the integration of process and antecedent factors approaches and the need for multiple perspectives of the process.

#### 3.1. The Individual and Group Levels

The individual and group levels of analysis have been so neglected as far as the process approach goes that any addition to the literature in the area would be welcome. The most important requirement is for research to move away from the creativity tradition and its largely

mentalistic approach towards a focus specifically on innovation. That means recognising the social nature of the phenomenon, for instance by including aspects of inter-personal communication in models of the innovation process, and by paying attention to how development of innovations by individuals or groups proceeds after the point of adoption. (The existing model closest to such an approach is Rogers' (1983) "innovation-decision process").

### 3.2. The Organizational Level

At the organizational level there are plenty of process models to be found. What is lacking is any systematic attempt to test their applicability to 'real-world' innovation. Schroeder et al's (1986) claim that conventional process models are of limited use because not grounded in observations of actual innovations should be investigated empirically. A comparison of their alternative model with a more traditional stage-based one (e.g. Zaltman et al, 1973) would be valuable, though the danger of stage-based models being "self-fulfilling prophecies" (as Schroeder et al point out) must be taken into account in research design and analysis of findings.

### 3.3. The Integration of Process and Antecedent Factors Approaches

In the long run, at all levels of analysis, process and antecedent factors approaches should be integrated, with aim of identifying which factors have what effect on innovations at which point(s) in the process. However, a necessary condition for substantial progress to be made in this area is the existence of process models which we can be confident of, thus emphasising the urgent need for the kind of research suggested in the previous two sections. This issue will be addressed further in chapter three, once research into antecedents of innovation has been reviewed.

### 3.4. The Need for Multiple Perspectives of the Process

Very little account has been taken of how the innovation process appears to different individuals, groups, or parts of an organization, at different times. This is an important issue for two reasons. Firstly, although models generally imply that innovation is a unitary process, this may very often not be the case. At the organizational level, for instance, an innovation may develop differently in different departments or work groups. Secondly, there may be individual or group differences in awareness of the progress of an innovation. One member of staff might know that management had decided to implement an innovation, while another is only vaguely aware that the proposition is being considered. The practical implication of this is that the picture of the process at any one data-collection point may depend very much upon whom the data is collected from. This is not just a problem to be negotiated by researchers, but an important topic for research in itself.

CHAPTER THREE: ANTECEDENT FACTORS RESEARCH ON INNOVATION  
- A REVIEW OF THE LITERATURE

1. INTRODUCTION

The most common approach to innovation research has been to examine antecedents to individual, group, or organizational innovative performance. Work of this kind is generally cross-sectional in design, and focuses in the main on a single element of the innovation process. The overall aim of such research is thus to identify helps or hindrances to the invention, or adoption, or implementation of innovations, often on the implicit assumption that innovation is 'a good thing' - the "pro-innovation bias" identified by Rogers (1983; see the previous chapter). In this chapter, antecedent factors research at the individual, group and organizational levels will be discussed. The next section will look at work on types of innovation, an area relevant to all levels of analysis, though (as is true for the literature as a whole) dominated by the organizational level. Finally, future research directions will be recommended.

2. ANTECEDENTS: WHAT HELPS OR HINDERS INNOVATION?

2.1. Introduction

There are two reasons for the preponderance of antecedents factors research in the innovation field. The first is one of utility; it addresses directly the question likely to be uppermost in the minds of clients and others sponsoring research; "How can we innovate more often and/or more effectively?" The second reason is a practical one; longitudinal process studies are expensive, especially in terms of research personnel's time, and risky as an innovation may be discontinued before researchers have obtained all the information they hoped for. The merits and limitations of antecedent factors research

compared to the process approach will be discussed further in the concluding section of the chapter.

## 2.2 Research at the Individual Level

Chapter one of this thesis has argued for a clear distinction between the concepts of creativity and innovation. However, as the concepts of innovation and creativity are often confused, or used interchangeably, in the individual level literature, and as much of it draws upon the long-established creativity research tradition in psychology, some examination of work on creativity is unavoidable. This will be most evident in the first section, where trait approaches are briefly examined. The discussion will then turn to factors of a more situational or social nature such as discretion, positive affect, and feedback/recognition. The final section will focus on attempts to place facilitators and inhibitors of individual innovation within a theoretical framework, looking at the work of Jones (1987), Lovelace (1986) and Amabile (1983).

### 2.2.1. Trait Approaches

#### Trait approaches in the creativity literature

In the mainstream literature on creativity, personality-based research has dominated. This has either involved attempts to identify and measure a "creativity" trait (e.g Guilford, 1959), or to isolate personality traits related to creative production (e.g. MacKinnon, 1962). Nicholls (1972) has argued persuasively that the former approach has not been successful and that "approaches anchored to achievement criteria seem preferable". Some of the traits frequently held to be associated with creative achievement are: a desire for autonomy (McCarrey and Edwards, 1973) and social independence or lack of concern for social norms - highly creative people are often labelled "oddballs" by superiors (Kaplan, 1963; Coopey, 1987); high tolerance of ambiguity (Child, 1973); a propensity for risk-taking

(Michael, 1979; Glassman, 1986); and anxiety (Wallach and Kogan, 1965; Nicholson and West, 1987), though probably only at moderate rather than high levels.

These are only a few of the variables that have emerged in numerous studies. While this body of work does provide a relatively consistent picture of the creative individual, it has the major drawback of being almost entirely cross-sectional. To take an example from MacKinnon's (1962) classic study of architects, we have no way of knowing whether they are creative because of their independence, or whether their independence is a product of their creativity. Similarly, creativity may emerge as a means of coping with anxiety, or anxiety may result from the difficulties inherent in creative production. Even more important for applications to innovation, the study of characteristics associated with creativity cannot by itself tell us how creative performance in work settings can be stimulated or blocked - other than by selective hiring and firing.

#### **Kirton's adaption-innovation dimension**

Before moving on to look at approaches other than personality, attention should be drawn to Kirton's (1976) attempt to define innovation in trait terms. He claims that;

"...Adaption-innovation is a basic dimension of personality relevant to the analysis of organizational change, in that some people characteristically adapt while some characteristically innovate." (p. 622).

Put briefly, adaption is "doing things better" (within the existing structure) while innovation is "doing things differently" (outside the existing structure). Kirton has developed an inventory measuring people's position on this dimension, which has been used extensively (Kirton, 1978; Carne and Kirton, 1982; Torrance and Horng, 1980). He claims that the difference between adaptors and innovators is one of style not level of creativity - in other words, that they may be equally creative. This seems questionable conceptually, and indeed

empirical evidence has shown that high innovativeness is related to high creativity on some standard tests (Torrance and Horng, 1980; Goldsmith and Matherly, 1987). In addition, his work has all the problems of the creativity trait tradition identified by Nicholls (1972; see above) and most importantly, it completely disregards social and organizational factors; this may be justifiable in discussing creativity, but not innovation.

### 2.2.2. Situational Factors

A substantial body of work exists on variables of a more situational nature. This tends to focus on creativity and creative problem-solving in the work setting more often than the personality-based work does, and it is generally more directly relevant to innovation. A group of variables which might be labelled social/organizational can be included here. While work on factors such as organizational structure is principally concerned with the effects on organizational level innovation, a minority of studies examine their impact on individual creative or innovative performance. Some of the most commonly-appearing situational factors are described below

#### Discretion

Discretion or freedom of choice is frequently cited as a positive antecedent of creative or innovative performance (Amabile, 1984; Peters and Waterman, 1982; West, 1987). Freedom of time use appears to be particularly important (Lovelace, 1986), though Glassman (1986) states that findings such as those of Farris (1973) and Pelz and Andrews (1976) suggest that "...complete freedom of choice of how to spend one's time is not as effective as moderate freedom involving supportive consultations with supervisors or managers." (Glassman, 1986; p. 176).

#### Positive affect

Isen, Daubman and Nowicki (1987) have examined the effects of positive affect on creative problem solving. In a series of experiments they found that subjects in whom they induced positive feelings - in one case by watching an extract of a comedy film, in another by a small

gift - performed better at tasks requiring creative solutions than the control groups. Simple arousal, produced by exercise, and induced negative affect had no influence on the level of creative performance. How this finding might be applied to individual performance in work organisations remains to be examined.

### **Leadership**

Questions concerning leadership have received considerable attention, as researchers have sought to provide practical advice on how to manage creative people effectively. Many writers have stressed the need for participative and collaborative leadership (eg. Peters and Waterman, 1982; Kanter, 1983), though Glassman (1986) has argued that no single style can be universally prescribed. Referring to work on "Leadership Interaction Theory" (Fiedler et al, 1976; Hersey and Blanchard, 1982; etc), he suggests that leadership style should be modified according to the degree of self-direction exhibited by subordinates.

### **Feedback and recognition**

Feedback and recognition from supervisors have been found to play an important role; Amabile (1984) found appropriate feedback to be an important facilitator of creativity amongst R & D managers, while one of the obstacles to creativity mentioned by many of Glassman's (1986) participants - also from R & D - is "lack of appreciation of creative accomplishment." West (1989) found social support from superiors to be a predictor of innovation amongst community nurses.

### **Organizational structure**

Consideration of organizational structure in relation to creative performance at work has focussed on hierarchy. The consensual view is illustrated by Kanter (1983), who points out the deleterious effect on creativity of the "elevator mentality" in organizations where restrictive vertical relationships and "top down dictate" dominate. Reviewing the literature, Lovelace (1986) concludes that "...an organic, matrix and decentralized structure will provide the creative individual with freedom sufficient to be creative" (p.165). The

implication here is that organizational structure is important for individual creativity because it is a determinant of many of the variables discussed above, such as discretion.

#### **Effects of the wider culture**

Going beyond the organizational level, Coopey (1987) discusses how the wider culture in which an individual lives might influence his or her creativity and innovation at work. He cites March (1984), who argues that within Western society, consistent rationality is rewarded at the expense of the "playful attitude" of mind which is related to creativity. Within business, the continued influence of Taylorite notions of "Scientific Management" (though increasingly discredited by research) and the excessive emphasis on technology (Sarnoff and Cole, 1983) have reinforced this bias. Empirical support comes from Agor (1986) who studied the extent to which managers use intuition. Participants believed strongly that they used intuition in decision making, and many claimed to have made efforts to increase their use of it, but more than half the sample chose to "cover up", rather than admit to their colleagues that they used intuition - even if it meant extra expenditure of time and resources.

#### **2.2.3. Theoretical Frameworks for Antecedent Factors Research into Individual Innovation**

As can been seen, there is no lack of variables which have been proposed as influences on individual creativity or innovation, and in many cases there is considerable empirical support to back them up. However, there have been relatively few attempts to place facilitators and inhibitors within a theoretical framework which would help us to understand why particular factors have a particular effect. There are exceptions to this, and three of them will be discussed here; the work of Jones (1987), Lovelace (1986), and Amabile (1983).

##### **Jones' (1987) information-processing model**

Jones (1987) is concerned specifically with blocks or barriers to creativity. He collected data from managers, and from this proposed an information-processing model (based on Atkinson and Shiffrin, 1971) of

blocks to creativity. The four types of block are "strategic", "values", "perceptual" and "self-image". Of these, only strategic blocks - in effect, lack of appropriate creativity skills - can be dealt with by traditional creative problem-solving training. In all the other cases, the problem is not inadequate strategies for creativity, but that information processing barriers exist which prevent access to the full range of strategies; what is required is training appropriate to the particular type of block. The three types of non-strategic block are summarised below, along with the kind of training recommended to overcome them.

(1) **Values blocks:** These occur where an individual's values prevent him or her from acting creatively. An example is the so-called "Theory X" management belief that "there's only one thing workers understand - and that's discipline". Appropriate training would be aimed at making the individual more aware of how values (their own and their organization's) affect their problem solving. Techniques might include role playing and the discussion of hypothetical examples.

(2) **Perceptual blocks:** Here the manager may be consistently overlooking opportunities, or failing to anticipate threats as early as possible. Training in greater perceptual sensitivity is prescribed, especially such things as listening skills, and more discipline in discussions and meetings to ensure nothing important is missed out or inadequately covered.

(3) **Self-image blocks:** These will be found when the individual does not have the self-confidence to resist anti-innovation social pressures. He or she needs to learn to fight for ideas - assertiveness training may thus prove beneficial.

Jones' model is at an early stage of development, but there is much in it that is promising. One of the most interesting aspects of it is that it suggests that cognitive blocks to creativity may often have nothing to do with a lack of creative ability. An issue that needs to

be addressed with regard to applying the model is that sometimes more than one type of block might operate. For instance, an individual with authoritarian values may show insensitivity or lack of attention to ideas involving participation (i.e. values and perceptual blocks). The major criticism of the model is that it ignores social and organizational influences; training might be able to remove blocks to creativity from individuals, but this could be to no avail if the groups or organizations within which creative ideas have to be implemented remain strongly anti-innovative. The limited scope of the model must be recognised - it is not really concerned with how creative ideas once produced and accepted are actually implemented, and so is only of partial relevance to innovation.

#### Lovelace's (1986) motivational framework for stimulating creativity

Lovelace is concerned with how R & D managers can stimulate creativity in basic scientists. Citing Smeltz and Cross (1984) he maintains that creative performance is a function of both ability and motivation, and that it is therefore the responsibility of the R & D manager to manipulate the environment in such a way as to motivate scientists. As a theoretical foundation upon which recommendations for interventions can be based, Lovelace suggests Maslow's (1943) **Need Hierarchy theory** of motivation. He claims that; "In potentially creative individuals such as scientists, self-actualization needs will motivate the scientist to express fully his creativity" (p.166). The manager's goal should be to ensure that lower order needs are fulfilled (i.e. safety, social and esteem needs), allowing self-actualization to stimulate the scientist. Lovelace proposes three managerial activities by which this might be achieved: acting as a "linking pin" between scientists and the rest of the organization; defining roles and setting objectives; and acquiring resources.

The major problem for Lovelace's work is its foundation upon Maslow's theory. Extensive research has found it very difficult to apply the need hierarchy in real organizational settings (see Wahba and Bridwell, 1976). Lovelace should be given credit, though, for taking more account of factors outside the individual than, for instance,

Jones (1987) does, and for detailing how particular managerial interventions will satisfy particular needs of scientists.

#### **Amabile's (1983) social psychological model**

Amabile's (1983) theory has already been outlined in the previous chapter, where her proposed stages in the creative process were examined. To recap briefly, she maintains that there are five steps in the process (task presentation, preparation, idea generation, idea validation and outcome assessment), progress through which is influenced by three "components" of creativity - task motivation, domain-relevant skills and creativity-relevant skills. Although she does discuss the nature of the skill components, the main focus of her work - theoretical and empirical - is the part played by motivation. She proposes an "intrinsic motivation hypothesis of creativity", that; "...the intrinsically motivated state is conducive to creativity, whereas the extrinsically motivated state is detrimental." (p.91).

Her early empirical work was all experimental and clearly supported this hypothesis, showing the inhibiting effects of extrinsic motivators such as rewards on creative performance. In her first field study testing the theory, using as subjects R & D managers (Amabile, 1984), she found as expected that intrinsic motivators facilitated creativity, but although most extrinsic motivators were inhibitors, contrary to the theory a few emerged as facilitators. "Challenge" was mentioned by 24% of her subjects as a stimulus to creativity, while 17% mentioned "pressure" and 15% mentioned "recognition". Amabile does not offer an explanation of these findings, and states the need for further applied work.

Amabile's theory has two main advantages over Lovelace (1986). Firstly, by concentrating on "task motivation" rather than general motivation she avoids the problems of applicability and testability associated with Maslow's theory. Secondly, her inclusion of skill components sets realistic limits to the potential effects of motivation - no matter how motivated, a person without the appropriate skills for the task at hand, and without sufficient creative-thinking

skills, will not be able to perform creatively at the task. Nevertheless, there is a problem with the intrinsic motivation hypothesis, as in practical terms it is hard to define what is or isn't an intrinsic factor.

The two writers are in close agreement though when it comes to recommendations for managers about stimulating creativity; as we have seen, Lovelace holds that managers should seek to satisfy their subordinates' lower order needs so that self-actualization needs can have a free rein, while Amabile stresses the need to minimise extrinsic demands and constraints in order to encourage intrinsic motivation and thus creativity. In effect, both authors are saying that managers should clear away factors which distract from or interfere with the free flow of creativity. Thus, although Amabile presents "A Social Psychology of Creativity", social and organizational factors have an indirect and negative role as environmental constraints and demands which lead to extrinsic motivation.

#### 2.2.4. Summary: Antecedent Factors Research into Individual-Level Innovation

There exists a large literature on antecedents of individual creative performance, much of which could be applied to the work setting - some indeed is concerned with the creativity of particular occupational groups (e.g. MacKinnon, 1962; Glassman, 1986). However, a large proportion of this is concerned with the personality traits of creative people; such an approach is entirely asocial, and at best can only indicate which individuals are most likely to come up with creative new ideas. It tells us nothing about the likelihood of those ideas being implemented as actual innovations.

A substantial amount of work has been carried out on factors of a more situational kind, including social and organizational variables. As with the research dealing with individual characteristics, very little is explicitly focussed on innovation, but the terms "creativity" and

"creative problem solving" are often used synonymously with innovation. Work on some of these variables is quite extensive, particularly discretion, leadership styles, and feedback and recognition, where there is an emergent consensus on their effects on individual innovation. For instance, it is widely recognised that high discretion facilitates innovation (Amabile, 1984; Lovelace, 1986; West, 1987), except perhaps at very high levels (Farris, 1973; Pelz and Andrews, 1976). The major problem of the existing research into situational antecedents of individual innovation is that mostly it is not set in any theoretical framework. Recently, attempts have been made to address this problem (Jones, 1987; Lovelace, 1986; Amabile, 1983, 1984), but much remains to be done, especially in the integration of social factors into theory in a role other than as blocks or constraints to innovation.

### 2.3. RESEARCH AT THE GROUP LEVEL

As with the innovation process literature (chapter 2), the group level of analysis has received the least attention of the three. However, some possible facilitators and inhibitors of group innovation have been studied, and in addition, there are aspects of social psychological work on groups which offer promising applications to the innovation field. The first part of this section will review some of the variables which have been proposed as antecedents to group-level innovation, the most frequently discussed of which are leadership and group cohesiveness. The second part will examine areas of the mainstream social psychological literature of theoretical relevance to innovation in working groups.

#### 2.3.1. Proposed Antecedent Variables to Group-Level Innovation

##### Leadership

Many writers have concluded that a democratic, collaborative leadership style encourages group innovation (Nystrom, 1979; Coopey,

1987). Coopey points to a study by Farris (1982), which showed that in research laboratories, the more innovative groups "collaborated more highly with their supervisors and with each other than did the less innovative groups." Similarly, Wallace (1987) found that "peer leadership" (Taylor and Bowers, 1971) discriminated significantly between highly innovative and less innovative teams in primary health care practices, as reliably rated by independent experts. The highly innovative teams exhibited a greater degree of leadership support, goal emphasis, team building and work facilitation.

Individual-level antecedents of innovation appear at the group-level as recommendations for leadership style. Leaders are thus advised to create group environments with high, though not unlimited, discretion (Glassman, 1986), and to identify and remove blocks to their subordinates' creativity (Lovelace, 1986; Jones, 1987). In applying individual-level leadership concepts directly to groups, specifically group-level factors such as minority influence (Moscovici, Mugny and Van Avermaet; 1985), and conformity (Asch, 1956) have been neglected. Yet until more is known about the kind of group environment that encourages innovation, it is premature to make recommendations about how leaders may influence groups to be innovative.

#### Cohesiveness

The one specifically group-level factor which is commonly mentioned as an antecedent to innovation is cohesiveness. However, on the basis of current knowledge of the effects of cohesiveness on group performance, contradictory influences are evident. On the one hand, it is argued that cohesiveness facilitates innovation because it increases feelings of self actualization and psychological safety (Nystrom, 1979). On the other hand, an important factor in producing high cohesiveness is group homogeneity (Crosby, 1968), which is likely to inhibit innovation because it leads to unwillingness to question group decisions, a focus on relationships rather than tasks and other factors contributing to the "Group Think" phenomenon (Janis, 1972).

Not surprisingly then, the empirical evidence is ambiguous. Wallace (1987) found that cohesiveness discriminated significantly between health care teams previously identified as high or low in innovativeness, but that across all the practices there was no significant correlation. Further research is necessary to determine whether a simple linear or some form of curvilinear relationship exists between innovation and cohesiveness.

Nystrom (1979) attempts to resolve the contradiction by stating the need to alter group characteristics according to the current stage of the innovation process. Early on loosely-joined, heterogeneous groups are required to facilitate the production of innovative ideas, while later groups should be cohesive and homogeneous to facilitate implementation. The problem, of course, is how such a structural transition could be achieved in practice, especially as any given group may be involved in the introduction of several innovations at the same time, all at different phases in the process.

#### **Group longevity**

Lovelace (1986) suggests that research scientists should not be assigned to permanent groups, and Nystrom (1979) too argues for the advantages of relatively short-lived groups, at least as far as the early stages of the innovation process are concerned. A study by Katz (1982) found longevity to be negatively related to performance in R & D teams; however, this represents only indirect support for Nystrom's argument as it cannot simply be assumed that the general level of performance and the level of innovation will always be equivalent. To further complicate matters, group longevity might be expected to increase cohesiveness. Again, more research is needed before conclusive statements can be made about how longevity of the group affects its innovativeness.

#### **Group composition**

Geschka (1983) proposes that specially trained innovation planning teams be constituted within organisations, comprising six to eight members drawn from differing fields or functions. Teams should include

one or two "opinion leaders" who can aid in dissemination of innovation. The need for "stimulating colleagues" has also been stressed (Parmeter, 1971) but more precise knowledge of how composition of the group can affect innovation is required. Social psychological research on minority influence in groups may offer pointers here, suggesting that a minority of dissenting members in group decision-making can lead to more possibilities being examined and consequently to better quality decisions (Nemeth and Wachtler, 1983; Maass and Clark, 1983). This is in line with Janis' (1972) recommendations for avoiding "Group Think", which include the presence of an individual who will play a 'devil's advocate' role, ensuring all decisions made are thoroughly questioned. In any case, even at this early stage in our understanding, it would be naive to presume that the best way to ensure that a group is innovative is to ensure that it is composed of highly creative individuals.

#### Group structure

Meadows (1980) has attempted to apply Burns and Stalker's (1961) concept of "organic" organizational structure to small working groups. Organic groups are characterized by: an integrative, team-oriented approach to tasks; blurred boundaries of responsibility and authority; a high volume of lateral and supportive interpersonal communication; commitment of members to their skills or professions rather than to the organization; and participative decision-making. In a study involving R&D and technical departments in the chemical and telecommunications industries, he found a significant positive relationship between their measure of organicity and the perceived innovativeness of group tasks. However, the relationship between these factors and actual innovative performance remains to be tested.

#### 2.3.2. Relevant Areas of the Social Psychological Literature

Turning to the social psychological literature on groups, there is much that would appear to be applicable to innovation. This is particularly true for work with an emphasis on group decision making. "Group think" (Janis, 1972) has already been referred to as a possible consequence of high cohesiveness and homogeneity; we might expect it to

lead to a failure to be sufficiently critical of proposed innovations and to consider alternatives, leading to a deterioration in quality, rather than quantity, of innovation. The "risky shift" (Stoner, 1968) phenomenon - the observation that groups tend to take riskier decisions than individuals - may also have an effect on innovation, with the implication that where innovation is being inhibited by too much caution, decisions should be made by groups rather than individuals. However, caution is required here, given that later researchers have not always found a shift towards risk (Zajonc et al, 1972; Lamm and Myers, 1978); as McGrath (1985) says;

...we cannot assume anything to be true about the decision-making proclivities of *all* groups, working on *all* problems, under *all* sets of social conditions." (p.67).

More relevant might be the social psychological study of risk escalation in decision making. Teger (1980) studied experimentally the escalation process and showed that both individuals and groups will continue with behaviour which is ineffective, costly and unlikely to succeed because they are unwilling to 'lose' what they have already invested. This may help to explain why practices which have proved unsuccessful, or are outdated, may be retained rather than terminated in favour of new, innovative ideas (Kimberly, 1981). Finally, work on inter-group processes may be applied to innovation. Our knowledge of inter-group conflict (Sherif and Sherif, 1969) and identification with the group (Tajfel 1974) suggests that there may be circumstances where competition between groups would facilitate innovation, even though at the individual level we might expect it to be an inhibitor, because of its extrinsic nature.

There is a need for caution in applying social psychological research on groups to the innovation field, as most of the former is experimental, often drawing its samples from students or schoolchildren. In the complex environment of an organization, groups will be affected by a wide range of influences, whose interactions cannot readily be extrapolated from laboratory studies. Perhaps most

importantly, individuals may be members of many groups, in some cases with conflicting interests. However, what may be of most value to group level innovation research is the theoretical foundation that social psychology can provide - something very much absent in the group innovation literature.

### 2.3.3. Summary: Antecedent Factors Research into Group-Level Innovation

Existing research has addressed the influence of variables such as leadership, cohesiveness, longevity, composition, and structure upon work group innovation, though only the first two have been studied in any depth. There are two main problems with research at this level, other than the scarcity of studies compared to individual and organizational levels. First, truly group-level factors are generally neglected in favour of extrapolations from the individual level, especially in leadership studies (e.g. Lovelace, 1986; Glassman, 1986). Secondly, research is often lacking in theoretical foundation. This is surprising, since the extensive social psychological literature on groups offers much that could be drawn upon - in the areas of conformity, group decision-making, and inter-group processes, for instance.

## 2.4 RESEARCH AT THE ORGANIZATIONAL LEVEL

Antecedents to organizational-level innovation have received more attention than any of the other research areas dealt with in this review of the literature, and a very large number of facilitating and inhibiting factors has been suggested. Three main types of factor can be identified: characteristics or behaviour of organizational members, characteristics of the organization, and extra-organizational factors. These will be examined in turn.

### 2.4.1. Characteristics and Behaviour of Organizational Members

The influence of member characteristics on organizations' innovativeness has been one of the longest standing research areas

within the innovation field. The bulk of the work has concentrated on those controlling innovations - leaders and decision-makers - and on change agents. The influence of others within the organization has generally been referred to only in terms of resistance to change.

#### **Leaders and decision-makers**

Early work on organizational innovation was dominated by a focus on characteristics of leaders and/or decision makers. In many cases, data for an organization was only collected from one individual - in Mohr's (1969) classic study of innovation in American and Canadian public health organizations, data for each department involved came only from the interview responses of the local health officer (see also Ettlie, 1983; Ackermann and Harrop, 1985). Although this approach does make it relatively easy to study a large number of organizations at once, it results in "...a picture of organizational innovativeness only as seen from the top" (Rogers and Agarwala-Rogers, 1976). An innovation attempt can involve any number of people within the organization, up to its entire membership, and all their viewpoints must be incorporated if we are to gain a full understanding of what is happening. Nevertheless, leadership variables remain important because almost all organizations are to some degree hierarchical and as a result decision-making power tends to be concentrated in the hands of leading individuals.

In the study mentioned above, Mohr (1969) found a significant relationship between leader motivation, conceptualised in terms of "ideology-activism", and frequency of innovation. Where local health officers had more liberal ideologies and a more interactive view of their role, a higher level of innovation was found. There was, however, a strong interaction between leader motivation and resources; "When resources are high...a unit increase in health officer motivation, as measured, has about 4½ times the effect upon innovation as when resources are low." (p.124).

Kimberly and Evanisko (1981) also looked at leader characteristics in American health organizations. They examined separately the

relationships between levels of innovation and characteristics of Hospital Administrators and Chiefs of Medicine, along with organizational and contextual factors. Overall, leader characteristics proved to be poorer predictors of innovation than organizational factors. Of the leader characteristics included, the tenure, educational level and involvement in medical activities of Administrators positively predicted technological innovation, while time spent in committees was a negative predictor. Their cosmopolitanism, along with educational level, positively predicted administrative innovation. For Chiefs of Medicine the only significant relationship with innovation was a positive one between involvement in administrative affairs and technological innovation.

Pierce and Delbecq (1977) and Patti (1974) have stressed that pro-change values on the part of strategic decision-makers will facilitate organizational innovation. Hage and Dewar (1973) found that "elite values" were responsible for more of the variance in innovation than any single structural variable.

Moving away from the effects of relatively stable characteristics such as values, educational level, tenure and so on, there is a considerable amount of work which looks at or makes prescriptions for the appropriate management style and actions to encourage innovation. Van de Ven (1986) proposes three principles for developing "...an infrastructure that is conducive to innovation and organizational learning". First, critical limits for organizational innovation must be defined with a clear set of values and standards. Second, the organization must

"...develop the capacity for double-loop learning - that is, it must be able not only to detect and correct deviations from the standards it has set, but also to detect and correct errors in the standards themselves" (p.590).

Third, the organization must preserve rather than reduce uncertainty and diversity.

Much of the work on managing individual innovation can and has been applied to the organizational level. There is a consensus that a democratic, participative leadership style is conducive to innovation (Kanter, 1983; Nystrom, 1979). Bouwen and Fry (1988) refer to studies carried out in several Belgian companies examining the management of innovation, and make the point that in managing novelty effectively it is not enough simply to avoid those practices and procedures that inhibit it; there is a need to actively attend to the management of ideas.

#### Idea champions and change agents

As stated earlier, a "top-down" only view gives an incomplete picture of organizational innovation, yet it is taken in a large proportion of research. Of the work discussed so far, only Patti's (1974) addresses the issue of how decision-makers react to innovations proposed by subordinates. In the studies carried out by Bouwen and Fry (1988) and their colleagues, it was commonly observed that innovation required the extraordinary effort of an individual idea champion, and they argue that; "Part of managing novelty is therefore concerned with how the enterprise allows and rewards such courageous persons to emerge and attract others' attention." (p.13).

Bouwen and Fry are chiefly concerned with individuals who informally adopt the "idea champion" role, but often an individual (frequently an outsider) is formally appointed to the task of overseeing the innovation process. Such an individual is commonly called a "change agent", and there exists a large body of research concerning the appropriate actions and characteristics of change agents. Findings in this area are summarised by Rogers (1983), who proposes from the available evidence that change agent success in securing clients' adoption of innovations is positively related to the following factors;

- "... (1) the extent of change agent effort in contacting clients,
- (2) a client-orientation, rather than a change-agency orientation, (3) the degree to which the diffusion program is

compatible with clients' needs, (4) the change agent's empathy with clients, (5) his or her homophily [*i.e. shared attributes and attitudes*] with clients, (6) credibility in the clients' eyes, (7) the extent to which he or she works through opinion leaders, and (8) increasing clients' ability to evaluate innovations." (p.343).

In addition he suggests that contact with change agents by clients is positively related to client social status, social participation, education level and cosmopoliteness. Rogers cites the number of studies including each factor and the proportion supporting the "generalization" about it; the lowest proportional support is 74%, and in many cases there is 100% support, although it should be noted that factors (5) to (8) are all found in fewer than five studies, and there is no evidence regarding (4). It should be noted that the literature on change agents often does not distinguish between levels of analysis, that is, between situations where the client is an individual and where it is an organization.

#### **Resistance to change**

In looking at the characteristics and behaviour of organizational members, innovation researchers have, as mentioned earlier, tended to concentrate on leaders and/or decision makers, with a separate strand of work looking at change agents. Where other members of the organization have been considered, it is usually in the context of resistance. Watson (1970) discusses forces of resistance as they operate "in personality" and "in the social system", and a similar division will be used here.

A number of individual psychological factors has been studied in relation to resistance to organizational innovation. Selective perception is mentioned by both Watson (1970) and Zaltman and Duncan (1977); it is argued that having formed an attitude, people tend to respond to subsequent suggestions for change within their established outlook. There are clear parallels here with Jones' (1987) "perceptual blocks" to creativity. Other factors associated with resistance

include such things as conformity to norms, habit, low tolerance for change, dogmatism, low tolerance for ambiguity, and low risk-taking propensity. Some of these have already appeared as inhibitors to individual level innovation, which raises the question of how individual innovativeness is related to attitudes to organizational innovation - this appears to be an area that researchers have not addressed.

Five social system factors are commonly identified in the literature as sources of resistance to innovation (Bedeian, 1980); (i) vested interests of organisational members; (ii) rejection of outsiders, where an innovation is introduced by an external change agent; (iii) misunderstandings due to lack of clarity, especially between higher management and those on whom an innovation is imposed; (iv) an organizational structure incompatible with the innovation; (v) finally, lack of top-level support and commitment. The last three of these factors were all major contributors to the relative failure of the new teaching system examined in Gross et al's (1971) case study of educational innovation.

Researchers have been over-ready to explain innovation failure in terms of resistance to change; few have examined how attitudes and behaviours of organizational members can facilitate innovation. Rogers (1983) argues that innovation research is marred by an "individual-blame bias", which implies that "...if the shoe doesn't fit, there's something wrong with your foot". This is linked to the other bias Rogers identifies - the "pro-innovation bias"; if researchers and practitioners ceased viewing innovation as intrinsically good, they would feel less need to attribute "blame" for failure. As it is, there has been little attention payed to the positive role resistance can play for the organization - for instance, by highlighting unanticipated negative consequences of planned changes - though exceptions can be found (e.g. Zaltman and Duncan, 1977; Klein, 1970). The whole approach to the involvement in innovation of organizational members other than top decision-makers needs revising; the very term 'resistance to change' has deprecatory connotations, implying

irrational, unthinking behaviour. People may have very good reasons for resisting an innovation, not the least of which being that "...the advocated innovation is simply not functional enough; that is, it does not do what it purports to do." (Zaltman et al, 1973; p.85).

Lastly, the relationships between organizational members' attitudes to innovation, and other work-related attitudinal variables - such as job satisfaction and commitment to the organization - have been neglected. This isolation of attitudes to innovation from peoples' wider feelings towards their work and their organization can only encourage the perception of such attitudes in simplistic 'resistance/acceptance' terms.

#### 2.4.2. Characteristics of the Organization

A wide range of organizational characteristics has been studied as possible antecedents of innovation, including size, structure, resources, knowledge of innovations and age. Recently, an increasing emphasis has been placed on strategy, climate and culture, though the last two have not really developed beyond the level of speculation.

##### Organizational size

Kimberly and Evanisko (1981) found organizational size to be the best predictor of both technological and administrative innovation in American hospitals. Similar findings in hospitals and health departments have been obtained by Kaluzny, Veney and Gentry (1974), Mohr (1969), Mytinger (1968) and others. The evidence is not all one way though; Rogers (1983) for instance cites a 1981 report from the U.S. General Accounting Office which observes that "small-sized organizations are more inventive in developing new technological products", while Utterback (1974) concludes in a review of innovation in industry that firm size does not appear to influence speed of adoption of innovations.

There are two major problems with the use of organizational size as a predictor variable for innovation. First, there is considerable variation in what is meant by organizational size and consequently in

how it is operationalized (Kimberly, 1976). Second, size may not be a variable of theoretical interest or importance in itself, but rather "a surrogate measure of several dimensions that lead to innovation" (Rogers, 1983: see also Aiken and Hage, 1971; Baldridge and Burnham, 1975). In Mohr's (1969) study, for instance, it was found that size predicted innovation "because it connoted a summary of factors that included motivation, obstacles, and resources in a highly conducive combination." (p. 120).

#### Organizational structure

Structural variables have probably received the most attention of any in the organizational innovation literature. Three which are frequently examined together are centralization, formalization and complexity. Centralization refers to the extent to which authority and decision making is concentrated at the top of the organizational hierarchy. Formalization is the degree of emphasis placed on following rules and procedures in role performance. Complexity refers to the amount of occupational specialization and task differentiation in the organization. Zaltman et al (1973) argue that these variables have contrasting effects at the initiation and implementation stages of the innovation process (the so-called "innovation dilemma"): initiation is facilitated by low levels of centralization and formalization and high levels of complexity, while implementation is facilitated by high centralization and formalization and low complexity. The evidence regarding each of these variables is examined below.

(1) **Centralization:** There is clear empirical evidence for Zaltman et al's proposition that high centralization inhibits initiation of innovations because it restricts channels of communication and reduces available information (eg. Hage and Aiken, 1967; Burns and Stalker, 1961; Shepard, 1967). The greater participation that results from a decentralized structure allows more viewpoints to be brought into consideration and is likely to produce a greater diversity of ideas. The evidence is less clear for the facilitating effect of centralization on implementation of innovations, though Kimberly and Vanisko (1981) found a significant negative relationship between it

and the adoption of technological innovations by hospitals. Zaltman et al state that centralization helps organizational members to know what is expected of them, and thus reduces the ambiguity and role conflict which can be caused by implementing changes. However, they themselves admit that participation (a feature of decentralized structures) can "increase organizational members' commitment to working through the sometimes difficult implementation stage"; Pierce and Delbecq (1977) argue that for this reason, centralization will inhibit implementation as well as initiation, though the effect will not be as strong.

(2) **Formalization:** Zaltman et al (1973) hold that formalization is an inhibitor of innovation initiation, because "rigid rules and procedures may prohibit organizational decision makers from seeking new sources of information". Rogers (1983) and Pierce and Delbecq (1977) agree, though the latter raise the possibility that a formal mandate to innovate and experiment may actually stimulate innovation. The evidence for the reverse effect in the implementation stage is better than for centralization; for instance, a study by Neal and Radnor (1971) found a strong positive relationship between the establishment of procedural guidelines and the successful implementation of new operation research activities in large firms.

(3) **Complexity:** Organizational complexity is held by Zaltman et al to be positively related to innovation initiation and negatively related to implementation. This is because at the initiation stage "diversity in occupational backgrounds can...bring a variety of sources of information to bear, which can facilitate awareness or knowledge of innovations" (p.135), but at the implementation stage greater diversity provides more opportunities for conflict, making a consensus harder to reach. Studies by Sapolsky (1967) in department stores and Carroll (1967) in medical schools show this pattern of results, but Hage and Aiken (1967) found reasonably strong correlations between complexity and the adoption of innovations by social welfare organizations. Kimberly and Evanisko (1981) found specialization and functional differentiation (measured separately) to be significant predictors of hospital adoption of technological innovations. It may

be that the facilitative effects on initiation outweigh the inhibitive effects on implementation (Pierce and Delbecq, 1977).

To sum up, the evidence regarding the "innovation dilemma" does offer some support but it is not full and unambiguous. For the proposition to be adequately tested, it is necessary for longitudinal studies to be carried out which can effectively monitor the influences of centralization, formalization and complexity on the different stages of the innovation process. Although this need has been recognised for some time (see Rogers and Agarwala-Rogers, 1976), such studies remain rare, in part because of the practical difficulties involved.

Of the other organizational structure variables which have been studied, probably the most important is stratification, that is, the number of status layers or levels within an organization. The consensus view is that high stratification inhibits innovation, because it leads to too much preoccupation with status and insufficient freedom for creative thinking (Kanter, 1983).

#### Resources

In examining the influence of resources on innovation, some studies (e.g. Mohr, 1969) have used a general resource measure such as expenditure. More frequently researchers have concentrated on the availability of slack resources; that is, "the degree to which uncommitted resources are available to the organization" (Rogers, 1983). Not surprisingly, measures of available resources are consistently found to be positively related to innovation; this was so in Mohr's (1969) study where, as we have seen, resources also mediated the effects of leader motivation. Rogers and Agarwala-Rogers (1976) suggest that very high levels of slack may actually create a need for innovation - they give as an example the technological innovations adopted by some Arab nations in order to make use of their oil wealth.

As with organizational size, there are problems in the measurement of slack. Rogers and Agarwala-Rogers (1976) make the criticism that much of the research operationalizes the variable in shallow or imprecise

ways, such as a by equating it with profit alone. They point out that slack "is a concept which is as much psychological as financial"; it is not just a matter of what resources exist but whether organizational decision makers believe resources to be available specifically for innovation. Support for this contention comes from Meyer (1982), who looked at factors determining the responses of a group of hospitals to a severe "environmental jolt" (a doctors' strike). He found that slack acted as a cushion against the impact of the strike; hospitals with high slack resources could avoid the need to innovate in response to the "jolt", while some with lower slack used the strike as an opportunity for learning and subsequent innovation.

Patti (1974) gives another set of circumstances in which there may be a negative relationship between resources and innovation - when resources are in the form of "sunk costs". His argument parallels Teger's (1980) individual and group level work on escalation - the "too much invested to quit" phenomenon. The more resources an organization has previously invested in an existing arrangement or pattern of behaviour the less likely it is to be willing to change it. Kimberly (1981) makes a similar point when he says that an organization may fail to "exnovate" (i.e. choose to rid itself of) a non-effective innovation despite resultant costs because it is concerned with "maintenance of prestige or...face saving". The relationship between innovation and resources is clearly more complex than many writers have allowed for.

#### **Organizational knowledge of innovations**

This variable refers to the organization's ability to identify potentially useful innovations in the environment. In part this will be determined by characteristics of key personnel - attributes such as professionalism and cosmopolitanism (Rogers and Agarwala-Rogers, 1976), but of at least equal importance is the extent to which the organization encourages and engages in active innovation-seeking behaviour (Kimberly, 1978; Tushman, 1977). Support for the facilitative effect upon innovation of this variable is not entirely

consistent; Kimberly and Evanisko (1981) found that "external integration" was not related to adoption of either technological or administrative innovations.

The use of the 'knowledge of innovations' variable pre-supposes that the organization will react to a performance gap by seeking to import an innovation from the external environment, rather than invent a solution of its own. This tendency, or "diffusion bias", was noted in process as well as antecedent factors research (see chapter two). Little effort has been made to determine the relative frequencies of internally generated and imported innovations.

#### **Organizational age**

Pierce and Delbecq (1977) propose that the relationship between organizational age and innovativeness will be a negative one; citing Aiken and Alford (1977) they state that "the older the organization, the more bureaucratic the system and the less receptive the system is to policy innovations" (p.32). In contrast, Kimberly and Evanisko (1981) argue that older hospitals "might be expected to adopt innovations as a way of insuring their status in the community"; they found positive relationships between age and both technological and administrative innovation, though only significant in the former case. As with organizational size, and slack, there are difficulties in operationalizing age. Taking the above examples, Pierce and Delbecq define it in terms of "the length of tenure of strategic organizational members"; Kimberly and Evanisko do not state how they have operationalized age, but from their discussion it seems that they have used the absolute age of the organization - that is, the length of time it has been in existence. There is a need for greater clarity in future.

#### **Organizational strategy, climate and culture**

These factors are increasingly attracting attention in relation to organizational innovation, though as yet little empirical work on climate and culture has been carried out. A common approach to strategy has been to identify 'strategic types', and a number of

studies have been carried out relating these to innovation. In Meyer's (1982) study of American hospitals' (discussed above in relation to resources), he found that hospital responses to the crisis, including whether or not it was perceived as an opportunity for innovation, were determined more by strategy and ideology than by resources and structure; "...whereas ideologies and strategies exert strong forces guiding organizations' adaptations, structures and slack resources impose weak constraints" (p.534). Brooks-Rooney, Rees and Nicholson (1987), using a modification of the strategic typology employed by Meyer (i.e. Miles and Snow, 1978), also found that strategy was an important determinant of the level and type of innovation observed, though they stress that there is no one ideal strategy for innovation. Cooper (1984) found strategy to be a significant predictor of firms' product innovation; the most innovative showed "a union of technological prowess and aggressiveness with a strong market orientation" (p.256); they also placed more emphasis on R & D than less innovative firms.

Organizational climate and culture are identified as important antecedents of innovation by many writers, especially in more recent work in the field (e.g. Fischer and Farr, 1985; Kanter, 1983). There is considerable overlap and a lack of consistency in the usage of the terms; while recognising this, it is generally the case that climate is a more limited concept than culture, to a large extent concerned with "atmosphere" or "mood", whereas culture comprises those symbols and structures which enable shared meaning, understanding and sense-making to be arrived at and maintained (Morgan, 1986).

The need for an organizational climate supportive of innovation is stressed quite frequently in the literature; less common are precise prescriptions as to what might constitute such a climate. Bower (1965) describes a "working atmosphere" favourable to innovation as requiring participation and freedom of expression, but also demanding performance standards. It should be noted that his recommendations are not based on empirical work but on his thirty years of practical experience as a change agent in industry. In a study of police

departments, Duncan (1972) identified three important dimensions of climate for organizational change: need for change, openness to change, and potential for change. He found a significant positive correlation between openness to and potential for change, but significant negative correlations between need for change and the other two variables. Thus the greater the perceived need for change, the less the perceived openness to and potential for change. Zaltman and Duncan (1977) explain this somewhat counter-intuitive finding by suggesting that high perceived need for change creates anxiety which leads to the organizational personnel feeling that they cannot make the necessary changes. Fischer and Farr (1985) found "surprising similarities" between the climates for innovation amongst R & D managers in China and the West.

The shift of interest from climate to culture in the study of organizations generally may be discerned in recent work on innovation, with recommendations for a "pro-innovation culture" (West and Farr, 1989, Kanter 1983). Handy (1985) suggests that a "task culture" is most favourable to innovation - that is, a culture which emphasises performance, minimises style and status differences within teams, is flexible, adaptable and sensitive to its environment. However, he stresses that such a culture is not appropriate for all functions of an organization and argues for intra-organizational diversity of cultures.

At present, organizational culture is an area of speculation rather than empirical investigation in the innovation literature, though the growing recognition of its importance makes it very likely that this will change in the near future. There is a need for future research not only to examine which types of culture facilitate or inhibit innovation, but also the extent to which innovation necessitates changes in organizational culture. As Morgan (1986) says;

"Attitudes and values that provide a recipe for success in one situation can prove a positive hindrance in another. Hence change programs must give attention to the kind of corporate ethos

required in the new situation...effective organizational change implies cultural change." (pg. 138)

#### 2.4.3. Extra-Organizational Factors

Antecedents of innovation can be found outside of the organization as well as within it. These factors are generally called 'environmental' though the term is used in various ways; it may refer to the market or sector within which the organization operates, or it may be used in a political, cultural or simply geographical way, or some combination of these. Within the innovation literature, understanding of the effects of organizational environment is at a similar stage to that of the role played by culture; "Studies of the influence of organizational environment on adoption of innovation are rare, although assertions that the environment makes a difference are not" (Kimberly, 1981; p.90). Extra-organizational variables which have been discussed include city or community size, competition, and environmental complexity and turbulence.

##### **City or community size**

In their study of hospital innovation, Kimberly and Evanisko (1981) found that size of city was the best contextual predictor of technological innovation, though the relationship was not significant independent of the effects of individual and organizational variables. A similar finding emerged from Mohr's study in the relationship between community size and public health department innovation; "community size was important...because it connoted a summary of factors that included motivation, obstacles, and resources in a highly conducive combination" (p.120). Thus, like organizational size, city or community size may not be of influence in itself, but rather may imply the presence of other antecedent factors.

##### **Competition**

It is frequently argued that competition will stimulate innovation; indeed, meeting competition is generally presented as the prime purpose of innovation in texts aimed at practitioners, as reflected in titles such as "Innovating to Compete" (Walton, 1987) and "Innovation:

"the Attacker's Advantage" (Foster, 1986). Some empirical support has emerged (Cooper, 1984; Milo, 1971), but what needs to be examined is the relative importance of competition compared to other factors. It should not be assumed that innovation is always the best response to competition; a cautionary example is Coca Cola's development of "New Coke" in response to the growing threat from Pepsi; the innovative product was rejected in many markets, resulting in the re-introduction of the original.

Kimberly (1981) suggests that competition between organizations may occur not simply for economic advantage but also for status and prestige. Organizations seek to increase their prestige in comparison to other similar organizations - what Caplow (1964) calls their "organization set". We may therefore predict that innovations adopted by higher status members of the set will tend to be copied by lower status members.

#### **Environmental turbulence and complexity**

Aiken and Alford (1970) state that a high degree of turbulence in the environment (i.e. instability and unpredictability) will stimulate innovation by making the organization more aware of "cues" to innovate. Kimberly (1981) proposes an interaction between environment and structure in their effects on the adoption of innovation;

"Where environments are relatively stable and predictable, formalization and centralization may facilitate adoption, whereas in cases of instability and environmental turbulence, these same characteristics may impede adoption by uncertainty." (pg. 89)

Most writers who have considered the effects on organizational innovation of environmental complexity conclude that it will have a positive impact (Baldridge and Burnham, 1975; Kimberly, 1981). However, there is little agreement about precisely what it means and how it should be measured. As Brooks-Rooney, Rees and Nicholson (1987) say; "The first step to effective management of the environment is to

perceive it. But there are many different possible ways of viewing one's environment" (p.54).

There is a danger of reductionism in the way in which the influence of the environment on innovation is treated; particular environmental factors have an effect because they imply the presence of organizational antecedents, as city size implied resources in Kimberly and Evanisko's study (1981). A more sophisticated approach to the nature of the organization's relationship with its environment, drawing perhaps on work such as Morgan's (1986) conceptualisation of "organization as flux and change".

#### 2.4.4. Summary: Antecedent Factors Research into Organizational Innovation

Antecedents of organizational-level innovation which have been studied fall into three broad categories. First, there are characteristics and behaviour of organizational members. Here, research has concentrated on leaders and decision-makers, looking at variables such as educational level, values, and most commonly, management style. Change agents, and recently "ideas champions" (Bouwen and Fry, 1988) have also received a substantial amount of attention, though most work on the former is in the diffusion tradition. Study of the influence on innovation of other members of the organization has mostly been confined to examination of resistance to change, a narrow and limiting approach which Rogers (1983) labels as an "individual blame bias".

There is a large literature on the influence of characteristics of the organization upon innovation. Aspects of organizational structure appear very frequently, and the notion of the "innovation dilemma" (Zaltman et al, 1973) is often referred to; the proposal that the structural variables of centralization, formalization and complexity have opposite effects on innovations before and after the point of adoption. Support for this prediction is not conclusive, though in parts quite strong. Other organizational characteristics studied include size, resources, knowledge of innovations, and age. Problems in operationalization are common amongst these variables; either due

to lack of clarity about what has been measured (e.g. in what is meant by 'organizational age'), or to the use of inadequate or inappropriate measures (e.g. profit as the sole measure of resources). Recently, interest in another set of organizational characteristics has grown; strategy, climate and culture. As yet, only strategy has received much empirical investigation.

The third category of antecedents is extra-organizational factors. Variables studied include city or community size, competition and environmental turbulence and complexity. Although the influence upon innovation of the organizational environment is referred to quite frequently, like climate and culture the area has seen little empirical study, though this may be expected to change in the near future.

### 3. RESEARCH INTO TYPES OF INNOVATION

The question of what types of innovation exist and how they differ cuts across process and antecedent factors approaches, though existing empirical work is mostly concerned with identifying antecedents of different types. Examination of innovation types has mostly not gone beyond quite general, speculative comments. One exception is the distinction between technical and administrative innovation, upon which a considerable amount of work has been carried out. This will be looked at first, followed by the three dimensional typology produced by Zaltman, Duncan and Holbeck (1973). Finally, other types of innovation appearing in the literature will be summarised.

#### 3.1. The Technical-Administrative Distinction

Damanpour and Evan (1984) define technical innovations as those "directly related to the primary work activity of the organization"; this includes such things as new products and services, and new elements in the processes or operations producing these. In contrast,

**administrative innovations** are concerned with relationships between people interacting to accomplish work tasks and goals, and "those rules, roles, procedures, and structures that are related to the communication and exchange between people and between the environment and people" (p.394).

In a study of U.S. libraries, Damanpour and Evan (1984) found support for Evan's (1966) concept of "organizational lag" (i.e. the adoption of administrative innovations by organizations tends to lag behind the adoption of technical innovations) and showed that organizational lag was negatively related to performance. Also, adoption of administrative innovations tended to trigger technical innovation, but the reverse was not the case. Kimberly and Evanisko (1981) found different antecedents for technological and administrative innovations, in a study of American hospitals (discussed earlier in this review). Daft (1978) found that administrative innovations in U.S. High School Districts tended to originate from the "administrative core" - school Principals and Superintendents - while technical innovations mostly came from the "technical core" - i.e. the teachers. Furthermore, the higher the level of professionalism within a core, the more likely were its members to initiate innovation in the other core. Kimberly (1981) has criticised Daft for dichotomizing the life of an organization "in a way which does not correspond with the realities of role interdependencies, work-flow patterns, and the distribution of authority" (p.91).

### 3.2. Zaltman, Duncan and Holbek's (1973) Typology of Innovation

Zaltman et al (1973) propose that innovations be categorized along three dimensions: programmed - non-programmed, instrumental - ultimate, and radicalness. Each of these will be defined and briefly discussed below.

### 3.2.1. Programmed - Non-programmed

Programmed innovations are those which are scheduled in advance. Zaltman et al give examples such as the development of larger jet engines after the decision to construct the first jumbo jets, or the appointment of a permanent staff member to take over work previously carried out by consultants. Knight (1967) argues that programmed innovations will tend to follow well-defined implementation procedures.

Non-programmed innovations are not scheduled in advance. Two types are identified by Zaltman et al. First there are slack innovations, stimulated by the availability of free resources (see the discussion of slack as an antecedent to innovation in section 2.4.2. of this chapter). These are unlikely to involve significant changes to organizational structure, and are mostly imported from outside the organization. The second type of non-programmed innovation is distress. These are responses to pressing problems, and tend to be more radical than slack innovations. They are more likely to involve internal changes to the organization than the introduction of new products or processes (Knight, 1967).

### 3.2.2. Instrumental and Ultimate Innovations

Put simply, ultimate innovations are those which may be considered ends in themselves, while instrumental innovations are introduced in order to facilitate the subsequent introduction of ultimate innovations (Grossman, 1970). Introducing an instrumental innovation may reduce resistance to the later ultimate innovation by making it appear less radical than it would have otherwise, but successful use of this strategy requires that "knowledge exists concerning what structures or functions should be changed to ease the way for the end innovation" (Zaltman et al, 1973; p.22). There is also the danger that the instrumental innovation might have unanticipated negative consequences which actually make the success of any subsequent ultimate innovation less likely.

### 3.2.3. Radicalness

This dimension may be seen as consisting of a combination of two factors; novelty and risk; the more novel and risky an innovation, the more radical it is. An important consideration in judging the riskiness of an innovation is its scope - how wide an influence it has in the organization. Zaltman et al argue that the degree of radicalness of an innovation should be determined by the radicalness of the problem situation, warning of the tendency of organizations to adopt innovations of insufficient radicalness (Harvey and Mills, 1970).

### 3.2.4. Combinations of the Types

Having described the three dimensions, Zaltman et al discuss how they might be combined in real-life cases. They contend that while "the various types are not mutually exclusive...certain combinations are much more likely to come about than others" (p.32). Thus they consider that programmed innovations are likely to be routine (i.e. low radicalness) while non-programmed - and particularly distress - innovations will often be radical. However, empirical investigation of these dimensions and how they interact remains scant (Normann, 1971; Miller, 1971).

## 3.3. Other Innovation Types

Many other types of innovation can be found described in the literature. Treatment of them varies from extensive reviews to little more than a passing mention. Often distinctions are made according to the area in which the innovation occurs; thus we have managerial innovation (Kimberly, 1981), educational innovation (Carlson, 1965), medical innovation (Coleman, Katz and Menzel, 1966), corporate innovation (Ackermann and Harrop, 1985), and so on. Whether these represent truly different phenomena or are just distinctions of convenience is not clear, though in the main research under these different headings examines the same antecedents and process elements, using very similar methodologies. A more distinct category is product

innovation. This is concerned with the development and marketing of new manufactured products (e.g. Normann, 1971; Cooper, 1984), and is the focus of much of the R&D management literature on innovation. There is a strong emphasis on invention and creativity, and how managers can enhance these qualities in their staff (Geschka, 1984; Glassman, 1986; Lovelace, 1986).

Most of the innovation types discussed so far have been applied exclusively at the organizational level, though many could be applied at individual and group levels; for instance, product innovation in R&D groups. There are also some types which are specifically relevant to the individual, such as **role innovation** (Schein, 1971; Nicholson, 1984) and West's (1987) dichotomy of **development** (where the individual initiates something new to him/herself) and **conversion** (where he or she introduces something familiar from one setting into a new setting).

This does not claim to be an exhaustive list of innovation types, but it does indicate the range that can be found. In the light of the many and varied ways in which innovations may be categorized, the dearth of empirical work examining systematic differences between types is lamentable, especially as such a strategy was recognised more than ten years ago as a way of overcoming the inconsistencies in organizational innovation research findings (Downs and Mohr, 1976).

### 3.4. Summary: Types of Innovation

Many different types of innovation have been identified in the literature, but empirical studies comparing them - in antecedents, process or outcomes - are uncommon. The one exception is the technical - administrative dimension, which has received a considerable amount of attention. The concept of "organizational lag" (Evan, 1966) utilises this distinction, positing that administrative innovation tends to "lag behind" technical. Evidence supporting this, and showing its negative consequences for organizational performance

has emerged (Damanpour and Evan ,1984). Zaltman et al (1973) offer a useful three-dimensional typology of innovations, also suggesting likely combinations of types, but although work exists on individual types from it, it has not been studied empirically as a whole. Finally, it has been noted that the majority of innovation types identified have been applied solely to the organizational level, although there is no reason why many should not be used at the individual and group levels.

#### 4. DIRECTIONS FOR FUTURE ANTECEDENT FACTORS RESEARCH INTO INNOVATION

Overall, in the innovation field there is a more urgent need for progress in process research than in antecedent factors research, as was stressed in chapter two. This is not to say that the antecedent approach is invalid. There will continue to be practical and theoretical issues for which it is an appropriate research strategy - for instance, in uncovering the relationships between attitudes to innovation and other attitudinal variables - and there are areas of antecedent research which are not well developed, including the whole group level of analysis. As in chapter two, recommendations for the development of the individual and group levels will be made together, as the main points hold true for both. This will be followed by specifically organizational-level suggestions, while the final three sections will cover points applicable across levels of analysis, in the areas of innovation types, antecedent/process research integration, and consequences of innovation. It will be seen that several points raised appeared in the equivalent section of the review of process research (chapter two), indicating that these are weaknesses in the innovation literature as a whole.

## 4.1. The Individual and Group Levels

### 4.1.1. Theoretical Foundations

Research at both these levels suffers from a lack of adequate theoretical foundation. At the individual level, there have been some attempts to tackle this problem, but most have been concerned with creativity rather than innovation (Jones, 1987; Lovelace, 1986; Amabile, 1983). Theoretical frameworks for individual-level innovation need to move away from the creativity tradition, as has been argued in chapters one and two. This means that the dependent variable should not be the quantity of new ideas produced, as new ideas are not necessarily innovations (and vice versa). At the group level there is an almost complete lack of theory, though there are *areas of the* social psychological literature on group processes which would appear to offer a suitable starting point for theory-building (McGrath, 1985).

### 4.1.2. Social Factors

The other main problem for individual and group level research is that it has not taken enough account of social factors (a point made in the previous chapter in relation to process research at these levels). This may be seen as another side of the previous problem (i.e. theoretical shortcomings) as the building of theoretical frameworks which distance innovation research from the creativity field by focusing on the social and applied aspects of the former will inevitably lead to the inclusion of more social variables in empirical studies.

## 4.2. The Organizational Level

### 4.2.1. Diffusion Bias

The tendency to assume that organizations will respond to problems by importing innovations from outside, ignoring the possibility of internally-generated innovation, should be avoided. The relative

frequencies of internal and external innovations, and the differences between them, are matters for empirical investigation.

#### 4.2.2. Individual Blame Bias

The bias in the literature towards 'blaming' individuals - particularly non-managerial organizational members - for innovation failure (Rogers, 1983) should be challenged. Research should never rely on the perceptions of one individual or group in an organization for a full picture of an innovation. The possibility should always be considered that resistance to any innovation might be rational and justified from the viewpoint of the resistors, and could even be of benefit to the organization as a whole. Finally, the attitudes towards innovations of organizational members should not only be studied in the context of resistance to change. Relationships with other work-related attitudinal variables require investigation.

#### 4.2.3. Measurement Issues

More clarity and sophistication is required in the measurement of some variables, in particular organizational size, age, and resources. It is vital that researchers make it clear precisely how they operationalized these variables, in order to make valid comparisons between the findings of different studies possible. Equally, in many cases, simplistic one-dimensional measures should be regarded as inappropriate; the measurement of slack resources purely in terms of profit, for instance.

#### 4.2.4. Climate, Culture and Extra-Organizational Factors

Empirical work on the influences of organizational climate and culture, and extra-organizational factors is needed, as they have up to now largely been treated in a speculative manner. Research should avoid reductionist approaches, which merely break down these concepts into clusters of familiar, well-tested organizational factors.

#### 4.3. The Integration of Process and Antecedent Factors Approaches

The previous chapter suggested that integrating the two main approaches to innovation research should be a long-term aim of the field. One example of research which takes such a direction, discussed in the present chapter, is work on the "innovation dilemma" (Zaltman et al 1973). This hypothesizes that certain structural variables will have opposite effects at the initiation stage and the implementation stage of the innovation process. It should be pointed out that most (if not all) of the evidence cited in relation to the predictions comes from studies which have only looked at one stage - initiation or implementation. A truly integrated approach would have to follow the effects of the variables on the same innovation(s) before and after adoption.

#### 4.4. Types of Innovation

Distinctions between types of innovation are to be found in abundance, as has been seen; what is needed now is extensive empirical investigation of the characteristics of the various types. This means both large scale survey studies to identify differing patterns of antecedent factors, and case studies comparing processes in a wide variety of settings. The assumption that innovativeness can be measured simply by calculating an aggregate of adopted innovations, regardless of differences between them, should be abandoned, at least until we know the extent to which it makes sense to view innovation as a single phenomenon.

## CHAPTER FOUR: EXPERIENCES OF INNOVATION AT WORK - A PRELIMINARY STUDY

### 1. INTRODUCTION

This chapter describes an interview-based study examining the experiences of innovation at work of twenty-seven men and women from a wide variety of occupations. As was mentioned at the end of chapter one, the study was carried out at the same time as the compilation of the literature review chapters; thus although it follows them in the thesis it would be more accurate to view it as being in a parallel position to chapters two and three.

The study had two principal aims:

- (1) To supplement the literature review chapters in the identification of issues to focus upon in the main fieldwork program.
- (2) To provide descriptive data on experiences of innovation, in the light of the predominance of quantitative research at the individual level.

In addition, an important purpose of carrying out the study was to familiarise myself with the use of interview techniques to gather information about innovation processes.

### 2. PROCEDURE

#### 2.1. The Sample

Descriptive accounts of individual experiences of innovation at work were collected from twenty-seven people (eighteen men and nine women), mostly of managerial or professional status, using unstructured

interviews. Participants were selected to give a cross section of different occupations and organizations (Table 4.1).

Table 4.1: Occupational Areas of Participants

Occupation Area	Sex	
	Male	Female
Health Service/ Social Work	4	4
Education/ Library Service	5	3
Private Sector Industry	5	0
Civil Service and Local Government	2	2
Nationalised Industry	2	0
	----	----
	18	9

There was considerable variation in jobs and status both within and between categories. For instance, the health/social work group ranged from a Consultant Physician to a Nursing Assistant with special responsibility for Occupational Therapy. At the start of each interview, the interviewee was asked to give a brief description of his or her job; the researcher otherwise directed the interviews as little as possible, encouraging people to discuss the issues relating to innovation that they considered to be important from their experience. Innovation was defined for the participants as being the *introduction of new ideas or products, or new and different ways of doing things*. The interviews (which lasted between thirty minutes and an hour) were tape-recorded, with the knowledge and consent of the participants.

## 2.2. Identifying and Classifying Relevant Statements

The interviews were not transcribed verbatim, as in most there was a considerable amount of information which was not of immediate relevance to the aims of the study - for instance, detailed descriptions of participants' jobs. Instead, only statements directly

concerned with innovation were transcribed. Statements were defined by natural breaks, such as pauses, or changes of subject in the conversation.

The full set of relevant statements was examined carefully, in order to detect any main themes running through them. Seven were identified, the first four being external and internal facilitators and inhibitors of innovation. The others were participants' own and others' reactions to innovation, and strategies and tactics used to implement innovations. These themes were then used as categories for content analysis of all the statements. Each statement was assigned to whichever one of the categories it best fitted. Allocation to more than one category was not permitted, but where necessary original statements were sub-divided. The final total of statements for all participants was 466. Of these, 72% were distributed amongst the seven categories, while 28% could not be assigned to any of them and were placed in an eighth 'miscellaneous' category.

It should be noted that the method of categorizing statements was based, rather loosely, on that used by Amabile (1984) in her study of creativity amongst R & D personnel.

### 3. ANALYSIS OF THE CATEGORIES

#### 3.1. Facilitators and Inhibitors of Innovation.

Research on creativity at work has emphasized the facilitating effect of internal, or 'intrinsic' motivation, and the inhibiting effect of external/extrinsic incentives (eg. Amabile, 1983). Facilitators and inhibitors of innovation mentioned by interviewees were therefore categorized according to whether they referred to 'external' factors such as the organizational environment (including other people), rewards and punishments etc., or 'internal' factors such as the individual's own personality, abilities and experience. Across all participants, 93 statements referred to external facilitators, while

100 referred to external inhibitors. Of the statements referring to internal factors, 43 concerned facilitators, while only 9 concerned inhibitors.

Overall, external factors are mentioned significantly more frequently than internal, with the number of statements concerning internal inhibitors being particularly low. The different factors that appear as facilitators and inhibitors of innovation, are grouped as sub-categories of each main category. These are listed in Table 4.2.

Table 4.2; Factors mentioned as Facilitators and Inhibitors of Innovation.

EXTERNAL FACILITATORS

Pressure (mostly economic) from outside of the organization	[13]
Freedom/discretion in the job	[11]
Attitudes and attributes of particular colleagues and/or superiors	[10]
Support from the work group	[6]

EXTERNAL INHIBITORS

Aspects of organizational ethos/culture	[14]
Characteristics of key persons in the organization	[13]
Aspects of organizational structure	[12]
Lack of resources	[8]
Time pressure	[7]

INTERNAL FACILITATORS

Desire to achieve personal satisfaction through work	[7]
Need for variety in work	[5]
Having a creative personality	[5]

INTERNAL INHIBITORS

Own personality and attitudes	[4]
Own lack of abilities	[2]

(Figures in parentheses show the number of participants mentioning the sub-category at least once)

### 3.2. Reactions to Innovation.

This category includes both simple evaluations - "I thought it was a bad idea" etc - and descriptions of behavioural responses to innovation - "I liked the idea and put a lot of effort into making it work". It also includes reports of other people's as well as the participants' own reactions. Reactions were classified as being 'positive', 'negative', or 'neutral'. Table 4.3 shows the number of participants' and others' reactions in each sub-category.

Table 4.3: Participants' and Others' Reactions to Innovation.

	Type of Reaction			
	Positive	Negative	Neutral	E
Participants' Reactions	21	9	6	36
Others' Reactions	4	14	4	22
	-----	-----	-----	-----
	25	23	10	58

( $\chi^2 = 10.34$ , d.f. = 2,  $p < .01$ ).

The majority of participants' own reactions are reported as positive, while the majority of others' reactions are reported as negative (a significant difference:  $\chi^2 = 10.34$ ,  $p < .01$ ). A further classification of the reactions is in terms of whether they refer to specific innovations, or to innovation more generally. An example of the former comes from a Staff Nurse involved in in-service training for auxillaries; "Staff are being switched from geriatric wards to plastic surgery. Staff who've been on geriatrics for ten or fifteen years are terrified of the change." An example of a reaction statement classified as 'general' is from a first-line manager in a steel plant; "The shop-floor didn't care whether innovation made the plant more efficient. If it made the job easier or safer, that might have an effect." Table 4.4 compares the number of specific and general statements in each reaction sub-category.

Table 4.4: Comparison of frequencies of specific and general statements in each reaction sub-category.

	Statement Classification		
	Specific	General	E
<b>Participants' Reactions</b>			
positive	11	10	21
negative	9	0	9
neutral	3	3	6
	----	----	----
	23	13	36
<b>Others' Reactions</b>			
positive	2	2	4
negative	7	7	14
neutral	2	2	4
	----	----	----
	11	11	22
	----	----	----
<b>TOTALS</b>	<b>34</b>	<b>24</b>	<b>58</b>

In all but one of the sub-categories, frequencies for specific and general statements are identical or very nearly identical. However, in the "participants' negative responses" sub-category, all nine of the statements refer to specific innovations; none of the participants made any mention of reacting negatively to innovation "in general". Also, participants make a point of explaining the reasons for their negative reactions to particular innovations; for instance, a Health Visitor said she disliked a recent change in her clerical work as it involved having another form to fill in, and she felt that "already too much time is spent on paper work".

### **3.3. Strategies and Tactics for Innovation.**

Seventeen of the interviewees discussed the strategies and tactics they (or occasionally, others) had used for implementing innovations. There was broad agreement about how to maximise the chances of successful implementation, with the emphasis being on preparation prior to innovating, and on presentation of innovations. Preparation refers to the planning and information-gathering carried out prior to any attempt to introduce an innovation. Most participants who referred to strategies and tactics for innovation, believed careful preparation to be important, particularly if you are fairly new in a job. There was agreement that when moving into a new job it is necessary to learn as much about it as possible, and to "toe the line" for quite a while, before suggesting or implementing changes. An example comes from a consultant physician: "I took the view when I came into the post that I'd spend six months to a year looking at it from the inside before I really tried to make any major changes." Another important part of preparation for those in new jobs was seeking "allies" who shared their views about the kinds of new ideas they would like to see introduced.

As with preparation, caution was also the key-note in much of the discussion of the presentation of innovation - presenting new ideas in familiar and unthreatening ways, involving people from the beginning, playing down the scale or importance of the innovation, and so on. One participant (a partner in a firm of chartered surveyors) prescribed a more aggressive approach, saying that managers needed to be a bit "bullish" in introducing innovations in order to overcome resistance to change, but there was little support for this view from other interviewees. Some of the most interesting comments in this category concerned the ways in which people tried to overcome resistance to change from superiors and/or colleagues. An Education Advisor persuaded reluctant colleagues to adopt a new system of recording school visits by giving the impression that the idea came from the Chief Advisor. A Nurse in charge of an occupational therapy workshop took advantage of the appointment of an enthusiastic new Nursing

Officer to go over the head of the unit Sister, who refused to accept new ideas from the staff. There were several other examples of people's resourcefulness in overcoming resistance to innovation, but it was also evident that where there was continued and implacable resistance to innovation from powerful individuals or groups, people did lose virtually all motivation to find new and better ways of doing things.

#### 4. DISCUSSION

##### 4.1. Facilitators and Inhibitors of Innovation.

The most striking finding from the statements made in this category was how very infrequently internal inhibitors of innovation were mentioned. This may largely be due to the social desirability of innovation; as Kimberly (1981) points out, innovation is a concept heavily laden with positive value. Managers in particular may be unwilling to discuss aspects of their own personalities, experience or abilities which inhibit innovation. Attribution theories suggest that people are "biased towards explaining events in a manner congruent with a positive self-evaluation" (Eiser, 1980), but if participants were simply making self-serving attributions we would also expect a higher proportion of internal than external facilitators to have been mentioned. In fact, the opposite was found - 93 external facilitators compared to 43 internal. If we only consider statements referring to innovations introduced by participants themselves, which we might expect to elicit the strongest self-serving attributions, the same pattern is found; 53 external facilitators and 26 internal. An explanation solely in terms of self-serving attributions does not appear to stand up.

The fact that there were almost as many statements referring to external facilitators of innovation as to external inhibitors would seem to contradict Amabile's (1983) theory, which states that extrinsic factors cannot facilitate creativity (although she talks

about creativity rather than innovation, her recent research shows that she makes little distinction between the two terms - see Amabile 1984, 1986). Outside of the controlled environment of the social psychology laboratory, it is too simplistic to see all influences on innovation in terms of an external-internal dichotomy. Amabile herself found such clearly external factors as pressure and recognition were mentioned as facilitators by Research and Development laboratory managers (Amabile, 1984).

#### 4.2. Reactions to Innovation.

The principal finding from this category - that participants own reactions were reported as mostly positive while others' were reported as mostly negative (Table 4.3) - may be interpreted purely in attributional terms; participants perceive resistance to innovations as coming from the environment rather than themselves. It has been noted that one of the most commonly mentioned inhibitors of innovation was "characteristics of key persons in the organization" (Table 4.2).

As with 'Facilitators and Inhibitors', the social desirability of innovation may have discouraged people from talking about situations where they reacted negatively to innovation. It is interesting that all the statements made by participants about their own negative reactions concerned specific cases (Table 4.4). Such reactions do not imply that the person is "anti-innovation", whereas a negative reaction to innovation more generally might (e.g. "All the changes in this company have been for the worse"). It is of course possible that all of the interviewees were entirely and unreservedly pro-innovation, but this seems highly implausible and the influence of social desirability is a more likely explanation. This is not to say that interviewees did not find innovation to be a positive experience - in many cases real enthusiasm and excitement about changes and new ideas was evident.

#### 4.3. Strategies and Tactics for Innovation.

Participants comments on how innovations had been or should be introduced support an approach which views innovation as a process which occurs within organizations - sometimes a very prolonged process - and not a single event. The implication for research is that longitudinal techniques are particularly appropriate in studying innovation. It has been seen that most of the participants who discussed strategies and tactics for innovation supported a cautious approach, but it is notable that almost all of them came from medium-sized or large organizations, and were not in top management positions. Interestingly, the one participant who argued for a more "bullish" approach was from a small, commercial organization, much concerned with profitability, and was at the top of the organization. This highlights the need to take into account characteristics of particular organizations and particular innovations; general prescriptions about innovation and its management which fail to do so will produce the kind of inconsistent or contradictory empirical findings discussed by Downs and Mohr (1976).

There is a need to be careful in drawing conclusions from retrospective accounts of the histories of particular innovations, as hindsight might lead people to reconstruct coherent 'strategies' where in fact the process had been much less planned and orderly. Again this points to the need for longitudinal studies, observing innovations as they occur. However, in many cases it will be a matter of years between the conception of the innovative idea and its full implementation within the organization, and here retrospective accounts are important as they offer a practical way of looking at the process as a whole. Problems with accuracy of recall can be partly alleviated, by seeking as many accounts of the same innovation as possible, and by the use of documentary materials such as the minutes of relevant meetings.

## 5. IMPLICATIONS FOR THE MAIN RESEARCH PROGRAM

Three points emerged from the study described above which influenced the content and design of subsequent studies in the main research program (chapters five to eight). The first of these concerned the methodology. It was found that the unstructured interview technique was appropriate for the gathering of descriptive data regarding innovations; people felt able and willing to discuss their experiences in this area, and all of the participants recognised innovation to be a topic of relevance to their working lives.

Secondly, the findings suggest that the comparison of extrinsic and intrinsic influences on innovation would not prove a very rewarding direction for research to proceed in. Outside of laboratory conditions, the distinction between extrinsic and intrinsic factors is blurred, and any investigation of how their influences differ is likely to be hampered by social desirability effects; people will tend not to attribute negative influences on innovation to internal factors. In any case, the motivational approach is more appropriate to the study of creativity than innovation, as it is concerned solely with the production of new ideas, and not with how such ideas are implemented within a social setting.

The third point concerns the scope of research. The present study chose to examine experiences of innovation from a wide range of different occupation types and organizational settings. Although suitable for a preliminary, highly exploratory investigation, this approach did obscure the fine details of individual cases of innovation. The quite high proportion of statements which could not be assigned to any of the thematic categories (28%) shows that in cross-setting studies a considerable amount of relevant data will probably not be usable. It may be concluded that where research aims to illuminate the fine details of the process of innovation, studies within a single occupational setting are preferable.

## 6. SELECTING THE OCCUPATIONAL SETTING FOR THE MAIN RESEARCH PROGRAM

Following on from the final point made in the previous section, the first task in the design of the main research program was to chose the types of organizations and occupational groups upon which studies should focus. From the conclusions reached in the literature review chapters, especially chapter two, I had already determined that the first main study should examine the histories of a small number of specific innovations and the attitudes towards them of organizational members. It was important to obtain as full a set of details as possible about each innovation, and to minimise the problems of retrospective accounts. This required the chosen organization(s) to be quite small, so that a high proportion of those involved in an innovation could be contacted; in a very large organization it would be difficult to get anything approaching a complete cross-section of opinions.

The decision about the type of organization to select was guided by two criteria. Firstly, I was keen to choose an area in which innovation success was not judged in financial terms. This was in keeping with the position stated in chapter one, that innovation is an important topic because of its potential impact upon the well-being of individuals, organizations, and societies. Its relevance therefore extends far beyond questions of how to improve business profits, and this should be reflected in research. Secondly, I looked for an area in which innovation was a highly salient issue, to ensure gaining the interest of participants.

After investigating a number of possibilities, the area finally chosen was Elderly Care Organizations. In the first instance this meant local authority Homes for the Elderly, though in the last study (chapter eight) the scope was broadened to included a psycho-geriatric ward. Care of the elderly is an area which has seen major changes over recent years, with the move towards community care, and an increased emphasis on maximising the independence of clients, and this has necessitated innovative responses both at the level of policy, and of

practice within individual organizations (see Isaacs and Evers, 1984; Towell and Harries, 1979). Additionally, Elderly Care workers in residential Homes are a group which have been neglected by social and occupational psychologists.

CHAPTER FIVE: A STUDY OF INNOVATIONS IN TWO LOCAL AUTHORITY

HOMES FOR THE ELDERLY

PART 1: INFLUENCES ON THE INNOVATION PROCESS

1. INTRODUCTION

This study was the first of three carried out in Elderly Care organizations. It focussed on two issues emerging from the literature review (chapters two and three): (1) perceived influences on - or antecedents to - the innovation process, and (2) staff attitudes towards innovations. The conception of innovation as a process underlay the way in which both these issues were approached. The present chapter concentrates on the former issue; it takes an exploratory approach using qualitative data collected through semi-structured interviews. The data is examined through a system of detailed content analysis of interview transcripts. The question of attitudes towards innovations is looked at in chapter six, utilising quantitative and qualitative data.

1.1 Influences on the Innovation Process: Aims

Before the aims of this part of the study can be discussed it is necessary to clarify what is meant by the term 'influences'. An influence on the innovation process is any factor which determined, or had a perceivable effect on, the way in which the innovation process developed - the direction it took, how rapidly it proceeded, and its eventual outcome. The approach taken therefore combines elements of process research, in looking at how innovations develop over time; and antecedent research, in examining factors guiding or influencing the progress of innovations.

Part one of this study is exploratory in nature. It does not seek to test hypotheses drawn from existing theory, but rather attempts to lay foundations for future theoretical work. There are four strands to the

approach taken, drawn from the conclusions reached in the literature review (chapters two and three); these are described below, followed by a statement of overall aims.

(1) **Process-based:** Rogers (1983), Schroeder et al (1986) and others have stressed that we need to look more closely at the whole innovation process. This means studying in depth individual cases of innovation, and considering the full process - from its initiation to its final outcome (absorption or discontinuation) - rather than selecting a single event or 'stage' such as adoption or initiation.

(2) **Social orientation:** While not exclusively focusing on one level of analysis, the conception of innovation as a *social process* (see chapter one) lies behind the design of the study, and for this reason many of the salient issues are ones which might conventionally be considered group-level; hierarchical interactions, participation, inter-group relations etc. Consequently, there is little emphasis on macro-organizational issues (e.g. structure) or individualistic issues (e.g. creative ability, personality).

(3) **Multiple perspectives:** Too often in the past a single view of the innovation process in a particular case has been accepted as the full story - almost always that of management. This study does not seek to uncover, or accept, one 'true version' of each innovation's history. Discrepancies between people's accounts of an innovation's history are viewed as evidence of important variations in the ways in which the innovation is experienced by different individuals or groups.

(4) **Categorization of influences by source:** There is little to be gained from simply attempting to find new antecedent factors, or new configurations of factors, which help or hinder innovation. As Downs and Mohr (1976) have emphasized, the findings from this kind of research are very unstable; in any case they lead to a kind of "cookbook" approach - add certain ingredients and the product will be innovation - which is out of keeping with a process perspective. In line with its social orientation, this study categorizes influences

according to their source; that is, the individual, group or organization whose actions, demands or needs are primarily responsible for the influence. It also makes a classification by influence direction - whether the influence on the innovation process is positive or negative, or indefinite.

Broadly stated then, the aims of the first part of the study are to explore the manner and extent to which staff accounts of influences on the innovation process varied between staff groups and across different phases of the process; and to reconstruct in as much detail as possible the sequence of events comprising the innovation process in the chosen examples.

## 1.2 The Nature of the Study: Retrospective or Longitudinal?

There are two possible approaches to examining the innovation process; to follow it as it happens over time or to reconstruct it from retrospective accounts. The advantage of the longitudinal approach is that it enables the researcher to gather very detailed information - for instance he or she could note patterns of interpersonal interactions at meetings where an innovation is discussed, could observe immediate reactions to the proposal to introduce an innovation and so on. The main problem in tracing the progress of an innovation longitudinally is that it is very difficult to obtain anything like a complete picture of what is happening as it happens. If questionnaires are used at regular intervals, important but unexpected events may be missed - as Schroeder et al (1986) have observed, setbacks and surprises are characteristic of the innovation process. Close observational techniques, such as participant observation, offer a better chance, but here the danger is one of not being able to see the wood for the trees; in any case the researcher cannot possibly be everywhere at once, and he or she will inevitably have to rely on second-hand reports some of the time. Whatever the exact methodology used, any attempt to follow an innovation from its first initiation to final absorption is risky, as the innovation may be discontinued

before the researcher has gained the information he or she requires. It is also very difficult to predict how long it will take before the innovation process reaches any kind of clear outcome.

The advantage of the retrospective approach is that it does enable the researcher to put together a fuller picture of the whole process. Because participants are more distanced from the innovation than they would be in a longitudinal study they may find it easier to be objective - for instance, in admitting to their own errors or negative attitudes. This may help lessen the influence of "pro-innovation bias" (Rogers, 1983). The main difficulty for the retrospective study of innovation lies in assessing the extent to which participants' memories can be relied upon. By gathering accounts from as many of those involved in an innovation as possible, individual inaccuracies in detail can be made less of a problem - by searching for systematic differences, it should, for instance, be possible to get a fair idea of whether a particular disagreement between accounts represents merely one person's memory lapse or differing experiences stemming from differing involvements in the innovation. A more intractable problem, recognised since the early work of Bartlett (1932), is the tendency for people to impose coherency upon reconstructed events which was not apparent at the time they occurred. The researcher can only be aware of the likely bias in this direction, and recognise that what actually happened was almost certainly untidier than the reconstructed history suggests.

Both longitudinal and retrospective methods have their strengths and weaknesses; the researcher's must select the one appropriate to his or her aims. Since the present study was concerned with obtaining as complete a history as possible of each chosen innovation, it took a retrospective approach. This was made practicable by the low turnover of staff at the two Homes, particularly Home A, since the time the selected innovations were introduced.

### 1.3 Description of the Homes

The two Homes involved in this study were both Local Authority-run establishments. These were chosen in preference to private Homes for two reasons. Firstly, despite the burgeoning of private Homes encouraged by the present political and economic climate, residential care of the elderly remains primarily the responsibility of Local Authorities. Secondly, within a Local Authority many details of policy, administration and practice are common to all Homes, which is clearly important if conclusions are to be drawn across Homes from innovation case histories.

The management and administration of Local Authority Homes for the Elderly (referred to as "Part 3 care") is the responsibility of the City Council's Family and Community Services Department. Each Home falls within an administrative area called a Division, and each Division has a Principal Assistant (or "PA") who is the immediate line manager for all the Principals in the Division. Within a Home, the management (or "senior staff") team consists of a Principal, a Deputy Principal and two or three Assistant Principals. The other staff are Day and Night Care staff, Domestics and Kitchen staff.

Descriptions of the two Homes which participated in this study follow, including brief accounts of their histories. More historical details appear where relevant later in the chapter.

Home A is a 12-bedded purpose built unit, which opened in January, 1983. It is a single floor building and stands adjacent to a group of sheltered accommodation bungalows. (Sheltered accommodation enables elderly people to live on their own, but with help and support available from on-site Wardens). The bungalows are the responsibility of the Council's Domiciliary Services, but Home A is responsible for providing emergency cover.

The Home has a total staff of twenty-two; six kitchen and domestic staff, seven day care staff (including three part time), four night

care staff, and five senior staff - Principal, Deputy Principal, and three Assistant Principals (including one part time). The current Principal has been in charge since the home opened. As well as providing care for its residents, Home A offers a range of services to local elderly people such as luncheon clubs and day care. It also has a community room which is used by groups other than the elderly.

Home B is a 49-bedded purpose built unit, which at the time the interviews were carried out had been open for approximately eighteen years. It is on three levels, known as the lower ground, upper ground (or "UG") and top floors. Home B has a staff of eight kitchen and domestic staff, twelve day care staff, five night care staff, and five senior staff - Principal, Deputy Principal, and three Assistant Principals (including one part time).

For the first eleven or so years of its history, Home B was run by one Principal - or "Matron" as the title was then. On her promotion, she was replaced by her husband for the next three years, and following his departure there ensued a period of about six months where there was no permanent Principal and a series of short-term temporary Principals were brought in from outside. Shortly after a new permanent Principal had been installed, the current Principal was appointed as Deputy, and she took over as Principal some nine months later, in late 1982.

Like Home A, Home B provides various services for the community in addition to its residential care function, including a carers' group (for people looking after elderly residents in their own homes), and a blind club.

#### 1.4 Outline of Procedure

Access to the Homes was negotiated initially with the two Principals, with final permission to proceed given by the Principal Assistant for the Division to which both Homes belonged. Following this, in January

1986, all members of staff at both Homes were requested to fill in a short, open-ended questionnaire. This asked them to list changes which had been introduced into the Home; separate sheets were provided for describing (a) changes which were still in operation and (b) changes which had been discontinued. In consultation with the respective Principals, and after discounting changes which clearly did not fit the definition of innovation used in this thesis, two widely-cited examples of innovations were selected from each Home - one continuing and one discontinued. A discontinued as well as a continuing innovation example was chosen from each Home because it was felt that useful insights into the innovation process could be gained from looking at instances where it "failed", (as was the case in Gross et al's (1971) study of an educational innovation, amongst other examples in the literature).

The main data collection took place between March and May, 1986, and consisted of interviews with members of staff, carried out at the Homes. These were in two parts; first the member of staff was asked to give an account of the two innovations selected for her or his particular Home. Each of these case histories was followed by a short, verbally administered questionnaire comprised of questions about participation in the introduction of the innovation, attitudes towards the innovation and evaluations of its effectiveness. The second part of the interview consisted of a longer verbally administered questionnaire which included attitude-type measures under three headings: "Yourself and your job", "Other staff in the Home", and "The Home and care of the elderly". All the interviews were taped. A summary of the structure of the interviews is given in figure 5.1, below.

As mentioned in section 1, the present chapter only covers the qualitative data from the case history interviews relating to influences on the innovation process. Data relating to attitudes towards the innovations are examined in chapter six.

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Figure 5.1: Outline of the interview structure

Part A

- (i) Case history, Innovation example 1 (continuing)
- (ii) Questionnaire, Innovation example 1
- (iii) Case history, Innovation example 2 (discontinued)
- (iv) Questionnaire, Innovation example 2

Part B

Questionnaire (self, others, Home)

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## 2. THE CASE HISTORY INTERVIEWS

### 2.1 Selection of the Case History Innovations

#### 2.1.1. Initial Questionnaires

The initial questionnaire sent to all members of staff at both Homes consisted of a covering letter introducing the research project, a set of biographical questions - name, post, length of tenure, previous posts (if any) held at the Home - and the two questions asking for lists of important changes introduced in the Homes, as below.

- 1) In the space below, please list those changes that have occurred at *[name of Home]* in the time you've been working there which you consider to be the most important.

There is no need to list them in any particular order, but try to write down as many as possible.

- 2) In the space below, please give as many examples as you can of new ideas which have been introduced at *[name of Home]* but later abandoned. Again there is no need to list these in any particular order.

Fifteen staff at Home A and sixteen staff at Home B returned the questionnaires. The number of changes listed ranged from one to fourteen at Home A, and five to twenty-three at Home B (discounting one member of staff who had only been there a month and had observed no important changes).

The two changes to be used as examples in the interviews were selected on three criteria. First, they had to be innovative by the definition given in chapter one. Changes which were simply improvements (e.g. "better meals"), routine personnel changes (e.g. "new management team"), non-specific changes (e.g. "wider concern for elderly in the community"), and unintentional changes (e.g. heavier workload due to increased resident dependency levels) were discounted. Second, they had to be frequently mentioned on the initial questionnaires. Innovation examples given by only a few people were rejected, as it was important that as many staff as possible should be able to discuss the examples chosen. Third, the innovations of each type (i.e. continuing and discontinued) had to be as compatible as possible, in terms of content and time scale. This was to enable valid comparisons of staff groups across the Homes as well as comparisons between the Homes. A brief discussion of the compatibility of the examples follows their descriptions in the next section.

### 2.1.2. The Selected Innovations

The four examples chosen for the case histories are described below.

#### (1) Example 1, Home A (continuing): Flexi-respite care

"Flexi" and "respite" care are both forms of non-permanent care, and although the terms are often used together or interchangeably, strictly speaking they are not the same. "Respite" care is a form of short stay care whereby elderly people living in the community come in for regular periods of residential care. "Flexi" care refers to the use of beds in a flexible way to meet whatever needs exist for non-permanent residential care. This might include looking after an elderly person whose family are away on holiday; keeping a respite

resident in for longer than the normal two weeks because of a deterioration in their condition or in the situation at home; taking an elderly person in while awaiting a hospital or permanent part three bed, if care can no longer be provided in the community.

*This innovation was listed by eleven of the fourteen members of staff who returned the initial questionnaire.*

**Example 2, Home A (Discontinued): Rotating rota**

The rotating (or "three-way") rota is an alternative to the traditional division of care staff between days and nights. Instead of having two separate groups of staff, all care staff rotate between three shifts - mornings, afternoons and nights.

*This innovation was listed by nine of the fourteen members of staff who returned the initial questionnaire.*

**Example 1, Home B (Continuing): Short stay wing**

"Short stay" refers to the same kind of non-permanent care provided in Home A; chiefly regular respite care, plus special cases such as holiday relief for relatives etc. In Home B however, only one of the three floors - the lower ground floor - has been given over to short stay residents, rather than the entire Home.

*This innovation was listed by eight of the sixteen members of staff who returned the initial questionnaire.*

**Example 2, Home B (Discontinued): Key worker system**

The key worker system is a practice whereby individual Care Assistants are assigned special responsibility for particular residents. This might involve specific tasks such as bathing, shopping, administering medication as well as generally being aware of the individual residents' wants and needs.

*This innovation was listed by seven of the sixteen members of staff who returned the initial questionnaire.*

### 2.1.3. Compatibility of examples

As mentioned earlier, it was required that the examples of each outcome type be as compatible as possible. This was interpreted as meaning that they should be as similar in function and time of introduction as possible, bearing in mind that they also had to meet the criteria of fitting the definition of innovation, and being frequently mentioned by respondents to the initial questionnaire. Fortunately, there was no difficulty in achieving this for continuing examples. The change to flexi-respite care at Home A involved the same alterations to care practices as the introduction of the short stay wing at Home B, and the innovations were implemented within a few months of each other. The only main difference was that the change involved the whole Home in Home A's case, but only one out of three wings in Home B's case. However, because of the larger size of Home B, the total number of beds involved was about the same.

There was more difficulty where discontinued innovations were concerned. The innovations described above were eventually selected because they were both concerned with the scheduling of Care staff's work. Clearly the innovations are less similar than the two continuing examples; however, on the initial questionnaires there were few discontinued examples appearing with any frequency. Also, Care and Domestic/Kitchen staff tended to list different changes, which made it inevitable that one group would be excluded. Examples relevant to Care staff were selected because they were the larger group, and were considered more likely to agree to being interviewed than Domestic staff (especially at Home B), on the basis of information given by the Principals prior to the selection of examples.

## 2.2 Interview Procedure

In keeping with the exploratory nature of the study, there was no formal structure to the case history interviews in the sense that there was no set schedule of questions to be asked of all participants. However, the interviews were not entirely unstructured;

there were a number of issues which it was important to discuss with all interviewees and which I would ensure were raised in every interview. Most of these concerned the innovation process rather than attitudes/reactions to it, as the latter were the focus of the short questionnaire which followed each case history. Questions that were always addressed included:

- \* What was the situation before the innovation was introduced?
- \* Whose idea was it to introduce the innovation?
- \* How had the innovation been introduced? - ie. gradually or suddenly, with or without a trial period etc.
- \* How was the innovation working now (for continuing innovations)?  
or How had it had come to be discontinued?

It should be noted that these issues would often arise naturally in the course of the interviewee's description of the innovation's history, making intervention by the interviewer unnecessary. The aim was always to allow the participant to describe events in her or his own words.

Before the interview proper I introduced myself and assured the member of staff that anything she or he said would be treated as confidential. I then asked for permission to tape the interview - which was given in all cases. Next I established whether the interviewee was able to discuss both of the two selected case history innovations; where this was not possible, an alternative innovation example was selected for discussion from those listed on her or his initial questionnaire. Lastly, the overall structure of the interview was summarised - case histories and accompanying short questionnaires, followed by the longer work attitudes questionnaire.

In the majority of interviews, the opening question was about the interviewee's past experience of working with the elderly; where this was not the case, the question was asked at a later stage, as it was felt that this was a factor which might affect reactions towards

innovations and other work attitudes. The first case history would then commence.

At Home A, twenty out of twenty two members of staff were interviewed; at Home B the figure was fifteen out of thirty, making a total of thirty-five interviewees. The lower participation rate at Home B was due to a number of factors. Firstly, there were three or more members of staff - including the part-time Assistant Principal - who had been at the Home for too short a time to have experienced either of the case history innovations or other major changes. There were several members of staff off sick and one away on holiday over the time that the interviews were carried out. Finally, some people declined to take part in the study; this was true of most of the domestic/kitchen staff (only two of them participated) who told the Principal that they did not feel it was relevant to them. In contrast, only one member of the care staff actually refused to take part in the study. At Home A, one of the two members of staff who were not interviewed was new to the Home (a kitchen assistant), the other was a care assistant who refused to participate.

All the case history interviews were transcribed in full, as were the responses to the short questionnaires accompanying the innovation example (the responses to the longer, final questionnaire were not transcribed). Table 5.1 shows how many participants of each staff level (Principal, senior staff and non-management staff) discussed each of the selected case history innovations.

Of those interviewed, it can be seen that one member of the senior staff and three members of the non-management staff at Home A were unable to discuss the selected continuing innovation, while one member of the senior staff (not the same individual) and four members of the non-management staff were unable to discuss the selected discontinued example. For Home B, two members of the senior staff were unable to discuss either selected innovation, along with three members of the non-management staff for the continuing innovation and four for the discontinued innovation.

Table 5.1 Number of participants discussing selected innovations at Homes A and B

	Staff level	Home A	Home B	Total no. of interviews
Innovation 1; continuing	Principal	1	1	2
	Senior staff	3	1	5
	Non-mgm. staff	11	8	18
	All staff	15	10	25
Innovation 2; discontinued	Principal	1	1	2
	Senior staff	3	1	5
	Non-mgm. staff	10	7	16
	All staff	14	9	23
Total no. of interviews	Principal	2	2	4
	Senior staff	6	2	10
	Non-mgm. staff	21	15	24
	All staff	29	19	48

### 3. INNOVATION HISTORIES

In this section the histories of the four selected innovations are summarised, on the basis of information obtained from the interviews. Attention is drawn to areas where there were marked differences in the accounts of interviewees, but the emphasis is on the consensual picture of what happened in each case. This is in contrast to the later parts of this chapter, where the chief concern is the pattern of variations in accounts. Only the main events or stages described by interviewees are included here, for reasons of space. However, more detailed histories are presented in appendix A., and the reader is advised to examine these as they will help put the major findings (sections 4 and 5) in context. The second part of this section (3.2), compares the innovation process in the four case histories.

### 3.1 Summary Case Histories of the Selected Innovations

#### 3.1.1. Home A

##### Flexi-respite care

At the time of her interview for her post at the as yet unopened Home, the current Principal was already a firm believer in short term and respite care, as a result of her previous experience as a District Nurse. Immediately prior to her interview she had walked the area to be covered by the Home to examine provisions for the elderly, and found them to be minimal. This also encouraged her to use the Home for flexi-respite care, as did the physical layout of the building. However, on taking up the post, she was not able to introduce this because higher management stipulated that most of the beds must be 'permanent' (i.e. residents would stay there the rest of their lives, barring hospitalisation or transfer to an Elderly Mentally Ill Home). The Home opened with nine permanent, two short stay and one assessment bed.

From the time of its opening, there were discussions amongst the Home's staff about how best to use the beds. There was a widespread feeling that the existing arrangements under-used resources. One result of these discussions was that the Home began to take in residents for re-habilitation, to prepare them after hospital or part three care to move back into their own Homes or into sheltered accomodation. The Principal describes this as a sort of "half-way house" between permanent and flexi-respite care;

"...I thought it would give us a breathing space to carry on trying to change, and get the department to realise that we couldn't do the two [i.e. permanent and flexi-respite care] side by side."

Several staff stated that they found the re-habilitation work rewarding and regretted that it was no longer done.

Probably about four months after opening (though some staff put the date several months later) it was decided to move towards an all flexi-respite care unit. The Principal sought and obtained agreement from her Principal Assistant (i.e. her immediate line manager), other Homes' Principals, and Social Workers. Written permission from the department was never received, but she felt secure enough to carry on regardless. The change was gradual - beds were converted to flexi-respite use as residents were re-habilitated or died. At the time of this study, about three years after the decision to implement the innovation was made, one of the original permanent residents still remained. Staff continue to be positive about the innovation - no one regretted introducing it - but there were complaints from a large proportion of Care staff that too many residents were staying for too long, thus negating the aim of offering short term care for as many local elderly people as possible;

"And some of us feel that it blocks the beds a little bit, and it's stopping us really carrying out what we'd said we were going to do, and that was a steady flow of people." (from a Night Care Assistant).

Other staff, including the Principal and most of the Senior staff, disagree, stressing the need to be flexible in responses to individual residents' needs, for instance in not sending residents to hospital "to die" if they become terminally ill.

#### **Rotating rota**

Again, the rotating rota was something that the Principal was keen on from before she was appointed to the Home. She felt that it prevented an "us and them" situation from developing between day and night staff, and enabled all the Care staff to get to know their residents. She drew up a rota on a rotating basis before the Home opened, but on presenting it to higher management was told that she could not use it - the only explanation given being that it was more costly than a normal rota. The Home therefore opened with separate Day and Night Care staffs.

About a year after the Home opened, the idea of the rotating rota again came to the fore. The Principal discovered that another Home in her division, which had opened at about the same time as Home A, had been allowed to have a rotating rota, after the Principal there had demonstrated that it need not be more expensive than the conventional system. She therefore felt justified in pushing for the change herself. At about this time, two members of the night staff who wanted to spend some time on days told the Principal that they would like to try out a rotating rota. It is not clear whether this was after the Principal had herself taken up the idea with higher management, or whether this was another reason for her so doing. Whatever the case, she gave her approval, and the proposal was discussed amongst the staff group as a whole. The outcome was that a trial period was agreed, at the end of which a unanimous agreement to continue was required, otherwise the innovation would be abandoned. The other two members of the night staff (i.e. not the two who suggested the change) refused to work days, and therefore remained on nights throughout.

At the end of the trial period, the necessary unanimous agreement was not attained and the innovation was discontinued. Interviewees disagree over how many people had opposed it; the figures they quote appear to be related to their own attitudes to the rotating rota. Thus those who most disliked it tend to say that "the majority" of staff were against it, while those most strongly in favour of the innovation say only two or three people opposed it. The Principal, though disappointed at the time, notes that the reasons for her support of the rotating rota were not really valid at Home A. The relations between day and night staff were generally good anyway, and the change to flexi-respite care meant that the issue of getting to know residents was less salient, as most of them would only be in the Home for a brief period of time.

### 3.1.2 Home B.

#### **Short stay wing**

The possibility of introducing short stay care at Home B was first considered by the Principal at around the time she was promoted from Deputy (i.e. about two and a half years ago, from the time the interviews were carried out). Simultaneously, there was (in the Principal's own words) "alot of talk, and some...pressure from the department about taking in short stay residents". It is not clear from her own and others' accounts whether the Principal could have resisted pressure from the department, had she wanted to. However, it is consensually agreed that she was enthusiastic about the idea, and that all the details of how it was to be introduced and run were at her discretion. Several staff mention that the Deputy Principal at the time (who has since left) was very keen on the idea too, and made a major contribution to its development.

Having determined that short stay beds would be introduced, the Principal visited other Homes to see how arrangements had been made elsewhere. This led her to feel that the only way in which it could be made to work was to convert one whole wing to short stay care. The lower ground floor was considered the best choice because there were several empty beds there already, and because there was a tradition in the Home of allocating the most mentally and physically able people to that floor - they would therefore be easier to move to another floor than more dependent residents. The implementation was facilitated by the Social Workers' strike then underway, which halted admissions with the result that throughout the Home more beds than usual were vacant. Permanent residents on the lower ground floor were not moved against their will, and indeed two chose not to move, so remained there.

There was some wariness about the change amongst staff, though several interviewees relate this to suspicions of management generally, resulting from the period before the current Principal arrived. Any initial hostility to the innovation appears to have faded after implementation, and the short stay wing has now become an accepted

part of the Home. One permanent resident remained on the wing at the time of this study. There are complaints from several staff about under-staffing, but the same is true for all the floors of the Home. Similarly, the increased dependency level of residents admitted for permanent care has been matched on the short stay wing, to the evident surprise of some staff;

"I think the kind of client what's coming in isn't what they were sort of wishing...because we did think they'd be more active than they are. And some, I just don't know how people cope when they go home, because some of them are worse than what we have in permanently." (Care Assistant).

#### **Key worker system**

The key worker system had the most complex and longest history of all the innovations studied. It was also discussed by fewer interviewees than any of the other three , and because of these factors was the most difficult history to piece together. The first key worker system was introduced four or five years ago (from the time of the study) by the then Principal, Mr.E., at the instigation of higher management. Those interviewees who were working in the Home at this time report that he was not really interested in the idea; in fact, all the details of implementation were worked out by two of the Assistant Principals. Care Assistants were allocated a group of residents for whom they had special responsibility; this involved physical tasks such as bathing as well as a generally being sensitive to their wants and needs. The Assistant Principals tried to distribute residents fairly so the heavier and more dependent ones were balanced by lighter and more capable ones.

There were several problems with the original key worker system, mentioned by members of staff, such as the fact that a Care Assistant could have residents spread over all three floors of the Home, which was clearly inefficient. A number of modifications were made to the system, including allocating residents to pairs of Care Assistants, to ensure they were not neglected due to staff sickness or holidays.

Information is lacking about exactly when and how the system came to be discontinued, though the final blow to it was when the Principal (Mr.E.) was sick and was replaced for about six months by a number of temporary Principals, all of whom had different ideas as to how the Home should be run.

When a new permanent Principal was appointed, she re-introduced the key worker system in a form similar to the original, but again it fell into disuse. The current Principal then took over (about two and a half years ago) and decided to divide Care staff into three teams, one operating on each floor. Within floor teams, the key worker system was again re-introduced, and it continues to be used on the upper ground floor, where staff interviewed clearly like it;

"I find it's a good thing because it helps us not to just think of the resident as a resident here...to me, I feel that I've been drawn into a family..." (Care Assistant)

On the top and lower ground floors, however, the key worker system has been abandoned. The top floor staff found it difficult to work because of inadequate staffing (though this affects the upper ground floor too), while the system was made impracticable on the bottom floor by the introduction of the short stay wing. At the time of this study, the Principal was considering revising the system for the Home as a whole, and the newly-appointed Assistant Principal in charge of the top floor expressed her intention to re-introduce it there in the near future.

### 3.2 Comparison of the Innovation Process in the Four Case Histories

#### 3.2.1. Purpose of the Comparison

Since these case histories are based on retrospective accounts only, of events going back over several years, it was thought inappropriate to use them to test an existing model (or models) of the innovation process. The data are useful though for exploring more general issues

about the sequence of events in the innovation process. In particular, the following broad question can be addressed:

Do the case histories of the innovations studied show a linear progression of process phases, separated by clear boundaries, as conventional stage-based models imply?

### 3.2.2. Phases of the Process

The term 'phase' is used because it implies a less rigidly defined sequence of events than the more commonly used 'stage'. While it is true that many writers in the literature have stressed that their proposed stages are not inflexible (e.g. Zaltman et al, 1973; Nystrom, 1979), the very term encourages an assumption that clear boundaries between parts of the process can be found. The existence of such boundaries remains to be tested, and is one of the issues looked at in section 3.2.3. Three process phases are used in this analysis, equivalent to stages found in the majority of models in the literature (see chapter 2). They are defined below.

- (1) **Initiation** consists of all the actions, communications and negotiations occurring from conception of an innovation to the point at which the organization starts to introduce it.
- (2) **Implementation** is the phase at which the organization brings the innovation into use. It may include a trial period (though not necessarily) and modifications to the plans developed in the initiation period may be made.
- (3) **Absorption** is equivalent to the "routinization" stage included in innovation process models (e.g. Hage and Aiken, 1970; Rogers, 1983). It describes the events, interactions, and so on through which the innovation becomes a routine part of organizational life.

Events and actions summarised in the case histories were assigned to these phases to produce descriptive models of the innovation process for each innovation example.

### 3.2.3. Descriptive Models of the Case History Innovations: Comparison of phase sequences

#### Explanation of the models

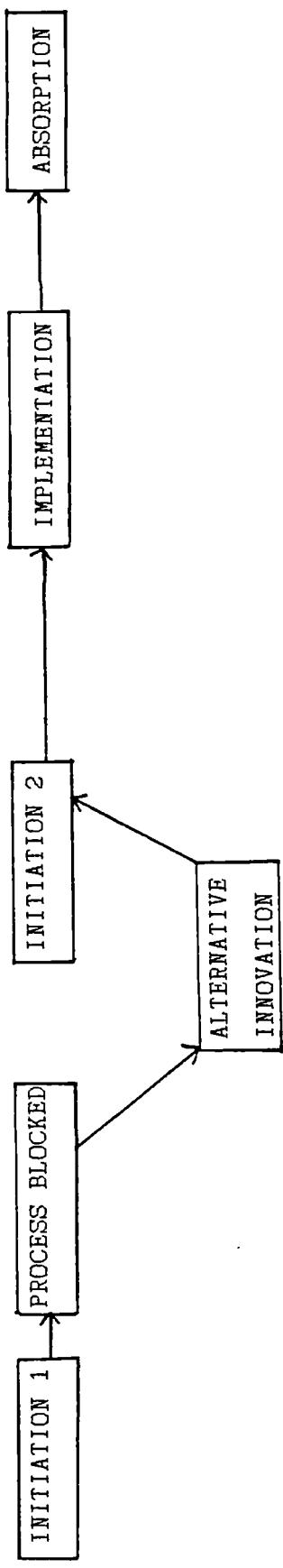
The descriptive models of the four innovation examples are presented in figure 5.2 (i)-(iv). The relationship between the phases depicted in the models and the histories described in section 3.1 will be explained below.

**Flexi-respite care (Home A):** The first initiation phase consists of plans made by the Principal on being appointed to the Home to introduce short stay care; these were then blocked when higher management insisted on the Home opening with mainly permanent beds. Although the innovation itself was discontinued, an alternative innovation - re-habilitation for residents - was introduced at least in part to facilitate a second attempt to introduce flexi-respite care. The second initiation phase commenced while re-habilitation was still occurring, with the discussions amongst staff, and then with higher management and other outside agencies (e.g. Social Workers) about the future direction of the Home. These led to the gradual implementation of the innovation, as each bed became free. Flexi-respite care is now fully accepted as the norm in the Home; hence absorption of the innovation can be said to have taken place.

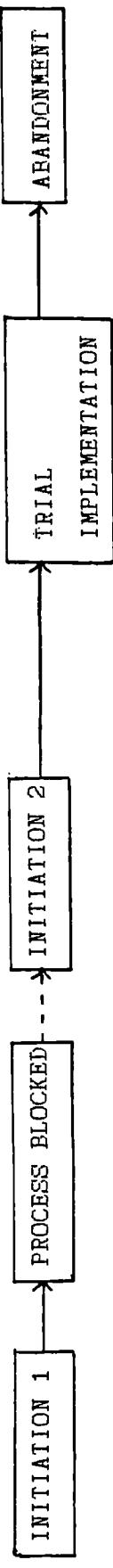
**Rotating rota (Home A):** The Principal intended to open the Home with staff working a rotating rota, and went as far as drawing up such a rota. This is the first initiation phase; it was, however, blocked by higher management. A second initiation phase occurred after the Principal learnt of the other new Home opening with a rotating rota, and this continued up to the point where staff agreed to try the innovation. There then followed a trial implementation period, at the end of which the innovation was abandoned.

Figure 5.2 Descriptive models of the innovation process in the selected cases

(i) Flexi-respite care (Home A)

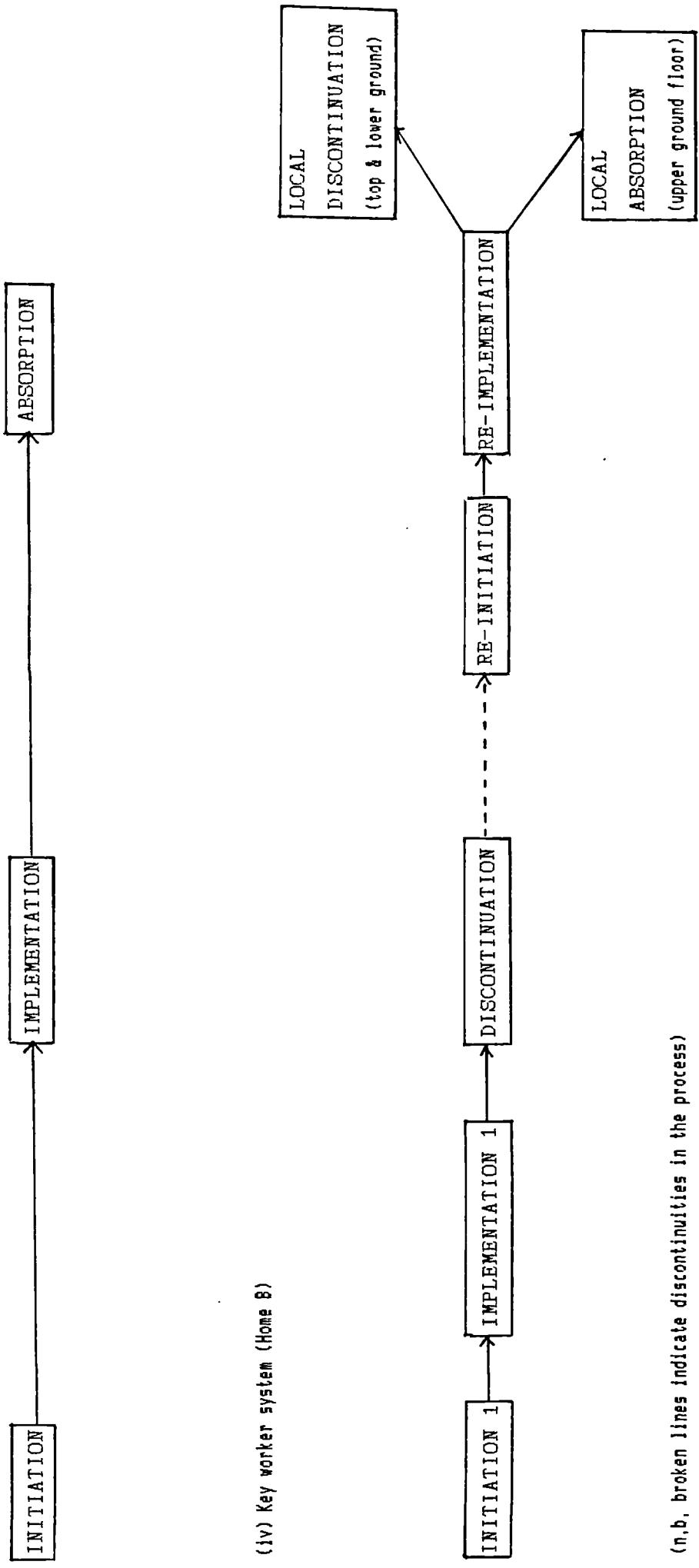


(ii) Rotating rota (Home A)



(n.b. broken lines indicate discontinuities in the process)

(iii) Short stay wing (Home B)



**Short stay wing (Home B):** The initiation phase commenced with the Principal's recognition that short stay care was an appropriate development for the Home. It included her discussions with higher management and visits to other Homes to determine how best to implement the innovation. The start of the implementation phase was when lower ground floor residents were asked to move to make way for short stay clients. Implementation proceeded gradually as more beds became free and were assigned to short stay. The short stay wing is now an established feature of Home B (i.e. it has reached the absorption phase).

**Key worker system:** The directive to the then Principal to introduce a key worker system marked the start of the process. This first initiation phase included the planning of the innovation by the two Assistant Principals. Implementation followed, including a number of modifications, but the innovation was eventually discontinued when the Home was managed by a series of temporary Principals. The next permanent Principal then re-initiated the innovation, and re-implemented it, but again it fell into dis-use and was effectively discontinued. The current Principal also re-initiated the key worker system as part of her plans to improve the Home when she took over. It was re-implemented, within floor-based staff teams, but subsequently discontinued on the top and lower ground floors. Its continuation on the upper ground floor may be considered as a localised absorption phase.

#### **Order of the phases**

Of the four cases, only in the short stay wing at Home B did the process progress in a simple sequence of initiation - implementation - absorption. For both the Home A innovations, the first initiation phase was unsuccessful, and the process came to a temporary halt, though in the case of flexi-respite care, an alternative innovation was brought in. After the second initiation phase, these innovations progressed without interruption through implementation to absorption (flexi-respite care) or abandonment (rotating rota). The key worker system (Home B) deviated most markedly from a straightforward linear

sequence, having been initiated, implemented and discontinued twice, and then developing separately on different floors.

#### **Boundaries between phases**

A clear boundary between initiation and implementation phases can be defined for the rotating rota and the short stay wing. For the former, the start of the implementation phase was set in advance in order to allow a fixed trial period, while for the latter, the boundary between the phases was the point at which bottom floor residents were moved elsewhere in the Home to free beds for short stay. It is highly likely that similar boundaries existed for the various versions of the key worker system, as the nature of the innovation is such that it could not be implemented piecemeal. However, there is not sufficient information in the interviews about this innovation to enable these boundaries to be pinpointed. It is also difficult to specify a point at which initiation ended and implementation began for the change to flexi-respite care at Home A. This cannot be put down to incomplete information, as this innovation was discussed by the highest number of participants and in the most detail of all four cases. The problem is rather that implementation happened so gradually, and for some time flexi-respite care and re-habilitation co-existed. Furthermore, vacant beds were already being allocated for use by short stay residents before permission for the innovation was given by all concerned.

It is very difficult to distinguish a boundary between implementation and absorption in any of the cases which reached the latter phase, though the phases are not identical. To take the example of the short stay wing: the period when permanent residents were moved and the first short stay clients arrived can confidently be assigned to implementation; likewise, interviewees clearly saw it as an integral part of the Home's facilities by the time of this study, placing it in the absorption phase. However, there is absolutely no indication that between these points there was a juncture at which one phase ended and the other began. The same is true for flexi-respite care and the key worker system on the upper ground floor. This may be explained by viewing absorption as a process of habituation, involving gradual

changes in the way an innovation is perceived rather than specific activities.

### 3.2.4. Conclusions

Comparison of these four cases of innovation raises doubts about the appropriateness of the conventional approach to modelling the process (i.e. as a linear sequence of discrete steps or stages). By itself though, this counter-evidence is not strong enough to conclude that stage models should be rejected outright.

In three of the four cases the process deviated from the straightforward sequence of phases conventional models would predict, although there is some comfort for advocates of the stage-based approach in the fact that only for the key worker system was there a radical deviation. Most authors do allow for some flexibility in their models, but as argued in chapter two, if the majority of cases in the field are found to be exceptions to the proposed sequences, the utility of such models must be questioned.

The problems are greater for stage models when the issue of boundaries between phases is examined. It has been seen that for all the innovations considered here, identification of a definite boundary between implementation and absorption was not possible. The phases could be merged, yet to place the whole post-adoption history of an innovation under a single heading results in an impoverished image of the process, as past authors have realised (Kimberly, 1981; Zaltman et al, 1973). This does appear to be a major dilemma for any attempt to describe the process in stages. The finding that for one innovation example, flexi-respite care at Home A, there were also considerable difficulties in defining a boundary between initiation and implementation emphasizes further the potential difficulties faced by stage-based models when applied to actual cases of the innovation process.

The points raised in this exploratory analysis highlight the urgent need for empirical work aimed specifically at testing models of the

innovation process against real-world cases of innovation. Chapter eight of this thesis presents a study which compared the accuracy and reliability of a well-known stage-based model (Zaltman et al, 1973) with Schroeder et al's (1986) alternative approach.

#### 4. THE INTERVIEW TRANSCRIPTS: METHOD OF ANALYSIS

##### 4.1 Requirements of the Method of Analysis

The overall aims of the interview analysis were, as has been seen, to explore differences in the accounts of influences on the innovation process between staff groups and Homes, between the innovation examples, and at different points in the process. To meet these aims, the method of analysing the interview transcripts was required to have the following three features:

- (1) Data must be organised in a way which enables multiple perspectives of the process to be described and compared.
- (2) It must be possible to relate statements about influences on innovations to particular phases of the process.
- (3) Within the framework of the study's overall aims, the approach should be exploratory. It should not attempt to test a set of rigid hypotheses, but should allow areas of interest to emerge from the data themselves.

From these guidelines a method of analysis was developed, utilising techniques from phenomenological research and content analysis. It is described in the next section.

## 4.2 Description of the Method of Analysis

### 4.2.1. Sources for Analytical Techniques

The early steps in the method of analysis devised for the transcript data draw upon phenomenological techniques, especially Hycner's (1985) guidelines for the analysis of interview data. These were felt to be appropriate because they stress that the means of identifying and classifying units of analysis should be determined by the nature of the particular data set. This was in line with the study's exploratory orientation. In the later stages, the analytical method moves closer to content analysis, as it is concerned with making comparisons (between Homes, groups, etc.) of the frequencies and distributions of influences on the innovation process.

### 4.2.2. Selecting a Unit of Analysis

The first step in developing the method of analysis was to select an appropriate unit of analysis. Kassarjian (1977) describes a number of units which have been used in content analysis, including words, phrases and themes. Other possibilities are to use strict grammatical units such as sentences or clauses, or to use natural breaks in the transcript (e.g. interviewer questions or interruptions) to define units. The unit that has been chosen for the present analysis is, however, taken from Hycner (1985); what he calls the "unit of general meaning". He defines this as

"...those words, phrases, non-verbal or paralinguistic communications which express a unique and coherent meaning (irrespective of the research question) clearly differentiated from that which precedes and follows" (p.282).

This method has a great advantage for subsequent classification, as by its definition a unit of general meaning (or "UGM") is unlikely to refer to two distinct influences, thus reducing the opportunity for categories to overlap. A grammatical unit, or a unit defined by a

'natural break' in the interview, may contain references to several different influences with different sources.

The transcripts of all the interviews relating to the selected innovations were divided into units of general meaning, in accordance with Hycner's (1985) definition, given above. Once this was completed, those units relevant to the research issues the study aimed to address were identified, and then categorized by innovation phase, influence source and influence direction (see sections 4.2.3. and 4.2.4., below). In developing the later parts of the method of analysis, the help of an expert rater was enlisted; a colleague with considerable experience of qualitative interview analysis, though in a field other than innovation.

#### 4.2.3. Identifying Units of Relevant Meaning

In Hycner's guidelines, the division of transcripts into units of general meaning is followed by the identification of "units of relevant meaning" (or "URMs") - that is, those interviewee statements (or segments of statements) deemed to be directly relevant to the research question(s) at hand. Following the same method, an overall research question was framed, to be applied to all the transcripts;

*"What determined or influenced the introduction and progress of the innovation, and its ultimate success or failure?"*

Criteria for interpreting and applying the question were written, and trial codings of UGMs were carried out by myself and the expert rater on one randomly-selected transcript from each Home. These revealed a problem regarding statements about attitudes towards innovations (both the interviewee's own attitudes and descriptions of others'). It was found very difficult to apply the criteria for identifying URM to these statements; the expert rater felt that he was presented with the choice of including all or none of the UGMs describing attitudes to innovations. The eventual solution reached was to divide the coding into two steps. Coding instructions were written, asking the coder to identify which statements were relevant to each of two research

questions. The first was as stated above, but an additional criterion was added that the coder was to discount all UGMs which referred to the attitudes of Home staff (including Principals and Senior staff) towards the innovation example. The second question was as follows;

*"What were the attitudes of members of staff to the innovation and what reasons did they give for their own and others' attitudes?"*

Thus for each unit of general meaning, the coder had three choices; it could be coded as relevant to research question one (influences), relevant to research question two (attitudes), or relevant to neither research question.

Three independent raters were presented with the research questions, the written criteria for interpreting and applying them, and two randomly-selected transcripts. I coded the transcripts myself, using the re-written criteria. The four sets of codings were then compared, and Kappa coefficients of inter-rater reliability (Cohen, 1960) were calculated, using Jackson's (1983) "Handy-Kappa" program. (The total number of units of general meaning on the two transcripts was seventy-nine). Table 5.2 shows the reliability coefficients for each coding category and overall.

Table 5.2 Coding units of relevant meaning: reliability coefficients

	Categories			
	Research Question 1	Research Question 2	Neither	Overall
Kappa	.58	.68	.60	.62
approx. standard error	.14	.12	.13	.03
approx. Z score	4.33	5.93	4.67	18.26

The overall Kappa of .618 indicates a good level of agreement between the coders, and all the Kappas for individual categories are well above the minimum acceptable level of 0.4, suggested by Fleiss (1981).

The second step in identifying units of relevant meaning relating to influences was to determine which of the units concerning staff attitudes should be included. Criteria were devised for judging when staff attitudes could be considered as influences on the process. The criteria were framed in the negative; that is, units of relevant meaning would not be included as influences in the following circumstances:

- (1) A URM *should not* be coded as an influence when it describes current attitudes to a past event.

e.g. "*Looking back, I think the way the innovation was introduced was wrong.*"

- (2) A URM *should not* be coded as an influence when it refers to any current attitude towards a discontinued innovation.

e.g. "*Some of us were quite sorry we gave up the innovation.*"

- (3) A URM *should not* be coded as an influence when it describes attitudes purely about the future of an innovation.

e.g. "*I hope we'll be able to make some changes to the innovation quite soon.*"

or "*I'd like to see the innovation tried again.*"

- 4) A URM *should not* be coded as an influence when it describes the interviewee's own attitude without any implication that this affected the innovation.

e.g. "*I didn't like the idea from the start.*"

or "*I've enjoyed my job much more since the innovation was introduced.*"

(The kind of statement that *would* be coded as an influence by this criterion is: "*I refused to participate in the innovation from the start.*")

5) A URM *should not* be coded as an influence when it describes other member(s) of staff's attitudes to an innovation, and a clear reference is made to these not affecting the innovation.

e.g. "*Staff weren't keen on the innovation, but nobody said anything to management at the time.*"

It can be seen that the criteria are stricter regarding participants' own attitudes than regarding those of other people. This was because it was felt that if an interviewee was able to report others' attitudes, those attitudes must have been made public and thus were highly likely to have influenced the innovation under discussion. In contrast, it cannot be assumed that participants' own attitudes were made public, hence the need for some clear implication of influence (criterion 4).

Reliability of the criteria was tested by comparing my own ratings with those of a coder who had had no involvement in the first set of reliability codings. The coder was presented with four transcripts (one from each innovation example, randomly selected) upon which the URMs already identified for research question two (attitudes) were highlighted ( $n = 38$ ). The task was to judge which of these were relevant to research question one, using the criteria detailed above. Again, I coded the transcripts myself, and a Kappa coefficient for the two sets of codings was calculated. The reliability was found to be adequate, though only just so (Kappa = .40), reflecting the difficulty of making judgements about when an attitude was or was not an influence. However, as most of the mistakes were on only one of the four transcripts, it was decided that the criteria could be accepted.

Having demonstrated the reliability of both sets of criteria, all the transcripts could be coded to identify the units of relevant meaning to be used in the analysis of influences on the innovation process. (The criteria for identifying units of relevant meaning, and all the associated materials presented to independent raters, are included in appendix B).

*The total number of units of relevant meaning identified across all transcripts was 1069.*

#### 4.2.4. Coding Dimensions for Units of Relevant Meaning

The units relating to influences on the innovation process (as identified by the procedure described above) were coded on three dimensions: the process phase they related to; the source of influence described; and the direction of the influence. The ways in which the categories included on each of these dimensions were developed are detailed below, along with reliability statistics for the categories.

##### Process phases

The division of the innovation process used in the comparison of the four case histories (section 3.2, above) was utilised here; i.e. initiation, implementation, and absorption. However, trial codings with the expert rater revealed that it was extremely difficult to distinguish between the implementation and absorption phases. The final version of the coding instructions therefore combined these into a single implementation-absorption phase. A category of phase not determinable was also added.

Two independent raters were presented with the coding instructions and four transcripts (one randomly-selected from each innovation example). One transcript was used as a "dummy-run" to ensure that the coders understood their task fully. Their codings on the remaining three, plus my own, were compared, and Kappa coefficients calculated for each category and overall. These are shown in table 5.3, below. The total number of URM<sub>s</sub> on the three transcripts was seventy-six. (Note that coding on all three dimensions was carried out at the same time and by

the same raters; reliability statistics are presented separately for each dimension for the sake of clarity).

The overall Kappa of .69 indicates very good agreement between raters. Of the individual categories, only 'source not determinable' has a Kappa coefficient below .4, indicating that disagreements tended to be between this category and one of the others, not between 'initiation' and 'implementation-absorption'. Both of the process phases had Kappas above .7, showing excellent agreement. The coding criteria can therefore confidently be accepted as reliable.

Table 5.3 Coding process phase; reliability coefficients

	Phase			
	Initiation	Implementation	Not Determinable	Overall
Kappa	,72	,75	,30	,69
approx. standard error	,22	,19	,19	,06
approx. Z score	3,26	3,94	1,55	10,75

#### Influence source

Categories of influence source were not imposed on the data, but allowed to emerge from examination of it, in line with Hycner's (1985) suggestions;

"The researcher then tries to determine...whether there seems to be some common theme or essence that unites several discrete units of meaning. Such an essence emerges through rigorously examining each individual unit of relevant meaning and trying to elicit what is the essence of that unit of meaning given the context." (p.287).

Four transcripts from each example were chosen, on the basis of their being rich in information and representing a cross-section of opinions and perspectives. The cases chosen always included the Principal, and usually one other member of the Senior staff, plus two members of the Care and/or Domestic staff. (The exception was for the rotating rota, at Home A, where a third case from a Care Assistant was used, instead of one from a Senior staff member). For each innovation example, a list of all the factors mentioned as influences on the four transcripts was compiled, and the sources for each influence factor noted. By amalgamating the four lists (i.e. one from each innovation example), seven categories of influence source were identified. A series of trial codings with the expert rater eventually resulted in the production of a final list of four source categories, described below;

(1) CLIENTS: This refers to the people for whom the Home provides a service. Naturally, the main group of clients are the residents themselves, but the category also applies to relatives of residents, elderly people in the community who receive day care or attend luncheon clubs, and any others who use the Home's facilities in any way.

(2) PRINCIPAL/SENIOR STAFF: This category comprises the Principal, Deputy Principal and Assistant Principals, of each Home, either individually or as a group. References to the whole staff group (i.e. Senior staff and Care/Domestic staff) are not included here, but in category (3).

(3) HOME STAFF: All references to the Homes' full and part-time staff (other than management), as sources of influence - individually, or in groups. This category also includes references to the whole staff group, including Senior staff (as above).

4) HIGHER MANAGEMENT AND OTHER OUTSIDE AGENCIES: This includes members of the Family and Community Services management ("Redvers

House") such as the Principal Assistant (PAs) and Chief Assistant, Medical and Social Work professionals, Principals of other Homes, and any other outside agencies with an influence on the Home.

A source not determinable category was included for URMs which for any reason could not be allocated to one of the above. The results of the reliability test on this dimension are given in table 5.4.

Table 5.4 Coding influence source; reliability coefficients

	<u>Influence source</u>					Overall
	Clients	Principal/ Senior staff	Home staff (Care/Domestic)	Higher m'gement	Not determined	
Kappa	,66	,66	,59	,63	,36	,57
approx. standard error	,17	,18	,18	,17	,17	,04
approx. Z score	3.94	3.71	3.32	3.72	2.19	14.13

Overall inter-rater agreement is good (Kappa = .57), as is agreement on all the individual categories except 'source not determined'. The criteria are acceptably reliable.

#### Influence direction

A simple three-way categorization of influence direction was used: positive, for factors which in any way helped the process; negative, for factors which in any way hindered the process; and indefinite, for URMs where a single clear direction of influence was not apparent. Reliability coefficients for these categories and the dimension overall are shown in table 5.5.

Influence direction has the lowest overall Kappa coefficient of the three dimensions, though it is still adequate (Kappa = .45). The coefficients for the 'positive' and 'negative' categories are considerably higher than this (.57 and .54) but that for the

'indefinite' category is well below the acceptable level (.25). This is the same pattern as was found for 'innovation phase' and 'influence source', as the 'indefinite' category may be considered equivalent to 'phase not determinable'. It indicates that disagreements tended be between 'indefinite' and one of the other categories, and not between 'positive' and 'negative' (in fact the latter only occurred on three out of seventy-six URM's). It was therefore felt that the criteria could be accepted.

Table 5.5 Coding influence direction; reliability coefficients

	<u>Influence Direction</u>			
	Positive	Negative	Indefinite	Overall
Kappa	.57	.54	.25	.45
approx. standard error	.19	.16	.18	.05
approx. Z score	2.94	3.28	1.37	8.82

Once the reliability of the three coding dimensions had been checked and found to be acceptable, the full set of transcripts were coded in accordance with the written criteria. Copies of the coding instructions, including the criteria for each dimension, are presented in appendix C.

## 5. INFLUENCES ON THE INNOVATION PROCESS: FINDINGS

Following a summary of the overall distribution of units of relevant meaning, the findings from three sets of comparisons are presented: between Homes and between innovation examples; between initiation and implementation-absorption phases; and between staff groups. (Aims of these comparisons are stated at the start of each section). The implications of the most important findings are considered in the concluding discussion section.

Before examining the findings, the reader's attention is drawn to the issue of what the URM percentage scores do and do not represent. These scores should be considered as measures of the salience to interviewees of each coding category in relation to all other categories on a particular dimension. They are not an objective measure of the importance of particular categories, but rather a measure of their perceived importance to interviewees.

### 5.1 The Overall Distribution of Units of Relevant Meaning

Staff in the Homes may be divided into five groups; Principals, Senior staff, Day Care Assistants, Night Care Assistants, and Domestic/Kitchen staff. The mean frequencies of URMs relating to influences on the innovation for each group on each innovation example are shown in table 5.6.

Table 5.6: Mean frequencies of URMs across innovation examples, by staff group

Staff group		Innovation example			
		Home A		Home B	
		Flexi-respite care	Rotating rota	Short stay wing	Key-worker system
Principal		141 <i>n</i> = (1)	77 <i>n</i> = (1)	24 <i>n</i> = (1)	31 <i>n</i> = (1)
Senior staff		23 <i>n</i> = (3)	15 <i>n</i> = (4)	19 <i>n</i> = (1)	19 <i>n</i> = (1)
Care staff (days)		19.8 <i>n</i> = (5)	25 <i>n</i> = (5)	13 <i>n</i> = (7)	17.3 <i>n</i> = (7)
Care staff (nights)		28 <i>n</i> = (3)	25.5 <i>n</i> = (4)	11 <i>n</i> = (1)	- -
Domestic/Kitchen staff		11.7 <i>n</i> = (3)	11 <i>n</i> = (1)	- -	- -
Overall means		28.5 <i>n</i> = (15)	21.7 <i>n</i> = (15)	14.5 <i>n</i> = (10)	19.0 <i>n</i> = (9)

There is great variation between participants in URM frequencies; even discounting the massive totals for Home A's Principal, the range is

from four (Day Care Assistant, Home B: short stay wing) to thirty-eight (Night Care Assistant, Home A: flexi-respite care). The absolute frequency score is therefore not an appropriate measure of how often interviewees referred to particular innovation phases, influence sources and influence directions. Instead, percentage scores were calculated for every interviewee, indicating the proportion of URMs allocated to each category of each coding dimension. For instance, interviewee 01 at Home A had a total of 17 URMs for the flexi-respite care example. On the first coding dimension - innovation phase - five URMs were coded as relating to initiation, ten to implementation-absorption, and three as 'not determinable'. Scores were thus 29% (initiation); 59% (implementation-absorption); and 12% (not determinable). In the rest of this chapter, the term 'URM percentage' will be used to refer to these scores.

## 5.2 Comparisons Between Homes and Between Innovation Examples

For all participants, URM percentage scores on each coding dimension were compared across Homes and across innovation examples (continuing vs. discontinued). Larger differences between the Homes than between the two sets of innovations would indicate that the distribution of URMs was determined more by characteristics of each Home than by common features of the innovations. This would place limitations on the examination of differences between staff groups and between initiation and implementation-absorption phases across the sample as a whole.

### 5.2.1. Comparisons Between the Homes

URM percentage scores were compared for Home A and Home B participants on all the coding dimension categories of both continuing and discontinued innovation examples. Because of the small sample and the nature of the data, Mann-Whitney's 'U' test rather than the T test was used, and non-parametric techniques were employed throughout the analysis of the transcript data. Table 5.7 shows those coding

dimension categories for which significant differences between the Homes were found.

All the significant differences between the Homes were on the 'influence source' coding dimension. For continuing innovations, the only category where a significant difference was found was Home staff, who were referred to as a source of influence more often at Home A than at Home B ( $U = 33.5$ ,  $p < .05$ ). There were significant differences on three categories for discontinued innovations: clients ( $U = 12.0$ ,  $p < .001$ ), to whom Home B interviewees referred more often; Home staff ( $U = 12.0$ ,  $p < .01$ ) again mentioned more frequently by Home A participants; and source not determined ( $U = 22.5$ ,  $p < .01$ ), where the higher frequency was for Home B interviewees.

Table 5.7: Significant differences between Home A and Home B in URM percentage scores.

Coding dimension category	Mean ranks		U	Z score	Probability
	Home A	Home B			
<u>Continuing innovations (n=25)</u>					
Influence source:					
staff	15.8	8.9	33.5	2.3	.02
<u>Discontinued innovations (n=23)</u>					
Innovation source:					
clients	8.4	17.7	12.0	3.5	.00
staff	15.6	6.3	12.0	3.2	.00
not determined	9.1	16.5	22.5	2.6	.01

### 5.2.2. Comparisons Between Continuing and Discontinued Innovation Examples

Wilcoxon's matched pairs test was used to compare each interviewee's URM percentage scores for continuing and discontinued innovations on all coding dimension categories (nb. eighteen of the thirty participants had scores for both types of innovation). Significant differences are presented in Table 5.8.

Table 5.8; Significant differences between URM percentage scores between continuing and discontinued innovation examples - comparison of ranks on Wilcoxon test,

Coding dimension category	<u>Ranks</u>				Z score	Probability
	Discont'd < Cont'd	Discont'd > Cont'd	Ties			
<b>Influence source;</b>						
clients	16	1	1	3.3	.00	
staff	0	18	0	3.7	.00	
<b>Influence direction;</b>						
positive	13	4	1	2.7	.01	
negative	2	15	1	3.4	.00	

There were significant differences on two influence source categories and two influence direction categories. Clients were mentioned as a source of influence more often for continuing than discontinued innovations ( $Z = 3.3$ ,  $p < .01$ ), while Home staff were referred to much more often for discontinued innovations than continuing ( $Z = 3.7$ ,  $p < .001$ ). On the influence direction dimension, there were higher scores for positive influences for continuing innovations ( $Z = 2.7$ ,  $p < .01$ ) and higher scores for negative influences for discontinued innovations ( $Z = 3.4$ ,  $p < .001$ ). There were no significant differences between innovation examples on innovation process phase.

### 5.2.3. Conclusions

Four out of twenty-two comparisons between the Homes were significant, compared to four out of eleven comparisons between innovation examples. This suggests that the influences on the innovation processes at the two Homes were not so different as to make analysis across the sample as a whole invalid. The one exception is for sources of influence on discontinued innovation, where there were significant differences on three out of five categories. This is probably due to the fact that the two discontinued innovations - the rotating rota and the key worker system - were not as similar in aims, content or history (see section 3) as the two continuing innovations (flexi-respite care and short stay wing). In the light of this, it would be

wrong to combine influence source scores for the two discontinued innovations when comparing staff groups (section 5.4, below). The large and significant differences between continuing and discontinuing innovations on two out of five influence source categories, and on both positive and negative influence directions, make it clear that the two types of innovation example cannot be combined to form overall scores.

The differences in the influence source categories may be related to the nature of the innovations. Both the introduction of flexi-respite care at Home A and the short stay wing at Home B were more directly concerned with changing the nature of client services than were the two discontinued innovations. Conversely, the rotating rota and key worker system were more concerned with the organization of staff than were the other innovations. It thus makes sense that clients were mentioned as influences more often for the continuing innovations than the discontinued, while the reverse is true for Home staff. In contrast, the differences between innovation examples in influence direction probably reflect their different outcomes. Discussion of discontinued innovations tended to focus on negative influences, while discussion of continuing innovations tended to focus on positive influences. Whether the continuing innovations survived because they met more positive than negative influences (and the reverse for discontinued) or whether the division of the examples into these two outcome categories affected the extent to which participants referred to positive or negative influences remains open to question.

### 5.3 Comparisons Between Innovation Process Phases

Central to the process approach to innovation research is the notion that influencing factors may have a different effect at different points in an innovation's history. This is the foundation of Zaltman et al's (1973) theoretical work on the "innovation dilemma", for instance. One of the most important purposes of the present study was therefore to compare URM percentage scores on the influence source and

direction dimensions in relation to the initiation and implementation-absorption phases.

URM percentage scores on the influence source and direction dimensions were calculated separately for initiation and implementation-absorption phases. In a small number of cases, the interviewee made very few references to one or other of the phases. It was decided not to include URM percentage scores based on fewer than three URMs for the phase; this left nineteen valid cases for continuing innovation examples and sixteen for discontinued innovation examples. Findings relating to influence source and direction are covered separately below. Note that because of the significant differences between discontinued at Home A and Home B on three of the five influence source categories (see 5.2), only the continuing innovation examples were included in the analysis of the influence source dimension.

### 5.3.1. Influence Source

Median scores for each source category at the initiation and implementation-absorption phases are shown on table 5.9, along with the results of comparisons of URM percentage scores between the phases (Wilcoxon's matched pairs test).

Table 5.9: Comparison of influence source scores at the initiation and implementation-absorption phases (continuing innovations only)

Influence source	Median scores		Wilcoxon test	
	Initiation	Implementation -absorption	Z score	Probability
clients	0%	41%	3,4	,00
staff	20%	8%	2,3	,02
home management	20%	0%	3,1	,00
higher management etc.	13%	0%	1,6	,11
not determinable	0%	24%	1,9	,06

(n, of valid cases = 19)

### 5.3.2. Influence Direction

Comparisons between the phases were carried out for influence direction in the same manner as for influence source, and are shown in table 5.10. Both continuing and discontinued innovations were examined here.

Table 5.10: Comparison of influence direction scores at the initiation and implementation-absorption phases

Innovation example	Influence direction	Median scores		Wilcoxon test	
		Initiation	Implementation -absorption	Z score	Probability
<hr/>					
1) Continuing (n=19)	positive	80%	20%	3,8	,00
	negative	0%	22%	3,8	,00
	indefinite	14%	50%	3,3	,00
<hr/>					
2) Discontinued (n=16)	positive	50%	30%	3,5	,00
	negative	13%	63%	3,5	,00
	indefinite	27%	21%	1,2	,23
<hr/>					

All the differences are significant, except direction indefinite for discontinued innovations. For both innovation examples, the median scores are higher for positive influences at the initiation phase than at the implementation-absorption phase, and vice versa for negative influences, and in fact there are no cases of individual participants' scores deviating from this pattern. Influences of indefinite direction are mentioned more often at the implementation-absorption phase for continuing innovations, but more often at the initiation phase for discontinued, though only the former difference is significant.

### 5.3.3. Conclusions

It is evident from these findings that the emphasis placed by interviewees on particular sources and directions of influence was strongly related to the phase of the innovation process under discussion. The findings suggest that the influence of those planning

and controlling innovations was more salient in relation to the initiation phase, while the influence of those affected by the innovations was more salient at implementation-absorption. Hence, at the initiation phase, the Home management category had the joint highest median score (20%) and the clients category had the joint lowest (0%). In contrast, at the implementation-absorption phase, clients had by far the highest median score (41%) while Home management had the joint lowest (0%).

The higher proportion of positive influences (and lower proportion of negative) at the initiation phase than at the implementation-absorption phase is not surprising, as an innovation which faced too many negative influences during initiation would probably never be implemented. Also, the findings regarding influence source suggest that the process may be less controllable once implementation starts, because the major influences come from those affected by the innovations rather than the planners and decision-makers. This is in line with Schroeder et al's observation of the ubiquity of setbacks and surprises in the process. Finally, it is possible that the retrospective nature of the study had an effect here, as at least for continuing innovations (which includes the key worker system for staff from Home B's upper ground floor) negative influences on the implementation-absorption phase were often current problems, and therefore highly salient to participants. In contrast, any negative influences on the initiation phase happened quite some time ago, and may have appeared less important with hindsight, or even have been forgotten. The need for future studies to look at these issues longitudinally is apparent.

#### 5.4 Comparisons Between Staff Groups

In the literature review chapters (two and three), past research was criticised for failing to study innovation from multiple perspectives. This part of the analysis therefore set out to look at whether participants' accounts of influences varied according to which staff

group they belonged to. The simplest division of participants was into managerial (i.e. Principals and Senior staff) and non-managerial groups. A finer level of division distinguished five groups by post: Principals, Senior staff, Day Care Assistants, Night Care Assistants, and Domestic/Kitchen staff. This latter method, with Day and Night Care staff combined, also represented a rank ordering by status. There are problems with both ways of grouping staff. Division by post results in some very small groups, but amalgamating these into managerial and non-managerial staff obscures some quite large differences between constituent groups. It was decided to rely chiefly on the two-way division, on practical grounds, but to look also at differences between post groups where preliminary examination of the data suggested this was appropriate. The comparisons between staff groups were carried out on all three coding dimensions; influence source, influence direction, and innovation process phase.

#### 5.4.1. Influence Source

Because of the significant differences between the Homes on this *coding dimension for discontinued innovations* (see section 5.2), only the data from the examples of continuing innovations were included for analysis here. Preliminary examination of the data indicated that on several of the influence source categories, differences between the sub-groups of the managerial and non-managerial staff groupings were larger than those between the main groups themselves. Comparisons were therefore carried out of all five staff post groups, using the Kruskal-Wallis 1-Way Analysis of Variance. The only significant difference was on the source not determinable category, where the URM percentage scores were lower for Night Care staff and the Principals than other groups.

#### 5.4.2. Influence Direction

There were no significant differences found between managerial and non-managerial staff on any of the influence direction categories. Looking just at continuing innovation examples, examination of group medians for positive influences suggested that scores on this category might be related to staff status (where Domestics are ranked lowest

and Principals highest, with Day and Night Care Assistants counted as a single group). This can be seen on table 5.11.

Table 5.11 Median scores on the 'positive' influence direction category for staff groups

Staff group	Status ranking	Positive influence: median score
Principals	4	67.5
Senior staff	3	54.5
Care staff	2	51.0
Domestics	1	31.0

Spearman's rank order correlation coefficient was calculated between status ranks and scores on the positive influence category for all participants (continuing innovations only). The relationship was significant ( $\rho = .41$ ,  $p < .05$ ), indicating that the higher an individual's status, the more references to positive influences on the innovation process she or he tended to make. Interestingly, there was no significant relationship found between group status and scores for negative influences.

#### 5.4.3. Innovation Process Phase

Managerial and non-managerial staff groups were compared on URM percentage scores for the three process phase categories of continuing and discontinued innovations. Mann-Whitney U tests revealed significant differences between the groups on the initiation and implementation-absorption phases for continuing innovations ( $p < .05$ ). Managerial staff referred more frequently than non-managerial staff to the initiation phase, and less frequently than them to the implementation-absorption phase, as can be seen from table 5.12.

There were no differences on any of the categories for discontinued innovations, nor on the phase not specified category for continuing innovations.

Table 5.12: Differences in median scores for innovation process phases; managerial vs. non-managerial staff.

	Median percentage score	
	Initiation phase	Implementation-absorption phase
Managerial staff	55	31
Non- Managerial staff	39	45

#### 5.4.4. Conclusions

Differences in URM percentage scores between staff groups are not on the whole as large as those between innovation process phases, though on two of the three coding dimensions (influence direction and innovation process phase) there was evidence of important relationships between participants' accounts and their group membership.

On the influence direction dimension, the correlation between positive influences and group status can be interpreted as a reflection of the stake in the innovations held by each group. Thus the Principals, as the people ultimately responsible for the decision to implement an innovation and for its consequences, referred most frequently to positive influences. The Domestics, who were least involved in and affected by the innovation, mentioned positive influences the least often, while the other two groups (Senior staff and Care Assistants) fell between these extremes. It is important to note that the higher status groups did not evade discussion of problems faced by the innovations, as is shown by the non-significant correlation between status and scores on the negative influence category.

Turning to innovation process phase, we have seen that on the continuing innovation examples, managerial staff referred more frequently in their interviews to the initiation phase than did the non-managerial staff, while the reverse was true for the

implementation-absorption phase. This difference may reflect the fact that management were more directly involved in the innovations during initiation, as planners and decision-makers, than during implementation-absorption. The initiation phase was therefore more salient to them when it came to discussing the innovations' histories. In contrast, the staff's major involvement came after implementation, when the innovation began to have a direct impact on the nature of their work, and they consequently dwelt for longer on the implementation-absorption phase.

The non-significance of the comparisons on innovation process phase for discontinued innovations is largely due to high scores on the initiation phase for some Care Assistants at Home A, discussing the rotating rota. It has been seen (section 3) that certain members of the Care Staff were very much involved in the second initiation of this innovation; it also aroused strong feelings and disagreements amongst staff when proposed, to the extent that two members of the Night staff refused to work it. The fact that the rota was only implemented for a short period of time was probably also instrumental in leading to a focus on events before implementation.

Finally, staff group membership did not appear to affect accounts of influence sources. These shared perceptions across groups of what facilitated or inhibited progress of the innovations suggest good communications between groups and a strong sense of identity within the Homes. There are features of the two Homes and their histories which might explain why this should be the case. At both Homes, the Principals encouraged an informal atmosphere, with relationships on a first-name basis. Also at both Homes turnover was low; many staff had worked together for a considerable length of time and knew each other very well. At Home A, a third relevant factor was that the Principal made a conscious effort from the start to recruit staff who shared her philosophy towards the care of the elderly.

## 5.5 Influences on the Innovation Process: Directions for Future Research

The findings of these analyses have confirmed the importance of examining influences on the innovation process at different phases, and of looking at differences in perspectives between staff groups. There are implications for future research in both these areas. In addition, differences between innovation examples suggest a need to look at differences between innovation types in influences on the process.

### 5.5.1. Differences Between Innovation Phases

On the basis of these findings, the distinction between initiation and implementation-absorption phases appears to be valid, as independent raters were able to reliably assign URMs to one or the other, and comparisons of URM percentage scores showed significant differences on both the other coding dimensions (i.e. influence source and direction). In contrast, it was not found possible to reliably distinguish implementation from absorption. This is in line with the conclusions of the examination of the sequence of events in the process (section 3), where the initiation - implementation boundary was much more easily defined than that between implementation and absorption. It would therefore be appropriate to use the two-phase division of the innovation process in future research, though it might be of benefit to await more detailed and rigorous examination of the sequence of events in the innovation process.

The most important findings regarding differences between the phases were the shift of emphasis from those involved in planning innovations to those principally affected by them, and the preponderance of positive influences at initiation and negative at implementation-absorption. These need to be examined further. Longitudinal research designs would help determine the extent to which the differences are a result of retrospection, and a mixture of interview and observational techniques would enable the perceptions of staff to be compared with those of a more detached outside researcher.

### 5.5.2. Differences Between Staff Groups

In the present study, investigation of differences in URM percentage scores between staff groups was hampered by the very small sizes of some of the groups. It would be advisable in future to look at inter-group differences in bigger organizations (or across a larger number of small organizations).

The lack of significant differences between groups on the influence source dimension was explained above in terms of the shared outlook between staff groups. This could be tested by comparing group perceptions of sources of influence for organizations where shared perspectives were evident with those in organizations that lacked a shared outlook, or "vision" (West, 1989). If the lack of a shared outlook did lead to inter-group differences in perceived sources of influence on innovations, the question could then be addressed as to whether this in turn lead to greater resistance to innovations.

The correlation between number of references to positive influences and staff group status requires further investigation. An explanation offered for the finding was that the higher status groups had a greater stake in the success of the innovations. This suggests that an intervention-based research strategy would be useful; the effects of interventions aimed at increasing the stake of lower status groups in an innovation could be evaluated. Again, longitudinal designs are recommended, as effects on perceptions of positive and negative influences may not be the same at all points in the innovation process, as the findings relating to innovation phases in this study suggested.

Lastly, on the innovation process phase dimension, it was found that managerial staff referred more frequently than non-managerial staff to initiation, and vice versa for implementation-absorption. This was interpreted as reflecting management's greater role in initiating innovations, and conversely staff's greater involvement with the innovations after implementation. This interpretation could be tested in future research by examining whether the differences between the

groups found here were reduced, or even reversed, for innovations initiated by non-managerial staff.

#### 5.5.3. Differences Between Types of Innovation

The differences in accounts of influence sources between the continuing and discontinued innovations appeared to be closely related to the nature of the innovations - their aims, the aspects of the Homes they affected, and so on. As pointed out in the literature review (chapter three), there is a lack of research examining empirically differences between types of innovation. Findings here suggest that such research could make an important contribution to our understanding of influences on the innovation process. One of the main foci of the final study described in this thesis (chapter eight) was therefore the examination of differences in the innovation process in relation to innovation types.

CHAPTER SIX: A STUDY OF INNOVATIONS IN TWO LOCAL AUTHORITY  
HOMES FOR THE ELDERLY

PART 2: ATTITUDES TOWARDS THE INNOVATIONS

1. INTRODUCTION

The main part of this chapter examines the relationships between evaluative attitudes towards innovations and other work-related attitudinal, dispositional and biographical variables. Unlike chapter five, quantitative data is used, collected through verbally administered questionnaires. Qualitative data from the interview transcripts concerning attitudes towards innovations is presented in the final section of the chapter.

1.1 Aims

The main research question is in two parts, the second of which is only to be addressed if the answer to part one is in the affirmative.

*(i) Are the evaluative attitudes towards innovations expressed by Non-management staff related to the extent to which they felt they had been involved in the introduction of the innovations?*

*If so:*

*(ii) Is involvement in the innovation a better predictor than other work-related attitudinal or biographical variables of evaluations of the innovation ?*

By "involvement in the innovation" I mean the extent to which members of staff participated in and were consulted about the introduction of the innovations. As seen in the literature review (especially chapter 3) participative management style, consultation, collaboration in decisions and so on is emphasized as a facilitator of innovation at

all levels (Kanter, 1983; Nystrom, 1979; Peters and Waterman, 1982). Most of the research concentrates on the role of participation in encouraging the production of innovations, rather than on its effects on the attitudes of those affected by innovations, yet as argued in chapters two and three, the process of innovation in an organization is influenced by many more people than just the original 'innovators'. In the interview transcripts, the most frequently mentioned source of influence on the selected innovations overall was 'non-management staff' (38% of all units of relevant meaning). Part (i) of the research question above is therefore concerned with whether participants' who felt more involved in an innovation did tend to express more positive attitudes towards it. Part (ii) asks how important involvement is in relation to other possible influences on attitudes. In answering this, the question must be addressed of whether any relationship found between the involvement measures and attitudes towards the innovations is independent of the relationships between the dependent variable and the other independent variables.

In the main analysis, only Case History questionnaire variables from the examples of continuing innovations were used, as the "evaluations" measure for discontinued innovations was (by definition) about past rather than present attitudes. It would make no sense to look at the relationships between these and independent variables measuring current attitudes - job satisfaction, opinions towards management, commitment etc. Thus for discontinued innovations, only the relationships between evaluations and the other Case History questionnaire variables were examined.

The second research question concerns the data from the Case History questionnaires only, for discontinued as well as continuing innovations;

*To which areas of its effect (i.e. job, residents, running of Home) is overall acceptance of the innovation - or acceptance of its discontinuation - related?*

Finally, the study examined whether attitudes to the innovations were related to *experience of working with the elderly*, and whether there were differences in attitudes between *care and domestic staff groups*.

## 2. METHOD

Background to the study and details of the data collection procedure have already been presented in chapter five. To briefly re-cap; interviews were carried out with members of staff at the two Homes, in which they were asked to describe the histories of two previously selected important innovations - one continuing and one discontinued. At the end of each innovation Case history, a brief questionnaire was verbally administered with measures of attitudes towards the innovations and the extent to which staff had been involved in them. After the second of these a longer questionnaire was verbally administered, comprising more general attitudinal, biographical and dispositional measures. The Case history questionnaires were administered to both management and care/domestic staff, but the General questionnaire was only given to non-management staff. Statistical analysis of the questionnaire findings was confined to the responses of non-managerial staff.

Not all interviewees were able to discuss both the selected innovations at each Home; where possible, alternative examples of innovations were used in such cases. The total number of participants discussing continuing innovations was twenty-three, of which all but four discussed the selected examples (Flexi-respite Care and Short Stay Wing). For discontinued innovations (Rotating Rota and Key Worker System) the total was sixteen, of which four discussed alternative examples.

## 2.1. The Case History Questionnaires

The short questionnaires administered after each Case History interview contained the two dependent variable measures relating to the two research questions, the main independent variable of the study ("involvement in the innovation") and three other single item independent variable measures. These two sets of variables are presented and discussed below. The full questions, as read to participants, are given in appendix D.

### 2.1.1. Dependent Variables

Throughout the analysis, the main dependent variable was evaluations of the innovation. In addition, a second dependent variable was used to address the second, subsidiary research question (which only involved analysis of relationships between variables within the Case History questionnaire). This measured participants' own current overall attitudes towards the innovations. For continuing innovation examples, the variable was called acceptance of the innovation; for discontinued examples, it was acceptance of discontinuation of the innovation.

#### Evaluations of the innovation

For any attempt to address questions concerning attitudes to innovations, the principal problem is the likelihood of a massive halo effect. Given that the innovations discussed here were selected because of their importance to participants, attitudes towards them - especially in a retrospective study such as this - may well be little more than expressions of overall feelings towards work and the organization. This was felt to be most likely to happen if the attitude measure was comprised of items that were generalised and largely affective (eg. "I like/dislike the innovation", "I enjoy/don't enjoy working with the innovation" etc). To avoid this, the items in the evaluations of the innovation scale have been designed to focus on the effects of the innovation in specific areas - namely, the respondents' own jobs, the residents, and the wider running of the

Home. On all items, responses were on a five-point scale, '5' representing the most positive effects, and '1' the most negative.

#### **Acceptance of the innovation / acceptance of discontinuation**

The single-item measures of participants' current overall attitudes towards the innovations were framed in general terms. As has been seen, they asked whether in retrospect participants thought it had been right to introduce the innovation (or, for discontinued examples, to have abandoned the innovation). This item was used to examine which of the areas of effect included in the main dependent variable - "your job", "the residents", "the running of the Home" - were most influential in determining the extent to which people felt that introducing (or abandoning) the innovation had been the right thing to do. Responses were again on five-point scales, with '5' indicating that the respondent was "certain" that it had been right to introduce/abandon the innovation, while '1' indicated that it had "certainly not" been the right thing to do. For discontinued examples scoring was reversed in the analysis - a high score thus representing an opinion that it had been wrong to abandon the innovation (i.e. a positive attitude towards the innovation).

#### **2.1.2. Independent Variables**

The main independent variable on the Case History questionnaires, and the only one examined alongside the General Questionnaire variables in addressing research question one, was the three-item measure of involvement in the innovation. The items asked the extent to which management made an effort to explain why they were introducing each innovation, how much say in the decision to introduce each innovation staff had had, and the amount of notice taken by management of staff reactions after the implementation of each innovation. All responses were on five-point scales, with '5' representing maximum involvement and '1' representing minimum.

All the other variables were single-item measures of attitudes towards the innovations. For continuing innovation examples, these were: participants' own initial attitudes (what they thought of the

innovations when first introduced); others' initial attitudes (i.e. other non-managerial staff); and others' current attitudes. For discontinued innovations, there was no question asked about others' current attitudes. It was felt that as these innovations had been discontinued for some time, they might no longer be subjects of discussion and concern amongst staff; interviewees would therefore not be able to report what their colleagues' current attitudes were. In fact this assumption proved wrong, as many participants did comment on others' current attitudes towards discontinued innovations. With hindsight, the omission of this item was a mistake.

## 2.2 Independent Variables on the General Questionnaire

This questionnaire set out to measure variables not directly concerned with the specific innovations discussed, but which might be expected to influence attitudes towards them, in order to address part two of the main research question.

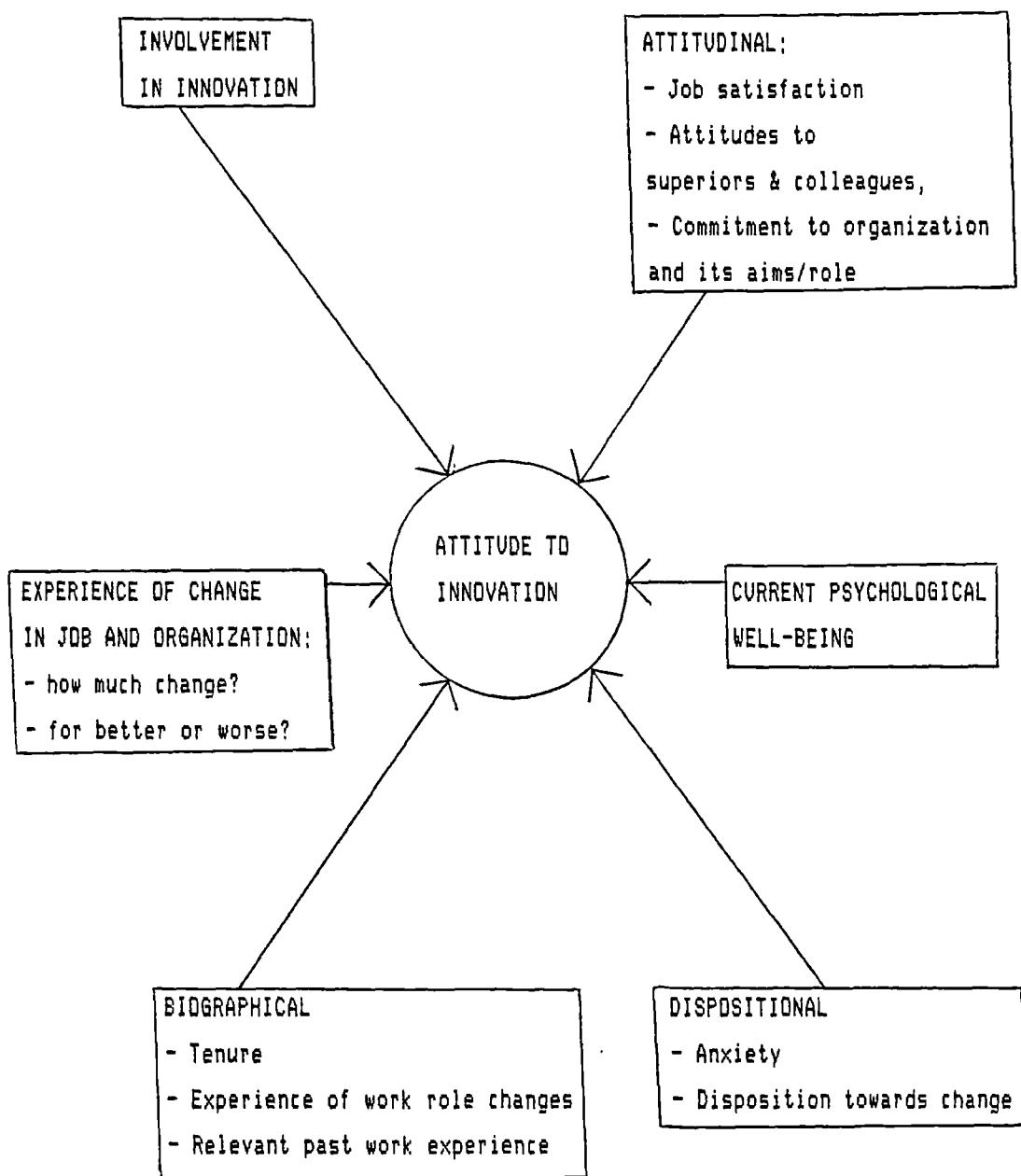
### 2.2.1. Selecting Variables to include in the Questionnaire

Clearly, a very large number of different factors might be determinants of people's attitudes towards innovations, but given the small number of participants and the limited time available to administer the questionnaire, it was necessary to focus only on those which seemed potentially most important and relevant. Five types of variable (other than "involvement in the innovation") were identified, as shown in figure 6.1; attitudinal variables, experience of change, biographical variables, dispositional variables, and current psychological well-being.

#### Attitudinal variables

We might expect what people think of important innovations to be affected by what they think of their job, their superiors and colleagues, and by their commitment to the Home and their attitudes towards elderly care.

Figure 6.1 Summary of potential influences on attitudes to innovation



### **Experience of change**

Attitudes towards an innovation might be influenced by peoples' experiences of change **within the Home and within their job**; people who have had mostly negative experiences may react less positively to any innovation than those who have had mostly good experiences. As well as the **direction of changes** (i.e. good - bad), the **amount of change** could be relevant.

### **Biographical variables**

It is commonly assumed that longer **tenure** is related to less ready acceptance of changes, though empirical findings are highly inconsistent (Rogers and Shoemaker, 1971). Other relevant biographical details are respondents' previous experience of working with the elderly and whether they had changed jobs **within the Home** - the rationale being that diversity of experience might make innovations appear less novel and hence less threatening (Zaltman et al, 1973).

### **Dispositional variables**

People of an anxious disposition might be expected to find innovations threatening and therefore exhibit negative attitudes, though there is evidence to suggest that anxiety may be positively related to individual propensity to innovate (West, 1987). A measure of anxiety is therefore included, along with one of general **disposition towards change**. Clearly, there are others which could have been included, but this thesis has argued that approaches based on personality traits are inappropriate to the study of innovation as a social process (see chapter three). These are therefore the only two dispositional variables included.

### **Current psychological well-being**

It is possible that reported evaluations of innovations might be influenced by respondents' current levels of **psychological well-being**, hence the inclusion of the General Health Questionnaire. A high correlation with this would tend to throw into question the validity of the dependent variable, as it would suggest that it predominantly

reflects current mental health rather than attitudes to the innovation.

#### 2.2.2. Measures Used

A full version of the General questionnaire, as administered to interviewees, is included in appendix E. The measures used are detailed below.

##### Measures using Lickert-type rating scales

**Job satisfaction:** Warr, Cook and Wall's (1979) Job Satisfaction scale was selected as a well-tested general measure. It consists of fifteen items rated on a seven-point scale (from "extremely dissatisfied" (1) to "extremely satisfied" (7)). There are two sub-scales: eight items relating to "extrinsic satisfaction" and seven to "intrinsic satisfaction".

**Current psychological well-being:** This was measured by the twelve-item version of the General Health Questionnaire (Goldberg, 1972). Each item was scored from 0 to 3, with a high score indicating low well-being.

**Opinion of your Principal/Supervisor** The eight-item scale for "Your immediate superior" from Cross' (1973) Worker Opinion Survey was used as it gives a broad overall measure of the respondent's opinion of her or his superiors. Here it was administered twice in succession - once in relation to the Principal, and once to the senior staff member who acted as supervisor to the interviewee. The respondent is required to state whether she or he agrees with the description of the superior given in each item; responses are "Yes" (3), "Uncertain" (2) or "No" (1). Four items are reverse-scored.

**Opinion of your colleagues:** Another scale from the Worker Opinion Survey was used here; "The People You Work With". Again there are eight items, and the responses and scoring are as for the previous variable.

**Commitment to the Home:** A modified version of Cook and Wall's (1980) Organizational Commitment scale was utilised. One of the original nine items was missed out, as irrelevant to Homes for the Elderly; "Even if the firm were not doing well financially, I would be reluctant to change to another employer". In addition the scale was reduced from seven items to five, with scoring indicating the extent to which respondents agreed with the statements in each item - ranging from "strongly agree" (5) to "strongly disagree" (1). Three items are reverse-scored.

**Attitude towards care of the elderly:** This is a four-item scale, designed for the study. It aimed to measure the extent to which participants felt that the work of Homes for the Elderly was important and worthwhile; scoring and responses were as for the commitment measure. One item is reverse-scored.

**Extent and direction of change:** Two single items measured the extent to which interviewees felt that their jobs and their Home had changed; a five point scale was used, scored from "a great deal" (5) to "hardly at all" (1). Accompanying each of these items was another which asked about whether the changes (i.e. to the job and to the Home) had been for the better or for the worse. The five points ranged from "almost always for the better" (5) to "almost always for the worse" (1).

**Change in opinion about management:** A single item was used to measure whether, and in what direction, respondents' overall opinions of the management group (i.e. Principal and senior staff) had changed. A five-point scale was used, from "I like them alot more" (5) to "I like them alot less" (1).

#### **Other types of measure**

**General and Work anxiety:** Dispositional anxiety was measured using two sets of three semantic differentials, one set asking about anxiety in general and the other about anxiety at work. The paired adjectives were "anxious - non-anxious", "relaxed - tense" and "nervous - not

nervous", based on self-concept measures of anxiety (Kinch, Falk and Anderson, 1983). Responses were scored from five to one, such that a high score represented a high level of anxiety (i.e. the second adjective pair was reverse scored).

**Disposition towards change:** This was measured using the "change" scale from the Adjective Check List (Gough, 1952), defined as indicating a tendency "to seek novelty of experience and avoid routine". The pro-change scale has twenty items, and the anti-change thirteen. Scoring is one ("yes") or zero ("no") on each item.

**Biographical variables:** Tenure was measured in years (rounding up from the nearest six months). Respondents were asked to reply "yes" or "no" to the questions of whether they had previous experience of working with the elderly (i.e. before they started work at Home A or B), and whether they had changed jobs within the Home.

### 2.3 Scale Reliabilities

Table 6.1 shows the Cronbach's Alpha reliability ratings for all the scales used in the study. There are three scales for which reliability was found to be unacceptably low; general anxiety ( $\alpha = .37$ ), attitude to elderly care ( $\alpha = .38$ ) and pro-change disposition ( $\alpha = .46$ ). For general anxiety, further examination showed that one of the semantic differential pairs, "relaxed - tense" was responsible for the low reliability score: the item-total correlation for this pair was -.08, compared to .39 for "anxious - not anxious" and .44 for "nervous - not nervous". This pair also had by far the lowest item-total correlation of the "anxiety at work" items, while the correlations between the other two differentials and their "general" counterparts were all high and significant; a scale comprising these four items was therefore constructed to be used as a measure of "dispositional anxiety". The alpha coefficient of reliability was found to be acceptably high:  $\alpha = .84$ .

In the case of "attitude to elderly care", removal of any one item would not substantially increase the Cronbach's alpha score, and it was concluded that the four items did not constitute a reliable scale. As there appeared to be considerable overlap with the concept of "commitment", reflected in a high positive correlation between the scales ( $r = .51$ ,  $p < .01$ ), the scale was dropped.

Table 6.1 Cronbach's Alpha reliability scores for all scales

Scale	$\alpha$ score	Scale	$\alpha$ score
Involvement in the innovation	.61	General Health Questionnaire	.84
Evaluation of the innovation	.67	Opinion of Principal	.67
Job satisfaction (full scale)	.83	Opinion of Supervisor	.74
Job satisfaction (extrinsic)	.65	Opinion of Colleagues	.58
Job satisfaction (intrinsic)	.83	Commitment	.69
General anxiety	.37	Attitude to elderly care	.38
Anxiety at work	.69	Pro-change disposition	.46
Anti-change disposition	.61		

A modified version of the "pro-change disposition" measure was constructed eliminating the six adjectives for which the item-total correlation was negative, or zero. These were *active*, *changeable*, *curious*, *independent*, *interests wide*, *unconventional*. With these removed, the Cronbach's alpha for the scale was .65. Three items on the "anti-change disposition" measure were also negatively related to the total scale: *apathetic*, *contented*, and *persistent*; these were dropped, resulting in an alpha rating for the adjusted scale of .66. It is worth noting here that the Pearson's correlation coefficient

between the pro- and anti-change scales was not significantly negative - as might be expected - but non-significant and positive ( $r = .02$ ). This raises doubts about the validity of these measures, a point returned to in the discussion (section 4).

(Note that the reliability coefficients given for "involvement in the innovation" and "evaluations of the innovation" are from the examples of continuing innovations. For discontinued innovations Cronbach's alphas were .71 and .65 respectively).

### 3. RESULTS

#### 3.1 Relationships Within the Case History Questionnaire

This section looks at the relationships between evaluations of the innovation and the other variables on the Case history questionnaire - most importantly, involvement in the innovation. It also examines the relationships between the individual items of the main dependent variable and the secondary dependent variable - acceptance of the innovation. Findings are presented for continuing and discontinued innovations separately. (Nb. In all cases, probabilities quoted are for two-tailed tests).

##### 3.1.1. Continuing Innovations

###### Correlations with "evaluations of the innovation"

The first step in answering the main research question was to test whether a significant relationship existed between evaluations of the innovation and involvement in the innovation. Pearson's correlation coefficient was calculated and a significant correlation between the two variables was found:  $r = .74$ ,  $p < .001$  ( $n = 21$ ). Part (i) of the research question can therefore be answered in the affirmative; involvement in the innovation is positively related to evaluations of

the innovation. If we look at correlations between the dependent variable and the individual items of the "involvement" scale, it can be seen that correlations are higher for effort to explain the aims of the innovation ( $r = .62$ ) and say in the adoption decision ( $r = .63$ ) than for amount of notice taken by management of staff reactions ( $r = .38$ ).

In addition, correlations between "evaluations of the innovation" and each of the four other attitudes items were calculated. The findings are shown in table 6.2. As the distributions on the "overall attitudes" items - particularly those relating to current attitudes (i.e. "acceptance") - are strongly skewed towards the top end of the scale, Spearman's rank order correlation ( $\rho$ ) was used.

Table 6.2. Rank order correlations between evaluations of the innovation and overall attitudes items.

	Own initial attitude	Own acceptance of innovation	Others' initial attitudes	Others' current attitudes
<hr/>				
Evaluation of innovation; $\rho = .26$		.45*	.31	.57**
N. of respondents	22	22	22	23

\* =  $p \leq .05$

\*\* =  $p \leq .01$

Evaluations of the innovation are significantly and positively related to participants' ratings of their own acceptance of the innovations ( $\rho = .45$ ,  $p \leq .05$ ) and others' current attitudes towards the innovations ( $\rho = .57$ ,  $p \leq .01$ ). The relationships between the dependent variable and both initial attitude items are non-significant. It should be noted that the skew in the distribution towards the top end of the scale was most marked for "own acceptance

of the innovation", where all but four of the responses were on the maximum point ('5').

#### Correlations with "acceptance of the innovation"

Research question two asked which of the items from the evaluations of the innovation scale was most strongly related to participants' acceptance of the innovation. The relationships found are shown on table 6.3.

Table 6.3, Rank order correlations between acceptance of the innovation and evaluations of the innovation items.

	Evaluation of the innovation's effects on:		
	Your job	The residents	The running of the Home
Acceptance of innovation; $\rho$ =	.19	.57**	.11
N. of respondents	22	23	23

\*\* = p<.01

The only significant rank order correlation is with effects on the residents ( $\rho$  = .57, p<.01). "Acceptance of the innovation" was also significantly correlated to others' current attitudes ( $\rho$  = .63, p<.01), and to tenure ( $\rho$  = .56, p<.01). It was not significantly related to "own..." or "others' initial attitudes". Bearing in mind the point made about the distribution of "own acceptance of the innovation", these findings only tell us that the four respondents who did not rate maximum tended to be older, saw the effects on residents as somewhat less positive, and the level of acceptance amongst their colleagues as somewhat lower, than the majority who said it was "certainly right" to introduce the innovations in question,

#### 3.1.2. Discontinued Innovations

##### Correlations with "evaluations of the innovation"

For discontinued innovations, the relationship between the dependent variable and involvement in the innovation was not significant

( $r = .16$ ,  $n = 12$ ). As can be seen, the number of respondents was much lower than for continuing examples, largely because for many of the interviewees at Home B the Key Worker System had not been abandoned and data from these participants were not included. None of the individual items from the "involvement" scale correlated significantly with "evaluations of the innovation"; however, the latter did correlate significantly with own acceptance of discontinuation ( $r = .67$ ,  $p < .01$ ), own initial attitude ( $r = .55$ ,  $p < .05$ ), others' initial attitudes ( $r = .59$ ,  $p < .05$ ) and tenure ( $r = .57$ ,  $p < .05$ ).

#### Correlations with "acceptance of discontinuation"

Rank order correlations between own acceptance of discontinuation and the "evaluations" scale items are given below, on table 6.4. The dependent variable is reverse scored, so that a high score represents low acceptance that it was right to discontinue the innovation, and vice versa.

Table 6.4. Rank order correlations between "acceptance of discontinuation" and "evaluations of the innovation" items,

	Evaluation of the innovation's effects on:		
	Your job	The residents	The running of the Home
Acceptance of discontinuation; $\rho$ =	.66**	-.06	.50*
N. of respondents	16	17	16

\* =  $p < .05$

\*\* =  $p < .01$

These findings therefore show that the better the effects on respondents jobs and the running of the Home, the less they accepted the discontinuation of the innovation ( $\rho = .66$ ,  $p < .01$ , and  $\rho = .50$ ,  $p < .05$ ). There was no significant relationship between "acceptance of discontinuation" and effects on residents. The pattern of results is therefore the exact opposite of that found for continuing innovations. The relationship between "acceptance of discontinuation"

and tenure was positive, but fell slightly short of significance ( $r = .45$ ,  $p = .07$ ).

### 3.2. Relationships Between Evaluations of the Innovation and General Questionnaire Variables.

#### 3.2.1. Differences Between the Homes and Between Staff Groups

To answer the main research question, data from both Homes were used, with the measures of evaluations of the innovation and involvement in the innovation coming from examples of continuing innovations only. As it was possible that the differences between individual ratings on the dependent variable might be due more to which Home they worked at than to the effects of the independent variables, it was necessary to compare the two Homes on the dependent variable ("evaluations"), "involvement in the innovation", and the measures on the General questionnaire. T-test comparisons were used for all variables except those failing to meet the requirement of homogeneity of variance; these were involvement in the innovation ( $F = 7.23$ ,  $p < .05$ ), commitment ( $F = 4.10$ ,  $p < .05$ ) and tenure ( $F = 52.50$ ,  $p < .001$ ). Using Mann-Whitney U tests it was found that only for "involvement in the innovation" was there a significant difference between the Homes ( $U = 23.5$ ,  $p < .05$ ), with participants from Home A reporting significantly more involvement than those at Home B. In particular, they report a higher amount of say in the adoption decision (Home A mean = 3.3, Home B mean = 1.9). T-test comparisons for all other variables are presented on table 6.5.

There are no significant differences between the Homes on the dependent variable, or on any of the independent variables except dispositional anxiety - where staff at Home B describe themselves as significantly more anxious than staff at Home A ( $t = -2.29$ ,  $p < .05$ ). Of the other variables, the comparison for job satisfaction comes close to significance ( $t = 2.07$ ,  $p = .054$ ) and there is a significant difference on the intrinsic satisfaction subscale alone ( $t = 2.67$ ,

Table 6.5: T-test comparisons between Home A and Home B on the main dependent variable and all independent variables.

	Evaluations of Innovation	Involvement in Innovation			
Mean - Home A:	12,3 (13)	10,8 (14)			
- Home B:	11,8 (9)	9,1 (8)			
T value:	,60	n/a			
	Job Satisfaction	Opinion of Principal	Opinion of Supervisor	Opinion of Colleagues	Commitment to Home
Mean - Home A:	78,2 (10)	20,4 (15)	21,3 (15)	19,8 (15)	33,3 (15)
- Home B:	67,8 (9)	22,0 (11)	23,3 (10)	20,5 (10)	32,6 (10)
T value:	2,05*	-1,40	-1,96	-0,61	n/a
	Current Psych. Well-being	Dispositional Anxiety	Pro-change Disposition	Anti-change Disposition	Tenure
Mean - Home A:	8,6 (15)	7,5 (15)	8,5 (15)	3,2 (15)	2,7 (15)
- Home B:	10,6 (10)	10,5 (10)	9,3 (10)	5,0 (10)	5,0 (10)
T value:	-1,08	-2,31*	-,58	-1,84	n/a

\* = p<.05

\* = ,05<p<,055

(figures in parentheses indicate the number of valid cases for each variable at each Home)

$p < .05$ ), with staff at Home A showing more satisfaction with the intrinsic features of their jobs than staff at Home B.

In five cases, four from Home A and one from Home B, an alternative innovation example had to be used instead of 'flexi-respite care' or the 'short stay wing' (see section 2, above). To check whether these participants referring to alternative examples differed in their ratings of evaluations of the innovation and involvement in the innovation from those discussing selected examples, oneway analyses of variance were carried out (the three groups being 'flexi-respite care', 'short stay wing' and 'alternatives'). No significant differences were found on either of the two variables. It was therefore possible to include these cases in the main analyses. Finally, t-test comparisons were carried out between care and domestic/kitchen staff on all variables. No significant differences were found.

### 3.2.2. Correlations with Attitudinal Measures, Psychological Well-Being and Anxiety

Pearson's correlation coefficients were calculated between evaluations of the innovation and the attitudinal scales on the General questionnaire, plus the GHQ12 and the semantic differential measure of dispositional anxiety. The results are given in table 6.6

There are significant positive relationships between "evaluations of the innovation" and job satisfaction ( $r = .55, p < .05$ ), opinion of the principal ( $r = .55, p < .01$ ), opinion of your supervisor ( $r = .47, p < .05$ ), opinion of your colleagues ( $r = .59, p < .01$ ), and commitment to the Home ( $r = .62, p < .01$ ). The dependent variable is not significantly related to current psychological well-being, dispositional anxiety, pro- or anti-change disposition, or tenure. Thus those making more favourable ratings of the effects of the innovations tended to be more satisfied with their jobs, think more highly of superiors and colleagues, and be more committed to their Home than those making less favourable ratings.

Table 6.6: Pearson's correlations between evaluations of the innovation and General questionnaire scales.

	Job Satisfaction	Opinion of Principal	Opinion of Supervisor	Opinion of Colleagues	Commitment to Home
<hr/>					
Evaluations of innovation; $r =$	,55*	,55**	,47*	,59**	,62**
N. of respondents	15	22	21	21	21
<hr/>					
	Current Psych. Well-being	Dispositional Anxiety	Pro-change Disposition	Anti-change Disposition	Tenure
Evaluations of innovation; $r =$	-,24	,01	-,15	,16	-,01
N. of respondents	21	21	21	21	21

\* = p < ,05  
\*\* = p < ,01

### 3.2.3. The Relationship Between Evaluations of the Innovation and Experience of Change

The rank order correlations between "evaluations of the innovation" and the five items asking about experiences of change are presented in table 6.7, below.

Table 6.7 Rank order correlations between experience of change items and evaluations of the innovation.

Experience of change in:	Your job		The Home	
	Amount of change?	Better or worse?	Amount of change?	Better or worse?
<hr/>				
Evaluations of innovation; $\rho =$	-,22	,10	-,35	-,24
N. of respondents	22	22	22	22

None of the correlations with "evaluations of the innovation" is significant. For both the amount of change items, the relationship is negative, indicating a tendency (albeit non-significant) for those who evaluated the innovations most favourably to report less change in

their jobs and the Home than those who were not so favourable in their evaluations. The correlations were in opposite directions for direction of change in the Home ( $r = -.24$ ) and your job ( $r = .10$ ), while for change in opinion of management the relationship was positive but the weakest of all the five items.

No significant relationships were found in "evaluations of the innovation" according to whether participants had worked with the elderly prior to coming to Home A or B, or whether they had changed jobs within Home A or B.

### 3.2.4. The Relationship Between Evaluations of the Innovation and Involvement in the Innovation, controlling for the effects of other Variables

Involvement in the innovation is more strongly related to "evaluations of the innovation" ( $r = .74$ ) than any of the other independent variables. Part (ii) of research question one can therefore be answered in the affirmative. To investigate these relationships further, it is necessary to examine the extent to which the relationship between the dependent variable and the "involvement" measure is independent of the effects of all the other significantly correlated variables. Partial correlations were carried out with "evaluations" and all the variables found to significantly correlate with it: involvement in the innovation, job satisfaction, opinion of Principal, opinion of supervisor, opinion of colleagues, and commitment. Because the partial correlation procedure only includes cases with valid responses on all the variables included, the fact that the number of valid cases for "job satisfaction" was markedly lower than for other variables (see table 6.6) created a problem. It was decided to calculate partial correlations between "job satisfaction" and the dependent variable separately from those with the other significant correlates of "evaluations of the innovation". Table 6.8 shows the first order partial correlations between "job satisfaction" and the dependent variable, controlling for each of the other variables in turn.

Table 6.8: First order partial correlations between job satisfaction and evaluations of the innovation, controlling for the effects of other variables

First order partials					
Controlling for:	Involvement in innovation	Opinion of Principal	Opinion of Supervisor	Opinion of Colleagues	Commitment to Home
<hr/>					
Correlation with Job satisfaction:	-.09	.09	.41	.31	.22
<hr/>					
degrees of freedom:	11 ( <i>all first order partials</i> )				
<hr/>					

None of the partial correlation coefficients is significant; even the largest coefficient (.41; controlling for opinion of supervisor) has a probability of .16, and controlling for the effects of involvement in the innovation actually leads to a negative correlation between "job satisfaction" and the dependent variable. The fifth order partial correlation coefficient (i.e. controlling for the effects of all the other variables) is -.03. The partial correlation coefficient between evaluations of the innovation and involvement in the innovation controlling for job satisfaction is .66 ( $p < .05$ , degrees of freedom = 11).

Turning to the other significant zero-order correlates, table 6.9 shows the fourth order partial correlations between the dependent variable and involvement in the innovation, opinion of Principal, opinion of Supervisor, opinion of colleagues and commitment to the Home; in each case controlling for the effects of all the other four.

None of the variables is significantly correlated with "evaluations of the innovation", independent of the effects of all the others. However, involvement in the innovation is the most strongly correlated of them all, and only it and opinion of your Supervisor have a fourth order coefficient of probability under .1.

Table 6.9: Fourth order partial correlations between evaluations of the innovation and all zero order significant correlates (bar job satisfaction)

Independent variable	Fourth order partial correlation coefficient	Probability
Involvement in the innovation	,46	,07
Opinion of Principal	,15	,57
Opinion of Supervisor	,45	,08
Opinion of Colleagues	,21	,44
Commitment to Home	,13	,62

The numbers of significant first, second and third order correlations for each variable are given in table 6.10. For every order of partial correlation, "involvement in the innovation" has more significant correlations with "evaluations of the innovation" than any of the other independent variables. It is the only independent variable with no non-significant first order partial correlations.

#### 4. DISCUSSION

##### 4.1 Interpretation of the Main Findings

The analysis has shown that the extent to which people felt they were involved in the introduction of an innovation was significantly and positively related to their evaluative attitudes towards the innovation, and that involvement in the innovation predicted evaluations better than any other variable. The partial correlations show that the relationship between "involvement" and the dependent

Table 6.10 The numbers of significant first, second and third order partial correlations with evaluations of the innovation for each of the independent variables.

Independent variable	First order partials		Second order partials	
	number;	sign,	sign,	non-sign,
Involvement in innovation	4	0	5	1
Opinion of Principal	3	1	1	5
Opinion of Supervisor	2	2	3	3
Opinion of Colleagues	3	1	2	4
Commitment to Home	2	2	2	4
<hr/>				
Independent variable	Third order partials			
	sign,	non-sign,		
Involvement in innovations	2	2		
Opinion of Principal	0	4		
Opinion of Supervisor	1	3		
Opinion of Colleagues	0	4		
Commitment to Home	1	3		

variable falls somewhat short of significance when all other relevant variables are controlled for; however, they also show that the relationship is more independent than is the case for any of the other significant zero-order correlates of "evaluations of the innovation". Both parts of research question one can be answered in the affirmative, indicating that the rationale behind the focus of this study on involvement in the introduction of the innovations (section 1.1) was justified.

There are two very important questions concerning the nature of the relationship between attitudes to the innovation and involvement in its introduction which cannot be answered conclusively with the data available, in one case because of the design of the study, and in the other because of the measure of involvement used. The first question is that of causality. As the study was historical rather than longitudinal it is possible that current opinions about the innovations influenced recollections of how they had been introduced, rather than the opposite. Only by examining the influence of involvement on attitudes towards an innovation over time would it be possible to clearly establish the direction of causality here.

Secondly, the results raise the question of what it is about involvement that might make people evaluate an innovation more positively when they are more involved in its introduction. Participation and consultation are usually prescribed as a recipe for avoiding resistance to change because they create a sense of 'shared ownership' or 'collective responsibility' for the change, and because they enable those affected by a change to increase their knowledge about it and so offset any suspicions based on incomplete information (Bedeian, 1980). It might be argued that in the present study participants' evaluations of the innovations were influenced by involvement (assuming for the moment this direction of causality) because the more involved they were in the introduction of an innovation, the greater was their knowledge about it, and sense of having a stake in it. An alternative explanation is that involvement in the innovation was only an indication of the overall extent to

which staff were involved in changes that happened in their Home. Their general feeling of being involved rather than their involvement in the specific innovations discussed may have been the crucial factor. To examine whether evaluative attitudes are related to involvement in the specific innovation or involvement in changes generally, or whether both are required, it is necessary to include two measures corresponding to these two factors.

A final point concerning the wording of the items on the "involvement in the innovation" measure needs to be made. For all three items, respondents were asked to rate how much "the staff" were involved (e.g. *How much say did the staff have in the decision to introduce the innovation?*). However, the dependent variable items were specifically concerned with respondents' own individual evaluations of the innovation. This is clearly an inconsistency, and in retrospect it probably would have been better to have worded the items so that they asked about how involved each participant felt she or he had been personally.

There were more serious problems with two other variables - disposition towards change and dispositional anxiety. For the first of these, the fact that the pro-change disposition and anti-change disposition scales were found to be unrelated, rather than negatively correlated, throws some doubt upon the validity of the measure. In any case, practical and conceptual difficulties exist with it. On the practical side, many participants found some of the adjectives highly ambiguous, or simply did not know what they meant; for instance "pleasure-seeking", "apathetic", "spontaneous" and "self-denying". Conceptually, it is of questionable value to try and explain attitudes towards innovation in terms of general disposition towards change, as there is a great danger of a circular argument emerging. A measure more closely associated with behaviour would be preferable, focusing on how people actually act in relation to change. An interesting possibility is apparent in the fact that measures of individual innovativeness frequently contain items which are very similar to the kind of characteristics held to indicate a pro-change disposition. For

instance, Hurt, Joseph and Cook's (1977) innovativeness scale includes such items as "I am suspicious of new inventions and new ways of doing things", and "I am challenged by ambiguities and unsolved problems."

As with "disposition towards change", items had to be excluded from the anxiety measure in order to achieve an acceptable reliability coefficient. The measure was anyway rather simplistic, and it would seem hasty to reject the possibility that dispositional anxiety might have a negative influence on attitudes towards innovations, without testing it again using a more sophisticated measure.

Turning to the Case History questionnaire items, the difference between continuing and discontinued innovation examples in the relationships between items from the "evaluations of the innovation" measure and acceptance (i.e. of the innovation, or of its discontinuation) is interesting. For continuing innovations the only significant rank-order correlation with "acceptance" was with effects on "the residents". For discontinued innovations the other two items were significantly correlated with "acceptance of discontinuation" (i.e. effects on "your job" and "the running of the Home") while effects on "the residents" was not. These differences are in line with differences in content between the main continuing and discontinued innovation examples. As was seen in chapter five, the examples of continuing innovations discussed by most participants were both focussed on client service, while the main examples of discontinued innovations were much more concerned with the way staff were organised (especially the rotating rota at Home A).

#### 4.2 Generalisability

The present study has taken a case-study approach, and as such it would be wrong to generalise from its findings to conclude that the same pattern of relationships would be found in other organizations or with other innovations. There are features peculiar to the residential care setting which are of relevance to the issue of what determines

attitudes towards innovations. For instance, it is clear from the interviews that effectiveness of the organizations is judged almost exclusively in terms of how well clients are served, whereas in a commercial organization concerns of profit are likely to be seen as at least as important. There are also aspects of the particular Homes and innovations studied here which may not be found in other Homes for the Elderly. Both had progressive management regimes which encouraged participation in the running of the Home beyond the fulfilment of narrow job descriptions in a way that would not occur in a more traditional Home; in such a Home, attempts to involve staff in the introduction of an innovation might be met with suspicion and not have a positive influence on attitudes.

Having said this, theoretically there appears to be no strong reason to suppose that the main findings regarding the relationship between involvement and attitudes *could not* be true in other settings - but general prescriptions must await further research.

#### 4.3 Future Research Directions

In the longer term, the aim must be to examine in other organizational settings how involvement in the innovation process influences attitudes towards innovations. By systematically examining different organizational contexts and different types of innovation, it might be possible to produce a general predictive model. However, there are a number of outstanding issues from the present study which need to be addressed empirically before we can be confident that such a course would be worth pursuing. A repeat of the study described in this chapter is required, with the following three important modifications:

- (1) The study should be longitudinal, in order to establish the direction of causality in the relationships between key variables.

(2) There should be two "involvement" measures; one (as here) concerned with involvement in the introduction of the innovation under consideration, and one concerned with involvement in changes more generally.

(3) A measure of individual innovativeness should replace the trait-based measure of disposition towards change.

A second study carried out in Homes for the Elderly to meet these requirements is described in the next chapter.

## 5. ATTITUDES TOWARDS INNOVATIONS: TRANSCRIPT DATA ANALYSIS

The chief concern of the transcript analysis was with influences on the innovation process (see previous chapter). However, in the coding of interviewee statements, units of meaning relating to attitudes towards the chosen innovations were also identified. A similar set of codings and analyses was carried out on these as on those concerned with influences on the process, though in less depth, since the attitudes area was mainly investigated through the use of the verbally-administered questionnaires.

### 5.1 Aims

As with the concerns of the questionnaire analysis which forms the main body of this chapter, examination of the transcript data concentrated on questions relating to attitude direction; that is, whether participants expressed favourable or unfavourable attitudes towards the innovations. Three research questions were addressed. The first followed up the finding in the "experiences of innovation" study (chapter four) that people were apparently less willing to report their own negative attitudes than those of others. This was explained

in terms of the positive value placed upon innovation in our society (Rogers, 1983).

- 1) *Did participants tend to describe their own attitudes towards the innovations as more positive than others'?*

The second and third questions complimented comparisons carried out on the influence data in chapter five;

- 2) *Were there differences in the direction of attitudes towards the innovations between managerial and non-managerial staff?*

- 3) *Were there differences in the direction of attitudes towards the innovations between initiation and implementation-absorption phases of the process?*

## 5.2 The Coding Scheme

### 5.2.1. Coding Dimensions

Following the same procedure as in chapter five, URMs concerning attitudes towards the innovation were coded on three dimensions. The first was source of attitude, meaning the person(s) whose attitude were described. Three categories were used: self, where the interviewee described her or his own attitude; other(s), where one or more other member of staff's attitudes were referred to; and self and others, where attitudes shared by the interviewee and one or more other members of staff were mentioned. This last category included general references to the Home's staff - e.g. "We all had difficulty understanding what was wanted" - and references to the interviewee and specific other people - e.g. "Me and my partner on nights both opposed the change".

The other two coding dimensions were taken directly from the analysis of influences on the process. Thus the second dimension was the innovation process phase to which the attitude applied: initiation

(e.g. "I thought it was a good idea when the Principal first mentioned it"); implementation-absorption (e.g. "I don't think it's worked out in practice as we wanted it to"); and phase not specified (e.g. "I've never doubted that the change was necessary"). Finally, the dimension of attitude direction was used; that is, whether the attitude described was positive, negative, or of indefinite direction.

#### 5.2.2. Reliability

Written criteria were produced defining the categories on each coding dimension, and inter-rater reliabilities were calculated between myself and an independent rater who had not been involved in any of the coding for influences on the innovation process. Four randomly-selected transcripts were used, containing a total of thirty-nine units of relevant meaning. Overall Kappa coefficients were as follows: attitude source - Kappa = .76; innovation process phase - Kappa = .52; attitude direction - Kappa = .75. All the coefficients were comfortably higher than the minimum acceptable level (.40; Fleiss, 1981), and two (source and direction) were very high, indicating excellent agreement between raters. It was therefore possible to use the criteria to code the full set of transcripts.

### 5.3 Findings

#### 5.3.1. Frequencies

Table 6.11. shows the mean number of URMs included in each coding category of the three dimensions, for each innovation example. Maximum and minimum frequencies within each category are also shown.

There are considerable variations in frequencies within cases on all coding dimensions, as is shown by the wide range of scores on most categories. Furthermore, there is a consistent difference between the Homes, with many more URMs relating to attitudes towards innovations for Home A participants than Home B, on both examples. (Home A: flexi-respite care, n = 159; rotating rota, n = 189. Home B: short stay wing, n = 48; key worker system, n = 44). Because of this the method

Table 6.11: Mean, maximum and minimum frequencies of URM<sub>s</sub> in each coding dimension category for each innovation example.

		<u>Innovation example</u>											
		Home A						Home B					
Coding dimension / category	Flexi-respite care	Rotating rota			Short stay wing			Key Worker system					
		Mean	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean	Max	Min
<hr/>													
Attitude source													
self	6.1	17	0	5.5	14	0	4.5	11	0	2.9	5	0	
self & others	3.2	8	0	1.4	8	0	0.6	5	0	0.8	3	0	
others	1.3	6	0	6.6	15	2	0.9	4	0	2.1	7	0	
<hr/>													
Innovation process phase													
initiation	3.7	14	1	4.8	13	0	1.3	4	0	0.5	2	0	
impl.-absorption	4.8	10	1	4.4	11	0	3.9	10	0	3.8	7	0	
unspecified	1.3	6	0	4.4	12	0	0.9	3	0	2.1	6	0	
<hr/>													
Attitude direction													
positive	6.8	17	0	4.6	15	0	3.5	6	1	2.6	5	0	
negative	2.1	7	0	5.8	12	3	2.0	7	0	2.9	5	1	
indefinite	1.9	5	0	1.7	5	0	0.5	2	0	0.1	1	0	
<hr/>													
Total n. of URMs	159			189			48			44			
<hr/>													
N of valid cases	15			14			8			8			

used in the analysis of influences on the innovation process was repeated here, and frequencies within each coding dimension category were converted into URM percentage scores, to control for differences between transcripts in numbers of URMs found.

The three research questions were all concerned with the balance of positive and negative attitudes. A single attitude direction score was therefore calculated for each interviewee, by subtracting the percentage of negative attitudes from the percentage of positive attitudes. A positive score thus represented a majority of positive influences over negative, while a negative score indicated the opposite. All the comparisons required by the research questions were carried out using non-parametric statistics. All significance levels quoted are for two-tailed tests.

5.3.2. Differences in Attitude Direction Between 'Self' and 'Others'  
To answer research question one, each participant's attitude direction scores for URMs relating to her or his own attitudes ('self') were compared to those relating to attitudes of other staff members ('others'), using Wilcoxon's matched-pairs test. Continuing and discontinued innovations were treated separately. Findings are shown in table 6.12.

Table 6.12: Comparison of attitude direction scores between 'self' and 'others', using Wilcoxon's matched pairs test

Innovation example	Median attitude direction scores		Wilcoxon test
	Self	Others	T-score
<hr/>			
Continuing (n=21)	+50	0	47
<hr/>			
Discontinued (n=22)	0	-37	147
<hr/>			

The difference between 'self' and 'others' for the continuing innovation examples is marginally short of significance, with interviewees describing their own attitudes as more positive than those of other members of staff ( $T_{\text{obtained}} = 47$ ,  $T_{\text{crit.}, \alpha=0.05} = 46$ ). The difference is in the other direction for discontinued innovations, but is clearly non-significant ( $T_{\text{obtained}} = 147$ ,  $T_{\text{crit.}} = 66$ ).

### 5.3.3. Differences in Attitude Direction Between Staff Groups

Research question two was concerned with differences between the managerial and non-managerial staff groups in interviewees' attitudes to the innovations. URMs relating to others' attitudes were therefore not included in this analysis, though those relating to 'self and others' combined were used. The attitude direction scores of managerial and non-managerial staff groups were compared for continuing and discontinued innovations separately, using the Mann-Whitney U test. Results are show on table 6.13.

Table 6.13: Comparison of attitude direction scores between managerial and non-managerial staff, using the Mann-Whitney U test

Innovation example	Median attitude direction scores	Mann-Whitney U test	
	Managerial	Non-managerial	U-score
Continuing	+62	+56	44
(n)	(6)	(15)	
Discontinued	-19	-27	25,5
(n)	(4)	(14)	

There is no significant difference between the groups on either innovation example. For both groups, the median attitude direction score is positive for continuing innovations and negative for discontinued.

### 5.3.4. Differences in Attitude Direction Between Innovation Process Phases

To address research question three, attitude direction scores relating to the initiation phase were compared with those relating to the implementation-absorption phase for each participant, using the Wilcoxon matched pairs test. The focus was on interviewees' own attitudes, so URM<sub>s</sub> relating to others' attitudes were again disregarded. For both the examples from Home B, there were very low frequencies of URM<sub>s</sub> relating to participants own attitudes at the initiation phase - in fact there was only one valid case for each. This analysis was therefore only carried out on the innovations from Home A, treating them separately. Table 6.14 shows the findings.

Table 6.14; Comparison of attitude direction scores between initiation and implementation-absorption phases, for Home A examples only (Mann-Whitney U test)

Innovation example	Median attitude direction scores	Wilcoxon matched-pairs test	
	Initiation phase	Implementation-absorption phase	T-score
Flexi-respite care (n = 15)	+100	+44	17
Rotating rota (n = 14)	+17	0	16.5

For the continuing innovation example (flexi-respite care), attitudes tended to be more positive regarding the initiation phase than implementation-absorption. The difference was just short of significance ( $T_{obtained} = 17$ ;  $T_{crit. (p<.05)} = 14$ ). For the discontinued innovation (rotating rota), a difference in the same direction was found, though here it was not as close to significance ( $T_{obtained} = 16.5$ ;  $T_{crit. (p<.05)} = 9$ ).

#### 5.4. Conclusions

The difference between the two Homes in overall frequencies of attitude URMs is striking, and is too large to be explained wholly by the tendency for the interviews to be shorter at Home B. A possible explanation is the generally lower level of involvement in the innovations on the part of Home B staff compared to those at Home A, particularly at the initiation phase. This was noted in the previous chapter, and can also be seen in the questionnaire data, examined earlier in this chapter. At Home A, higher personal involvement in the innovations may have lead to stronger feelings about them, and thus to a greater likelihood of these attitudes being expressed when the histories of the innovations were discussed.

Social desirability effects were only apparent for the continuing innovation examples, where participants described their own attitudes as more positive than those of other staff (though the difference was marginally short of significance). This is as we might expect from the interpretation of similar findings in chapter four in terms of self-serving attributions. Interviewees emphasized their own positive reactions relative to those of their colleagues for the 'successful' innovations (i.e. continuing) but not for the 'unsuccessful' (i.e. discontinued).

As had been the case regarding influence direction, there was no difference found in attitude direction scores between managerial and non-managerial staff groups on either type of innovation example. This shows that in these cases the innovations did not have strongly differential impacts on the two groups, implying - as noted in chapter five - a high degree of shared outlook between them. Reasons why this should be the case in these Homes have already been discussed (chapter five, section 5.4).

In the comparison of innovation process phases, only the cases from Home A were used. For neither innovation example was the difference in attitude direction scores significant, but both were in the same

direction, and that for flexi-respite care approached significance. The pattern was the same as for influences; attitudes were more positive regarding the initiation phase than the implementation-absorption phase. Again, the explanations offered in chapter five are valid here. Innovations which met too many negative attitudes at the initiation phase would probably never reach sustained implementation and absorption, and the problems faced at the implementation-absorption phase are likely to be more salient to interviewees than those at initiation, because more recent.

CHAPTER SEVEN: ATTITUDES TOWARDS INNOVATION  
- A SECOND STUDY IN HOMES FOR THE ELDERLY

1. INTRODUCTION

This chapter presents the second study of innovation in Local Authority Homes for the Elderly. It was conceived of as a follow-up to the examination of variables related to attitudes towards innovations carried out in the previous study and described in chapter six, with the aim of testing longitudinally the most important of the retrospective findings. Again two Homes were involved (referred to as X and Y), selected because of historical, physical and organizational similarities, and because they were both introducing the same innovation at the same time. It was originally the intention to look at data from three points in the innovation process - pre-adoption, initial implementation and later implementation; however, because of very poor response rates at time three, the analysis focuses almost entirely on times one and two.

1.1 Aims

The major focus of the study was on the relationship between evaluative attitudes towards the selected innovation - new supervision arrangements - and involvement in the introduction of the innovation. The dependent variable used was the same as in the first Homes for the Elderly study - evaluations of the innovation; unlike the previous study, however, two measures of "involvement" were employed. The first was a slightly modified version of the existing involvement in the innovation scale, while the second used almost the same wording but asked about involvement in changes generally. A number of other attitudinal, dispositional and biographical variables were included, mostly taken from the previous study. (Details of all the variables are given in sections 2.1 and 2.2)

Three hypotheses were tested, derived from the discussion of the previous study's findings (chapter six, section 4). A number of other questions were also examined, though not framed as formal hypotheses. It must be noted that these are only the questions relevant to the data from times one and two - some of the questions which would have been addressed had the time three completion rate been adequate are described in the discussion section at the end of the chapter.

The two main hypotheses are both concerned with the relationship between involvement in the introduction of the innovation and attitudes towards it:

*Hypothesis (1)*

*The measures of involvement in changes generally and involvement in the innovation at time two will be significantly related to evaluations of the innovation and will predict this better than other work-related attitudinal, biographical and dispositional variables.*

*Hypothesis (2)*

*Involvement in changes generally at time one will predict evaluations of the innovation (time two).*

In addition to testing these hypotheses, the study sought to examine the extent to which the relationships - if found - between attitudes to the innovation and "involvement in the innovation" and "involvement in changes generally" are independent of the relationship between the two "involvement" measures.

The third hypothesis was derived from the discussion of the parallels between disposition towards change and individual innovativeness in the previous chapter. It is stated as follows:

*Hypothesis (3)*

*Respondents' perceptions of their own innovativeness will be positively related to their evaluations of the selected innovation.*

Finally, the study aimed to test whether there were differences on the dependent variable - "evaluations of the innovation" - between staff groups (care and domestic), and according to whether staff had had nursing and/or residential social work training.

## 1.2 Background to the Study

### 1.2.1. The Homes

The two Homes are very similar in size and recent history. Home X has forty-four beds, of which three are short stay, one is a 'flexi-bed' and the rest are for permanent residents. It has a Day Centre with sixteen places. The staff consists of sixteen Care Assistants (four of whom are night staff), twelve domestic and kitchen staff, and four senior staff. At the time of the project there were also a YTS trainee and a Junior Care Assistant. The Home is built on a single storey, with three wings around a central dining/lounge area.

Home Y also has forty four beds, including two short-stay and two respite beds. Its Day Centre caters for twelve clients. Its staff consists of sixteen Care Assistants, plus one responsible for the day centre, nine Domestic, two Cooks and four senior staff. Unlike Home X, it does not have a permanent night staff as it operates a rotating rota system similar to that tried unsuccessfully at Home A in the previous study. The Home has two wings and is built on two storeys.

At both Homes a new Principal had been appointed just prior to the start of the study in January 1987. For both of them one of the first tasks was to compile an annual review report on their respective Homes, which as they were new to their jobs was seen by them and their immediate superior (Principal Assistant) as an opportunity to consult their staff in order to identify problems and make recommendations for

improvements. Copies of these reports were made available to me, and from these along with information obtained in informal discussions with the Principals, it is possible to summarise the problems facing the Homes at the start of the study.

Both reports start by acknowledging that the period immediately prior to the appointment of the new Principals had been a very difficult one. For example, Home Y's reads; "The last twelve months have been traumatic for the unit, many difficulties have been experienced and many changes have taken place". At Home X problems described included: lack of a formalised admission procedure, disorganised administration, inadequate communications (meetings being crisis-based, rather than happening on a regular basis), lack of training for staff, unsatisfactory care routines, low level of contact with relatives of residents, and serious problems with the fabric and furnishing of the building. Finally, the dependency level of residents was such that staffing levels were often inadequate - for example, 75% of residents were unable to dress themselves, 70% were unable to take themselves to the toilet, and only about 6% could help in any way in the care of their rooms and clothing.

At Home Y the list is almost identical. Problems with care practices appear to have been more serious - the report states; "This area has given great concern to all staff and the Department over the past twelve months. There has been a lack of concern for dignity, privacy and courtesy". Similarly, difficulties in relations with relatives seem to have been more severe; "Some staff resent relatives and see their comments as interfering or over critical. Some relatives are reticent of making complaints because they fear reprisals." However, less work was required on the structure of the building than was the case at Home X.

In both reports, the Principals are optimistic that improvements can be made and point to some that have already started to happen in the three months since they started (the reports were written in March and April, 1987). Home X's states; "Staff morale is at present high with

expectations of change and improvement to service offered." The reports conclude with lists of recommendations for action, prominent amongst which is the need to introduce new supervision arrangements.

#### 1.1.2. The Innovation - New Supervision Arrangements

The introduction of new supervision arrangements was formally proposed in the annual reports, which were not actually submitted until April 1987 at Home X and May at Home Y. The need had already been recognised before the Principals took up their posts - it was on a list of "proposed new projects" made available to me by the Principal Assistant of the two Homes in December 1986. By the time of the reports, both Principals had started the implementation of the proposal.

The intended development of supervision arrangements, as outlined to me by the Principals at the start of the study, was very similar at the two Homes. This is not surprising as the original impetus came from higher management and the Principal Assistant of the Homes was closely involved in the planning and early stages of implementation. Also, there was - at least in the first few months - a considerable degree of contact between the two Principals; they saw themselves as being "in the same boat" regarding their posts and the changes they needed to make in their organisations.

At both Homes the proposed sequence of events began with the Principal conducting individual supervision sessions with her/his Deputy and Assistants, in part to prepare them for their own supervisory duties. The staff were to be split into teams or groups, and each assigned a member of senior staff as a supervisor. Supervisors would hold both regular group meetings and individual supervision sessions involving all their staff. At Home Y, but not at Home X, there was an extra stage planned - before individual supervisions with group leaders commenced, each member of staff was to receive an individual supervision session with the Principal. All care staff were included in the plans for supervision, though at Home X the Principal foresaw problems with involving night staff - they could not be paid overtime

to attend group meetings, nor could the Principal or senior staff members be paid to stay up to give them supervision. This problem did not exist at Home Y because of the rotating rota system. Another difference between the Homes was that initially domestic staff were only included in the plans for supervision at Home Y.

A final note: it must be recognised that it was not "supervision" per se which constituted an innovation, but the particular set of arrangements brought in by the Principals during the study. Supervision had existed in the Homes before, but it had been arranged on a quite different basis, and had anyway been rather haphazard and unsystematic; the Principal of Home X said "nobody really knew what they were doing and why."

## 2. METHOD

Access to carry out the study was obtained in December 1986, through the Family & Community Services department and the Principals of the two Homes. Before data collection commenced, an information sheet was distributed to all staff at both Homes, explaining the purpose of the study and outlining what would be requested of them. I visited the Homes to introduce myself to as many people as possible; at both I managed to see approximately half of the members of staff.

Data were collected at three points in time, using questionnaires. The first questionnaire was given out in April, 1987, slightly more than three months after the Principals had taken up their appointments and before the new supervision arrangements had been implemented. Questionnaire two was administered in late July 1987, at the time when staff should have had their first supervision sessions. A quite poor initial response rate made it necessary to send reminders to participants, and when these still failed to elicit the required response, the questionnaire was re-administered to those who had not completed it, in September. The final questionnaire was distributed at the end of December 1987. Again the response rate - especially from

Home X - was very low, and after a reminder failed to substantially improve upon this, a very much shorter version was sent out, containing only the dependent variable measure and a few open-ended questions. The numbers from the two Homes returning the questionnaires are given in table 7.1. (Response rates for the two versions of questionnaire three are presented separately).

Table 7.1: Numbers from each Home returning the questionnaires

		Home X	Home Y	Total
Number returned	Time 1:	22	22	44
	Time 2:	15	17	32
	Time 3 (i):	3	12	15
	Time 3 (ii):	10	3	13

Although the response rate for time three, combining the two versions, was only slightly lower than time two, quite a high proportion of respondents did not complete the dependent variable ("evaluations of the innovation"), generally because they either had not yet had an individual supervision, or they felt unable to comment after only one supervision. Because of this, there were not enough completed questionnaires to carry out the desired statistical analyses involving time three data. I have therefore only made use of the qualitative material from the open-ended questions on the time three questionnaires.

At the times of delivering the questionnaires, and at other irregular intervals, I visited or telephoned the two Principals to check on how the new supervision arrangements and other changes were progressing.

## 2.1 The Involvement Measures and the Dependent Variable

In the discussion of the findings from the quantitative part of the previous study (chapter 6), the issue was raised of whether it is involvement in the introduction of the innovation itself, or general

involvement in innovations and changes in the organization, which influences staff attitudes towards the innovation. In that study there was no way of testing the role of the latter factor; for the second Homes for the Elderly study, it was therefore seen as important to include it. The way in which this was done was to re-word the "involvement in the innovation scale" so that it focussed on "changes in general"; otherwise (except for the alteration noted below) the items and responses were unchanged. The resultant scale - involvement in changes generally - was included in questionnaires one and two, while involvement in the innovation was included in questionnaires two and three.

The wordings of all the "involvement" items were changed slightly, so that they asked specifically about how much the respondent her or himself was involved, rather than "the staff"; for example, "How much say did the staff have..." becomes "how much say did you have...". Again, the problems with the original formulation have been discussed in chapter six, section 4.

The dependent variable, "evaluations of the innovation" was identical to that used in the previous study, and was included at time two (first implementation) and time three (later implementation - both versions of the questionnaire).

## 2.2. Other Independent Variables and Open-Ended Questions

### 2.2.1. Selecting Variables to Include in the Study

It was originally intended to repeat all the time one measures at time three, along with "evaluations of the innovation" and "involvement in the innovation". This would have made it possible to clarify the nature of causal relationships with the dependent variable using the cross-lagged panel technique; however, the response rate problems found with the relatively short second questionnaire persuaded me to keep the final questionnaire as brief as possible - in any case, as has been seen, the inadequate return rate of fully completed

questionnaires from time three made it necessary to drop this data collection point from the quantitative analysis. Full versions of all the questionnaires are included in appendix F.

The rationale behind the use of the two "involvement" measures has been explained in section 2.1 - it is with the relationships between these and the dependent variable that the two main research questions are concerned. The major problem in compiling the questionnaires was deciding which of the other attitudinal and dispositional measures from the previous study to include. As all the attitudinal measures were significantly correlated with the dependent variable; it would appear justifiable to simply include all of them again. However, it was felt to be important to keep the questionnaires quite brief, and in any case the high degree of interdependency between the variables in the previous study suggested that it would be superfluous to include them all. The decision over which measures to use was based largely on a consideration of the historical context of the Homes. Two of the attitudinal measures were chosen; the first, **opinion of your Principal**, because both the Principals were new to the Homes, and as the innovation was initiated primarily by the Principals, staff opinions about them were likely to be important. The second attitudinal variable was **commitment to the Home**. This was included because discussion with higher management when access was being negotiated, and with the Principals when they first took up their posts, indicated that there were problems with commitment, which they felt might influence attitudes towards changes. Also, commitment was the independent variable most highly correlated with "evaluations of the innovation" in the first study (other than "involvement in the innovation").

"Anxiety" and "disposition towards change" were not found to be significantly related to the dependent variable in the previous study, but there were problems with the measures used. In the present study a more sophisticated measure of **trait anxiety** was used, and a scale measuring individual relative innovativeness was included in the place of "disposition towards change".

The items asking about extent and direction of change in the previous study were not used here, as they were not significantly related to attitudes to the innovation in the previous study. To properly examine how past experience of changes in the Home and the job influenced staff attitudes to the innovation, it would have been necessary to obtain much more detailed information than the summary descriptions provided by these items, and that kind of in-depth biographical examination is beyond the scope of the present study. However, it was hoped that some light might be shed on the issue of individual experience of change in the responses to the open-ended questions - particularly the final two on the third questionnaire.

#### 2.2.2. Questionnaire One

##### **Measures using Likert-type rating scales**

**Involvement in changes generally:** A three item measure, as described in the previous section (2.1).

**Opinion of your Principal:** The same eight item measure as used in the first study, taken from Cross' (1973) "Worker Opinion Survey".

**Commitment:** Also as used in the first Homes for the Elderly study; eight items adapted from Cook and Wall (1980).

**Relative innovativeness:** A short (four item) scale, designed for the study, asking people to rate how innovative they saw themselves as being, relative to their colleagues. Responses were on a four-point scale from "Much more often" ('4') to "Less often" ('1'). It was decided to make the scale non-symmetrical in the light of observations made concerning the social desirability of innovation, which suggest that people would be unlikely to describe themselves as much less innovative than their peers.

**Trait anxiety:** The ten-item anxiety subscale from the trait scale of Spielberger's STPI Self Analysis Questionnaire (1979). Responses are on a four-point scale, with three items reverse-scored.

#### **Biographical and open-ended questions**

The biographical information elicited from respondents consisted of their post in the Home, tenure in months, whether they had any nursing qualifications, or any social work/residential care qualifications, and their age (given in ten-year brackets).

There was only one open-ended question on the first questionnaire. It was situated at the end, and read; *"If there are any comments you would like to make about any aspect of the Home, or about yourself, please write them in the space below."*

#### **2.2.3. Questionnaire Two**

##### **Measures using Likert-type rating scales**

**Involvement in the innovation:** The slightly modified version of the three-item scale used in the previous study (see section 2.1, above).

**Evaluations of the innovation:** The dependent variable from the previous study (see chapter six, section 2.1).

**Involvement in changes generally:** As in questionnaire one.

**Opinion of your Principal:** As in questionnaire one.

### **Biographical and open-ended questions**

The biographical questions from the first questionnaire were repeated for the benefit of any respondents who had joined the Home since it was distributed. Four open-ended questions were included; the first two asked the respondents to *list up to three good things, and up to three bad things* about the new supervision arrangements, while the third gave them an opportunity to make *any comments* about the innovation. These questions were positioned between the measures of "evaluations of the innovation" and "involvement in changes generally". A general *comments* question, formulated as in questionnaire one, concluded the questionnaire.

When a second batch of this questionnaire was sent to those who had initially not completed it, an extra question was added asking participants whether they had had their *first supervision* yet. It was not on the original questionnaire two because I had assumed - on the basis of information from the Principals - that virtually everyone would have had a supervision session by this time; comments made by some respondents showed that this assumption was not justified. This illustrates the confusion that often seemed to exist between the Principals and the senior staff as to exactly what was happening with the innovation - an issue I will return to later.

#### **2.2.4. Questionnaire Three**

The full version of the questionnaire contained the items listed below.

##### **Measures using Likert-type rating scales**

**Involvement in the innovation:** As in questionnaire two.

**Evaluations of the innovation:** As in questionnaire two.

### Biographical and open-ended questions

Once again, the biographical questions were repeated. Prior to the "involvement in the innovation" measure, respondents were asked to state when they had had their *first individual supervision session*. The measure was followed by an open-ended question asking for *any comments* about the way in which the innovation had been introduced. After the dependent variable, were again asked to *list up to three good things, and up to three bad things* about the new supervision arrangements; they were also asked to *describe any improvements* they would like to see made to them. Finally, they were asked to describe how, if at all, their Home had *(a) improved and (b) got worse since the new Principal had taken over.*

The short version of the questionnaire only included the measure of evaluations of the innovation, questions asking when they had had their *first and most recent supervision sessions*, and a space for "*any comments you would like to make about the new supervision arrangements.*"

### 2.3 Scale Reliabilities

Cronbach's alpha coefficient of reliability was calculated for all the scales used on questionnaires one and two. The results are shown in table 7.2.

All the scales are acceptably reliable. By far the lowest alpha coefficient is for "opinion of Principal" ( $\alpha = .59$ ) at time one, this is probably because the Principals were very new at this time, and staff did not have very clear opinions about them yet - a point several make on the questionnaire. By time two, the reliability is much higher ( $\alpha = .76$ ). The reliability of the "involvement in the innovation" scale is considerably higher here than it was in the previous study ( $\alpha = .85$ , compared to  $\alpha = .61$ ). This may be due, at

least in part, to the re-wording such that the items now focus explicitly on the respondent's own experiences.

Table 7.2; Cronbach's Alpha reliability scores for all scales

QUESTIONNAIRE ONE		QUESTIONNAIRE TWO	
Scale	$\alpha$ score	Scale	$\alpha$ score
Involvement in changes generally	.79	Involvement in the innovation	.85
Opinion of Principal	.59	Evaluations of the innovation	.73
Commitment	.74	Involvement in changes generally	.81
Relative innovativeness	.76	Opinion of Principal	.76
Trait anxiety	.85		

### 3. RESULTS

#### 3.1 Summary History of the Innovation in the Two Homes

The history of the introduction of the new supervision arrangements will be described under three headings; initiation, early implementation and later implementation, corresponding roughly to the periods preceding each of the data collection points.

##### 3.1.1. Initiation

The innovation had, in effect, two initiation phases. The first was the identification of the need for new supervision arrangements by higher management in the Family and Community Services department, accepted by the Principals when they were appointed, and discussed with a view to enactment by them and their Principal Assistant. The second initiation phase was the consultation with members of staff

regarding individual and group supervision, as part of the process of compiling the annual review reports in February and March, 1987. Once the reports were submitted (in April for Home X and May for Home Y), full implementation of the innovation could proceed.

### 3.1.2. Early Implementation

Although implementation of supervision for staff - the main purpose of the innovation - did not start until the annual review report was finished, the first step in the innovation commenced before this point; that is, individual supervisions for the senior staff with the Principal. Thus implementation of new supervision arrangements started while the second phase of initiation was still under way. The supervisions with senior staff were seen by their Principals as in part preparing them for their own supervisory roles; both Principals expressed some worries about the lack of supervisory experience amongst their senior staff. This aspect of the innovation was part of a wider initiative within the Division that the two Homes belonged to, in which all the Principals were involved in developing training for senior staff in supervision. The Principals themselves received supervision sessions with the Principal Assistant.

From around May, the next steps in implementation commenced. Staff were assigned to groups headed by a senior staff member - at Home X this only involved Care Assistants, while at Home Y domestic staff were also included. At Home Y, but not Home X, the Principal began conducting individual supervision sessions with all members of staff. At both Homes, group supervision meetings were held, and the first few individual supervision sessions took place.

### 3.1.3. Later Implementation

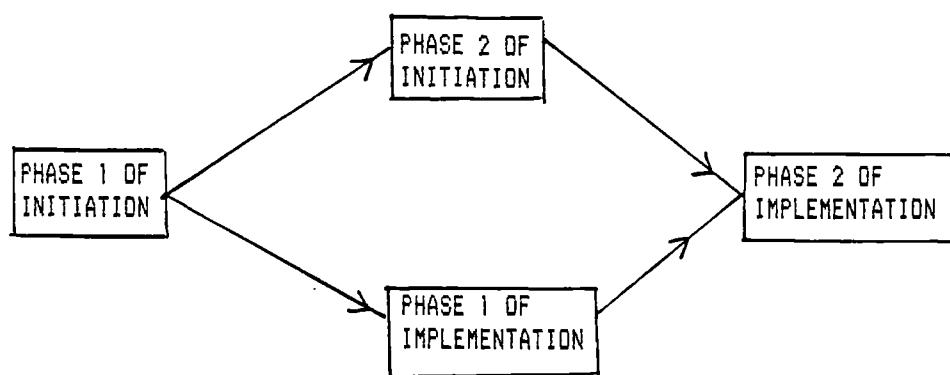
More individual supervision sessions took place; as early as mid-November the Principal of Home X stated that he thought all the Care Assistants had received at least one individual supervision with their group leader - however, subsequent informal contacts, and the comments made on the two versions of the final questionnaire, made it clear that he was mistaken. The delay was partly due to sickness amongst

senior staff. In December 1987, the Principal decided to include Domestics in the supervision arrangements - however, this too was delayed by the senior staff member assigned to supervise all domestic staff falling ill.

At Home Y too, not all staff had received an individual supervision session by the end of the study - originally it was intended that this should have happened by around October. One explanation given by the Principal was that a training programme for all staff had been initiated and this was occupying a considerable amount of the management team's time and energy.

The sequence of initiation and implementation phases at both Homes for the new supervision arrangements is shown diagrammatically in figure 7.1.

Figure 7.1; Sequence of initiation and implementation phases in the introduction of new supervision arrangements (Homes X and Y)



### 3.2. Comparisons Between Homes and Between Groups

The first statistical analysis to be carried out was a comparison between the Homes on all the main variables. This included comparisons of the mean scores at time one and time two for the variables involvement in changes generally and opinion of your Principal. Differences between care and domestic/kitchen staff and between those who had and had not obtained any relevant social work qualifications

were also examined. Finally, the responses at time two were compared between those who had had their first supervision session and those who had yet to have one. In all cases, two-tailed tests were used.

### 3.2.1. Comparisons Between Homes

The mean scores from each Home on each variable were compared. T-test comparisons were carried out on all variables except opinion of your Principal (Time 2), where the assumption of homogeneity of variance was violated, with a much higher standard deviation at Home X than at Home Y ( $F = 4.62$ ,  $p < .01$ ). For this the non-parametric Mann-Whitney U test was employed; it produced a  $U$  value marginally short of significance ( $U = 66.0$ ,  $p = .053$ ). The means were 19.6 for Home X ( $n = 14$ ) and 21.9 for Home Y ( $n = 16$ ).

Mean scores and values of  $t$  for the other variables are shown on table 7.3.

Table 7.3: Mean scores from each Home on all variables, and values of  $t$  obtained.

	Time One Variables				
	Involvement in changes generally	Opinion of Principal	Commitment to Home	Relative Innov'ness	Trait Anxiety
Home X mean	7.9 (18)	21.1 (16)	31.6 (18)	9.2 (20)	17.6 (19)
Home Y mean	8.8 (21)	21.1 (21)	27.5 (20)	9.1 (22)	19.0 (19)
$t$ value	-1.14	.04	2.87**	.07	-.78

Tenure	Age	Time Two Variables			
			Involvement in innovation	Evaluations of innovation	Involvement in changes generally
Home X mean	55.3 (22)	2.5 (21)		7.0 (12)	11.9 (11)
Home Y mean	70.8 (22)	2.9 (22)		6.6 (15)	12.5 (16)
$t$ value	-.81	-1.14		.33	-.75
					-1.58

\*\* =  $p < .01$

(figures in parentheses indicate number of valid cases on each variable at each Home)

The only significant difference between the Homes is on the time one variable **commitment to the Home**, where staff at Home X tend to be more committed to the organization than staff at Home Y. Differences on the other variables are mostly very small, and it is worth noting that the means for **opinion of your Principal** at time one are identical - while at time two it has been seen that the difference is near-significant, with Home Y staff having a higher opinion of their Principal than Home X.

Two of the variables, **involvement in changes generally** and **opinion of your Principal** were measured at both data collection points. The differences in mean scores at times one and two are shown for each Home separately and overall in table 7.4 Only responses from participants who completed these items at both points were included for the calculation of means.

Table 7.4: Comparisons between time one and time two ratings on involvement in changes generally and opinion of your Principal

		Home X (n=10)	Home Y (n=15)	Overall
Involvement in changes generally	Time 1 mean	8.3	8.5	8.4
	Time 2 mean	8.4	9.4	9.0
	t value	-.20	-1.78	-1.57
Opinion of your Principal	Time 1 mean	20.8	21.2	21.0
	Time 2 mean	21.2	21.9	21.6
	t value	-.80	-1.41	-1.64

None of the t-test comparisons is significant, but the non-significant differences show a consistent pattern. For both variables at both Homes there is an increase in mean rating over time, but the increases are larger for Home Y than Home X. This is more extreme for "involvement in changes generally", where there is a 0.9 increase in the mean for Home Y ( $t = -1.78$ ,  $p = .097$ ) compared to a 0.1 increase for Home X ( $t = -.20$ ,  $p = .85$ ).

### 3.2.2. Comparisons Between Groups

Overall, there were a total of twenty-eight care and sixteen domestic/kitchen staff who returned the time one questionnaire. At time two twenty-one care staff and eleven domestic/kitchen staff returned the questionnaire. One Care Assistant and one Domestic from Home X who had joined the Home after the administration of the time one questionnaire returned the second questionnaire. The group means were compared for all variables by t-tests, with the exception of commitment to the Home where the assumption of homogeneity of variance was not met ( $F = 3.02$ ,  $p < .05$ ), the variance for care staff ( $n=25$ ) being considerably higher than for Domestics ( $n=13$ ). A Mann-Whitney U test found no significant differences between the groups.

Table 7.5: Mean scores for care and domestic staff groups on all variables, and values of  $t$  obtained.

	Time One Variables					
	Involvement in changes generally	Opinion of Principal	Relative Innov'ness	Trait Anxiety	Tenure	Age
Care staff mean	8.5 (26)	20.8 (26)	9.9 (27)	19.2 (24)	60.9 (28)	2.1 (27)
Domestics mean	8.2 (13)	21.7 (11)	7.8 (15)	16.7 (14)	66.8 (16)	3.6 (16)
$t$ value	.47	-1.38	2.81**	1.34	-.39	-3.02**

	Time Two Variables			
	Involvement in innovation	Evaluations of innovation	Involvement in changes generally	Opinion of Principal
Care staff mean	7.9 (16)	12.5 (17)	8.9 (18)	20.8 (19)
Domestics mean	5.2 (11)	11.8 (10)	8.3 (11)	20.9 (11)
$t$ value	2.61*	.90	.56	-.11

\*\* =  $p < .01$

\* =  $p < .05$

(figures in parentheses indicate the number of valid cases on each variable for each staff group)

The group means differ significantly on three variables; care staff describe their own innovativeness relative to their colleagues as on

average higher than do domestics ( $t = 2.81$ ,  $p < .01$ ), and at time two, care staff report more involvement in the innovation than domestic/kitchen staff ( $t = 2.61$ ,  $p < .05$ ). Finally, the domestic/kitchen staff tend to be older, with their mean falling comfortably in the middle of the third age bracket ('36-45'), while the Care Assistants' is just in the second bracket ('26-35':  $t = -.02$ ,  $p < .01$ ).

Participants were asked on questionnaire one whether they had any nursing or social work qualifications. None had the former, while only seven had social work qualifications - four from Home X and three from Home Y (all of whom were Care Assistants). The qualified group were compared with the other respondents on all variables, using Mann-Whitney U tests. Significant differences were found on only two variables; those with social work qualifications scored higher on relative innovativeness than those without ( $U = 40.5$ ,  $p < .01$ ) and tended to be younger ( $U = 38.5$ ,  $p < .01$ ).

### 3.2.3. Other Comparisons

As it became apparent that a high proportion of respondents at time two had not yet had an individual supervision session, it was considered important to examine whether this influenced their ratings of "evaluations of the innovation", compared to those of staff who had had a supervision session. Unfortunately, this could not be determined for all respondents; the information was only available from those who answered the time two questionnaire when it was re-administered (see section 2.2.2), or those completing the final questionnaire. There were thus three groups to compare: those who had had an individual supervision ( $n = 5$ ), those who had not ( $n = 10$ ) and those for whom the information was not available ( $n = 12$ ). Using oneway analysis of variance, no difference between these groups was found ( $F = .75$ ).

T-test comparisons were also carried out on all time two variables between those who returned the questionnaire when it was first sent out, in July ( $n = 24$ ) and those who returned it when re-administered in September ( $n = 8$ ). No significant differences were found.

### 3.3. Relationships Between Evaluations of the innovation and Other Variables

#### 3.3.1. Relationships with Independent Variables at Times One and Two

In order to address all three research questions, Pearson's correlation coefficients were calculated between evaluations of the innovation and all the independent variables on the two questionnaires. The findings are presented in table 7.6.

Table 7.6: Pearson's correlations between evaluations of the innovation and all independent variables.

	Time One Variables				
	Involvement in changes	Opinion of Principal	Commitment to Home	Relative Innov'ness	Trait Anxiety
Evaluations of the innovation	$r = .13$	-.01	,17	,30	-,08
N. of respondents	23	24	22	26	22

	Time Two Variables					
	Tenure	Age		Involvement in innovation	Involvement in changes	Opinion of Principal
Evaluations of the innovation	$r = .06$	-,05		,34*	,58**	,11
N. of respondents	27	27		25	25	26

\*\* =  $p < ,01$

\* =  $.05 < p < ,055$

Hypothesis one predicted that the involvement variables would be more strongly correlated with "evaluations of the innovation" than any others. As can be seen, the one variable significantly related to the dependent variable was involvement in changes generally (time two) ( $r = .58$ ,  $p < .01$ ). The correlation with involvement in the innovation fell only very marginally short of significance ( $r = .34$ ,  $p < .051$ ). Hypothesis one was thus supported. Involvement in changes generally

(time one) was not significantly related to "evaluations", nor was it the largest non-significant correlation. Hypothesis two, that "involvement" would predict "evaluations of the innovation" longitudinally, must be rejected. The third hypothesis - that "evaluations of the innovation" would be predicted by relative innovativeness at time one is also not supported as the correlation is not significant, but it should be noted that this was the strongest correlation between the dependent variable and any of the time one measures ( $r = .30$ ,  $p = .07$ ).

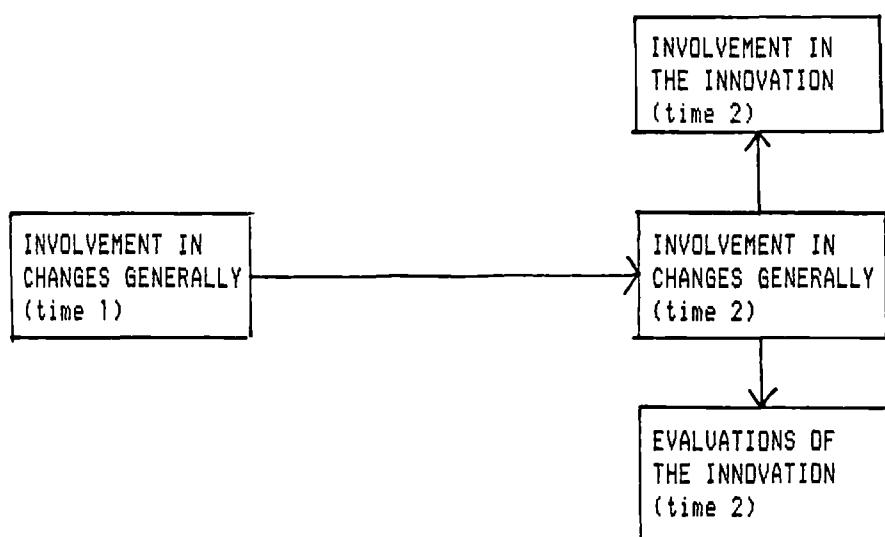
### 3.3.2. The Nature of the Relationship Between Evaluations of the Innovation and the two Involvement Measures

As involvement in changes generally (time 2) and involvement in the innovation were significantly related to each other ( $r = .48$ ,  $p \leq .01$ ), partial correlations were carried out to determine the extent to which the relationships between these two "involvement" measures and the dependent variable were independent of their relationship with each other. Taking first the correlation between "evaluations of the innovation" and involvement in the innovation, controlling for "involvement in changes generally (time 2)", the coefficient found is much lower than in the zero-order correlation and is non-significant (*partial correlation coefficient = .07, p = .40*). In contrast, the correlation between involvement in changes generally (time 2) and the dependent variable, controlling for "involvement in the innovation" is actually slightly larger than the zero-order correlation (*partial correlation coefficient = .59, p \leq .01*).

To explore these relationships further, involvement in changes generally (time two) was correlated with all time one variables. The only significant correlation was with involvement in changes generally (time one) ( $r = .71$ ,  $p \leq .001$ ) - though that with tenure approached significance ( $r = .31$ ,  $p = .054$ ). This suggests a possible pattern of causality in the relationship between the "involvement" measures and "evaluations of the innovation" as depicted in figure 7.2. The dependent variable is predicted directly by "involvement in changes

"generally" at time two, which in turn is predicted by its equivalent variable at time one (and, much less strongly, by tenure). "Involvement in the innovation" only predicts "evaluations of the innovation" through its relationship with "involvement in changes generally (time two)".

Figure 7.2: Possible causal relationship between the involvement measures and evaluations of the innovation



### 3.4 Findings from the Open-Ended Questions

The purpose of the various open-ended questions was to gather descriptive material concerning both the innovation itself (i.e. new supervision arrangements) and the wider context of the organization - particularly concerning changes in the Homes. Table 7.7 shows the number of respondents from each Home who answered each of the questions. Summaries of the responses to the open-ended questions from each questionnaire are given below.

#### 3.4.1. Time One Questionnaire

The single open-ended item on the first questionnaire asked for "comments about...any aspect of the Home, or about yourself". Amongst those from Home X, the subject arising most often was the Home's management, where a certain amount of caution was apparent in

Table 7.7: Number of respondents from each Home answering each of the open-ended questions

		Home X	Home Y
Time 1:	<i>General comments</i>	7	3
Time 2:	<i>Good things about the innovation</i>	6	7
	<i>Bad things about the innovation</i>	3	5
	<i>Comments about the innovation</i>	1	1
	<i>General comments</i>	4	0
Time 3: (full version)	<i>Comments on how innovation introduced</i>	1	0
	<i>Good things about the innovation</i>	2	0
	<i>Bad things about the innovation</i>	0	0
	<i>Suggested improvements to the innovation</i>	2	1
	<i>Ways in which Home had improved</i>	1	11
	<i>Ways in which Home had got worse</i>	2	0
Time 3: (short version)	<i>Comments about the innovation</i>	8	7

attitudes towards the new Principal. Two members of staff drew attention to the fact that they had received the questionnaire late, and wondered whether this was a "sign of things to come". There were indications in some comments that these attitudes may have been a result of the recent history of the Home, with references to poor staff-management relations, and a high level of change. This is not to suggest that people were critical of the current management - it was more a case of reserving judgement; an attitude of 'wait and see'. Other issues raised by Home X respondents in the comments section of the first questionnaire included the wish for more training to be made available, and a complaint that the views of domestic staff received less attention than those of care staff.

The desire for more widely available training was also expressed by one of the Home Y respondents, though another raised doubts as to whether this could be achieved without an increase in the numbers of care staff. One member of the care staff commented that she/he felt that because of council policy regarding accountability of Homes to the public, Homes were becoming "more institutionalised", and while improvements were being made in the physical care of residents, "the mental side of care" was being neglected.

### 3.4.2. Time Two Questionnaire

On the time two questionnaire, the "good things" about the new supervision arrangements listed by respondents were very similar from both Homes, and a majority of respondents listed at least two points. These mostly referred to having the chance to air views, sort out problems and put forward new ideas, both for their own benefit and for that of the Home and its residents. People from both Homes also saw supervision as an opportunity to learn new skills and improve existing ones at their jobs, as the following examples of "good things" show: "You are told your bad points (tactfully) as well as your good" (Care Assistant, Home Y); "The opportunity to learn more about the needs of residents" (Care Assistant, Home X). Respondents from Home X did tend to refer more often than those from Home Y to the potential of the new supervision arrangements for improving staff-management relationships.

There was more of a difference between the Homes in the "bad things" mentioned about the innovation. At Home X, all the comments referred in one way or another to time pressure or workload; that supervision takes up valuable work time, that it leaves the unit short staffed, and that recommendations arising from supervision often can't be carried out because of lack of time. At Home Y, although the last of these points was made by one respondent, most comments were more specific, dealing with particular aspects of the supervision arrangements; that "praise isn't given for good practices", that supervisions are not regular enough, and that they are carried out differently by different group leaders (the last two points were raised by three of the five Home Y members of staff who answered this question).

Four staff from Home X (but none from Home Y) made comments about changes in the Home more generally. The most remarkable feature of these is the lack of agreement between them. While two respondents said that things were going well and that most changes had been successful, though still in their early stages, another said "Nothing seems to get done, or it takes months", and the fourth respondent stated that although some minor things had been put right, "major things like worker/management relations have gotten worse".

### 3.4.3. Time Three Questionnaire

Looking at responses from both versions of the questionnaire together, the comments made at time three continue the pattern found at time two; people tended to be more critical of the new supervision arrangements and changes generally at Home X than at Home Y, but there were also greater differences in opinion amongst the Home X respondents. At Home X, several members of staff stated that they had not yet received individual supervision, and there were complaints that it had not been made clear enough to staff what supervision was and how it could be of help. One member of staff who had joined the Home shortly after questionnaire one was distributed said that she had not yet been told anything about supervision. Amongst those who had received at least one supervision, reactions varied; one commented

that it "did not serve any purpose", while two others pointed to improvements in communications with managers. There was a request for supervision to become "more regular..more private...more business-like". Finally, it was pointed out by one respondent that domestic supervision had been delayed due to the supervisor being off sick; she/he expressed confidence in the ability of the manager concerned to carry out supervision effectively. Comments about overall changes in Home X also showed strongly contrary views. For instance, one person said that the Home now had "more of a caring environment" while another said that "Nothing has improved, it's only got worse".

Respondents from Home Y showed a high level of agreement that things had improved over the past year. Supervision was seen as making it easier to talk about problems, and several people stressed that they now felt happier about going to see the Principal about worries or complaints. The Principal's involvement with residents and fairness towards staff was praised, and respondents mentioned improvements in communication, standards of care and the overall atmosphere. Importantly, nobody mentioned any ways in which things had got worse in the Home, and the only improvement suggested for the innovation was that supervision sessions should be more frequent.

#### 4. DISCUSSION

##### 4.1 Interpretation of the Findings

The findings from the study partially supported the hypotheses regarding the relationship between the measures of involvement and attitudes towards the innovation. The two involvement measures at time two were the two independent variables most strongly correlated with attitudes, the relationship with involvement in changes generally being highly significant while that with involvement in the innovation was marginally short of significance. Partial correlations confirmed the primary importance of the former measure, as it was significantly

related to attitudes when controlling for the effects of the relationship with "involvement in the innovation", while the reverse was not the case. This finding confirms the rationale behind the inclusion of the two measures; it may be interpreted as indicating that the participants in the two Homes judged the innovation largely on its merits regardless of how much they were involved in its introduction, but that they were influenced by how much they felt they were being involved in changes generally.

There are several reasons why overall involvement in changes might be of such importance to staff in the two Homes. Firstly, those staff who were most involved in changes may have been better able than others to see how the new supervision arrangements fitted into the wider plans to improve the Homes, making them more sympathetic to the innovation. This assumes that they supported the wider plans, which is reasonable, given that the plans were drawn up in consultation with staff and that commitment to the organization was generally high. The immediate historical contexts of the Homes should be considered. In both, one of the problems prior to the appointment of the new Principals was poor communication, especially between staff and management; ratings of the level of involvement in changes may therefore indicate the extent to which participants felt that this problem was being successfully dealt with. This in turn would be expected to be related to evaluations of the new supervision arrangements because one of the main purposes of this innovation - as illustrated by comments from the open-ended questions - was seen to be the improvement of communications between staff and management. It is interesting to note that the single item of the "involvement" measures most highly correlated with attitudes to the innovation was the one asking about the amount of notice taken by management of staff reactions to it - in other words, about management listening to what staff had to say.

No significant relationship was found between involvement in changes generally before the implementation of the innovation (i.e. time one), and attitudes to it immediately after first implementation. It was therefore not possible to be certain about the direction of the

relationship between the dependent variable and the time two "involvement" measures. It may have been the case that the first data collection was too soon after the appointment of the new Principals for staff to have formed clear perceptions of their degree of involvement in changes. The failure to obtain an adequate response rate at time three made it impossible to examine whether "involvement in changes generally" at times one and two would predict evaluations of the innovation once it had become more established in the Homes, nor whether "involvement in the innovation" would predict evaluations longitudinally.

Hypothesis three - that relative innovativeness would predict evaluations of the innovation - was not supported, although the fact that it was the strongest correlate with "evaluations of the innovation" of all the time one variables suggests that it would be worth testing this relationship again with a larger sample. It is possible that time two, when most staff had yet to have their first individual supervision, was too early for differences in attitude due to levels of individual innovativeness to emerge, but that the characteristic would have an influence once the innovation was having a more direct and sustained impact on people's working lives.

Finally, although the study did not set out to examine in any depth the unfolding of the innovation process in this case, the sequence of events observed (see figure 7.1) does add to the findings regarding phases in the innovation process in chapter five, section 3. It shows another way in which the initiation-implementation transition may occur other than in a simple two step sequence. In the previous study, it was found that one innovation - the key worker system - went through a number of re-initiations and re-implementations after its first introduction; here, at both Homes, initiation was in two phases, the second of which overlapped with the start of implementation.

#### 4.2 Directions for Future Research

As the present study was not able to properly test whether involvement in changes generally and/or in the introduction of a specific innovation predict attitudes to the innovation longitudinally, there remains a need to examine this question again. The possible relationship between individual innovativeness and attitudes towards innovations should also be investigated in future research. Looking further ahead, the findings presented here and in the previous chapter suggest two separate but complimentary directions which research into attitudes towards innovation should take.

Firstly there is a need to determine how general the relationships between "involvement" and attitudes to innovations are. This would require a series of longitudinal and primarily quantitative studies across a range of organizations differing in features such as size, function, economic sector, and so on, and focussing on a range of innovation types - technical and administrative (Evan, 1966), radical and non-radical (Zaltman et al, 1973), externally imposed and internally generated and so on. If systematic differences in the strength and nature of the relationship between the variables were found, as might be expected if the explanations offered above of the current study's findings are valid, it would be possible to develop a broad, predictive theory which could be tested through interventions in organisations.

In addition to investigating the generalisability of the findings, the study raises questions which would require a quite different research strategy from the one just proposed. In particular, there is clearly a need to study in greater depth the effects of the historical context within the organization as it relates to members' experiences of change and innovation. Relevant theoretical background might be found in areas such as work-role transitions (e.g. Nicholson, 1984). A suitable methodology would be in-depth interviews repeated over an extended period of time, making use also of documentary materials such as minutes and reports. As well as being of value in its own right,

this research could contribute directly to the more generalised programme described above; for instance, by uncovering characteristics of innovations salient to organisational members' attitudes. It could also be incorporated within research into the sequence of events in the innovation process.

## CHAPTER EIGHT: INNOVATION PROCESSES IN A PSYCHO-GERIATRIC WARD

### 1. INTRODUCTION

#### 1.1 Aims

All three previous studies have addressed process issues in some form: the preliminary study of experiences of innovation (chapter four) focussed on strategies for initiating and implementing innovations as one of the themes of the interviews, while the qualitative analyses in the first Homes for the Elderly study (chapters five and six) compared perceived influences on and attitudes to innovations across different phases of the innovation process for different staff status groups. The second study in Homes for the Elderly (chapter seven) intended to examine predictors of attitudes to the selected innovation from three points in the process - initiation, first implementation and later implementation - but in the event only the first two could be used. Additionally, the sequence of initiation and implementation phases was traced for the innovation process as it developed during the study.

Despite this attention to process issues, none of the studies sought - as its main aim - to investigate the sequence of events, phases or stages comprising the innovation process. In the first Homes for the Elderly study the retrospective design made it necessary to conceptualise the process in two broad phases - "initiation" (i.e. pre-adoption) and "implementation-absorption" (i.e. post-adoption), while in the second study the question of process sequence was tangential to the main research objectives. The broad purpose of the present study was therefore to follow examples of the innovation process as they unfolded, in order to identify the sequence of events in each case. More specifically, it aimed to answer the following two questions:

- 1) Does the innovation process develop differently for different types of innovation?
- 2) What kind of model is most successful in accurately describing the observed examples of the innovation process?

To answer the first question, a suitable typology of innovations was required. The one chosen was based on the three dimensions proposed by Zaltman et al (1973): programmed - non-programmed, instrumental - ultimate, and routine - radical. It also included the technical - administrative distinction made by Damanpour and Evan (1984). The way in which the typology used here was developed from these sources is described in section 4.1, below.

The models to be used in answering question two are a conventional "stage" model - that of Zaltman, Duncan and Holbek (1973) - and Schroeder et al's alternative more fluid model. By "successful" I mean not simply which model corresponds most accurately to the observed innovations, but also which is most practically useful. The latter is largely a question of the extent to which each model can be reliably interpreted and applied in the same way by independent raters.

## 1.2 Background to the Study

It was considered that it would be of benefit to the research program as a whole to somewhat broaden the scope of research from a sole focus on residential Homes for the Elderly. The present study was therefore carried out in a psycho-geriatric assessment ward in a large General Hospital (referred to as Ward G), thus remaining in the area of elderly care but within a quite different context. Ward G is a 25-bedded unit, located in a three-storey Victorian building in a large General Hospital. Its function is to take patients referred from other institutions or from the community with organic mental illnesses, predominantly Alzheimer's Disease ('senile dementia'), and assess their mental and physical abilities, in order to determine the type

and level of care they will require in future. Patients stay on the ward for a minimum of six weeks.

During the first observation period of the study the day-time staffing level on the ward was as follows; one Charge Nurse, four Staff Nurses, three Enrolled Nurses (S.E.N.s), and ten Nursing Assistants (three on temporary contracts). A fifth Staff Nurse joined the ward in June. The following specialist staff were based on the ward; a Social Worker, a Community Link Sister and an Occupational Therapist. A trainee Social Worker and a trainee Occupational Therapist were on placements here during this period (the latter not starting until June), and two Physiotherapists included Ward G amongst their responsibilities. There were varying numbers of Student Nurses working on the ward throughout this period, mostly on R.M.N. (Registered Mental Nurse) training plus a few post-registration students. Finally, the ward has its own staff of Housekeepers and Domestics.

There is a Day Hospital based on the ward, providing therapeutic and recreational facilities for elderly people from the community. Some of the more mentally able patients from the ward generally join in the activities. The Day Hospital is run by its own Staff Nurse helped by a Nursing Assistant, and is largely autonomous from the main ward.

Access was negotiated through the Assistant Director of Nursing Services with the newly-appointed Charge Nurse of the ward and its two Consultants in April 1987, and the study commenced in mid-May, 1987.

#### 1.2.2. The Historical Context

Ward G was selected as the setting for the study because events in its recent past and plans for its immediate future strongly suggested that significant changes would occur during the course of the research. The study was scheduled to coincide with the appointment of a new Charge Nurse to the ward; higher management expected him to make significant changes as the ward had been through what was widely perceived to have been a difficult period, with much of the blame for this being put on the previous Charge Nurse's inadequate managerial skills. A feature of

this appointment which was to prove important in the development of several innovations or changes was that the Charge Nurse had worked on the ward previously - leaving approximately two years before the study - when he had been jointly in charge with a Ward Sister who now worked as a Community Link Sister based on Ward G. Several of the staff - mainly Nursing Assistants - had been on the ward at that time and so knew him and his working style.

A second reason for expecting innovations to be introduced onto the ward was that just prior to the start of the study a major re-organisation of Elderly Mentally Ill services in the area had happened. Whereas previously Elderly Mentally Ill wards from several hospitals were combined into a single administrative unit, they were now to be integrated into the administration of the particular "localities" within which they were sited. This was a preliminary to a major re-organisation of all geriatric services in the area, planned for 1988. All these changes can be seen within the even wider context of Government policy regarding the N.H.S., aimed at making it more "cost-effective" through the introduction of a management structure closer to that typical of private industry.

## 2. METHOD

### 2.1 The Choice of Methodology

The methodology chosen for the study was participant observation supplemented by informal interviews and brief questionnaires at the start and finish. Participant observation had the advantage of allowing first-hand contact with innovation attempts as they occurred; other methods of tracing the development of changes which rely exclusively on reported information - such as repeated interviews or questionnaires - might miss key events by failing to ask the right questions at the right time and would tend to give most weight to the views of the most articulate or literate members of staff. The main disadvantage of participant observation is that it is extremely time-

consuming; the study was planned to last for about seven months, and to have worked a full five days a week for the whole period would have constituted an investment of time that was impractical to make - especially as it was possible that for much of the time there would be little to observe directly relevant to innovation. However, the more infrequent the observation periods were the more likely it was that important events would be missed. The schedule finally decided upon was as follows:

**Phase 1: May to June 1987**

- 1) Interview with Charge Nurse prior to moving to Ward G, to examine his expectations and intentions regarding the new job, especially with regard to possible changes.
- 2) An observation period lasting approximately four weeks, from mid-May to mid-June. The researcher to work for three full day-shifts per week, carrying out the duties of a Nursing Assistant. First questionnaire distributed.

**Phase 2: July to October**

Contact with the ward maintained in order to monitor the progress of any changes initiated in the first observation period, and also to identify any further changes. To be done principally through attending Ward Meetings and Multi-Disciplinary Team Meetings (M.D.T.s), and through informal discussions with members of staff on these and other occasions.

**Phase 3: November to December**

Second four-week observation period, and second questionnaire distributed.

## 2.2 Collection of Data

### 2.2.1. Participant Observation and Informal Interviews

Observation was carried out overtly; members of staff were informed of the reason for my presence on the ward at the beginning of the study at the first ward meeting, and on the covering letter attached to the first questionnaire (see 2.2.2. below). Any requests for information about the study were answered readily. Nevertheless it was felt inappropriate to make notes too publicly while working, for fear of arousing suspicion or hostility. Therefore if it was necessary to take notes during shifts this was done discreetly and privately, except in the case of staff meetings and arranged interviews (as opposed to spontaneous, informal conversations). Fuller notes were made immediately after each shift. As soon as possible after a shift, the rough notes were organized under the following headings and transcribed onto index cards;

- 1) Events - descriptions of important or unusual occurrences in the daily life of the ward, eg. activities for patients, accidents, admissions or discharges etc.
- 2) Innovation Progress - observations of the progress of particular innovations were categorized under this heading. The researcher's judgements of whether implementation was proceeding successfully and as planned were included, along with records of comments or other reactions from members of staff.
- 3) Staff Comments - this included all comments made by members of staff, other than those concerning specific innovations (see above). These could be comments made to the researcher, either in normal conversation or in an informal interview, or comments made by one staff member to another and overheard by the researcher.
- 4) Self-Observation - the researcher's own thoughts and feelings about working on the ward (especially relationships with staff) and about the progress of the research.

A discussion with the Charge Nurse about his intentions regarding the development of ward G took place in the course of a meeting about access for the study - before he had taken up the appointment. This and other information about the ward was recorded in note form. At the end of the first observation period, and at the beginning and end of the second period, short informal interviews were conducted with the Charge Nurse during normal shifts focussing on his opinions about how specific innovations and more general changes were progressing. Similar informal interviews (lasting no more than fifteen minutes) took place with other members of staff as necessary - particularly to gather details of important events or decisions which I had not been present to record. Information from this source was included within the index-card records for the shift.

#### 2.2.2. Questionnaires

Questionnaires were distributed to all ward staff and para-medics (physiotherapists and occupational therapists) who worked on the ward. It had originally been intended to use these as an opportunity to test some of the findings of the first Homes for the Elderly study longitudinally and in a different setting (note that this study was conducted before the second Homes for the Elderly study), hence the appropriate scale measures were included; however, the high staff turnover (seven out of eighteen nursing staff at the start of the study had left by the end) meant that few people completed both questionnaires. I will therefore only be utilising the information from open-ended sections of the questionnaires. At time one the only open-ended item - other than requests for details of work history - was one asking; "*Please list any changes you would like to see happen on the ward*". At time two there was an item asking for "*any comments about the ward and/or your job*" plus a space for respondents' comments about the questionnaire.

### 3. OBSERVATIONS OF INNOVATION AND CHANGE IN WARD G

Throughout the study, for the purpose of collecting data a broad interpretation of the definition of innovation was used (see chapter one). This inclusive approach was adopted partly on the grounds that it would be possible at the end of the study to disregard details of changes not considered to be innovative, while observations not recorded at the time would be lost. Also, for the purpose of comparing the process for different types of innovation it was desirable to have as wide a range of examples as possible, including 'borderline cases' which were not very radical. Finally, findings from the previous two studies have strongly suggested that individual instances of the innovation process need to be seen within the overall context of changes in the organization.

#### 3.1 Changes Suggested During Observation Period One

During the discussion with the Charge Nurse prior to his commencing the new job, he specified two changes that he was particularly keen to introduce; a new team-work system for nursing staff and a method for carrying out "objective" assessments of patients. The former he saw as a means of returning to how things had been working when he was on the ward before, while the latter was something which he and others had long wanted but not yet been able to develop.

At the start of the first observation period, most members of staff, when questioned, said they thought that the new Charge Nurse would make significant changes to the ward. In particular, those who had been on the ward when he was there previously (nine members of staff) were optimistic that these would result in improvements to the ward.

As has been seen the first questionnaire included a section which asked members of staff to indicate what changes they would like to see on the ward. Of the nineteen members of staff who completed the questionnaire, thirteen made at least one suggestion; the highest

number of suggestions made was six. The suggested changes fall into six categories, which were in descending order of the number of suggestions made: role changes for staff, including such things as more ward staff involvement in community care, and more structure to the nurses' role; changes to patients' quality of life, for instance, activities and trips out of the ward for patients and more privacy around patients' beds; physical changes to the ward including re-housing it in better premises along with less radical changes such as providing an activities room for patients; changes in patient assessment - particularly the development of a more structured assessment regime, and better pre-selection of patients; human resource changes such as more speech therapy input, and improved medical cover; and lastly, better communications amongst all levels of staff.

### 3.2 Innovations and Changes Observed During the Study

Although the focus of the study was on innovations introduced onto the ward, other changes were observed which are of importance in understanding the context for innovation. The major administrative re-organization of Elderly Mentally Ill units, has already been discussed in section 1.2.2. In addition to this, non-innovative changes in two areas had an impact on the ward; the physical/mental condition of patients admitted and the level of staff turn-over. These are described in section 3.2.1. below, while the innovations observed are covered in section 3.2.2.

#### 3.2.1. Patient and Staff Changes

Changes in patients' physical/mental condition: Between the first observation period (May) and the second (November), there was a highly noticeable change in the type of patient on the ward, in that the proportion of patients requiring close (sometimes constant) attention due to their very poor mental and/or physical condition increased markedly. This was explained as being a result of an exceptionally

long waiting list, which meant that many of the people on it had deteriorated considerably by the time a bed became available for them.

This change certainly had an effect on staff morale; not only did the work become more physically demanding, but many staff also complained that the ward was not able to properly carry out its assessment function. It was felt that the ward was becoming "a dumping ground", or "like a long-stay ward".

**Staff turn-over:** The ward experienced a relatively high level of staff turn-over in the course of this project; three Staff Nurses, one Enrolled Nurse, and three Nursing Assistants left the ward. In addition, the large group of learners on the ward in May had finished by the end of June, and from then on there were never more than two student nurses on the ward.

### 3.2.2. Innovations

Seventeen changes which appeared to fit the definition of innovation proposed in chapter one of this thesis were observed in the course of the study. Two of these were rather 'borderline' cases as they were described by some staff as returning to the way the ward had run before when the new Charge Nurse had worked there two years previously; these were the new nursing team system and the tea-pot tables. They were included in this analysis for two reasons. Firstly, many of the staff - including most of the Registered Nurses (S.R.Ns) - had not been on the ward two years, and the changes were therefore new to them (unlike the re-introduced ward meetings, which had only ceased a matter of months before). Secondly, these changes involved significant alterations to what had been expected of staff in the period prior to their implementation; they may therefore be considered to have challenged the existing status quo - one of the key criteria in the definition of innovation used here (chapter one).

The innovations can be placed in three groups according to whether they were (1) implemented, (2) initiated and adopted (i.e. a firm

decision to implement was made but full implementation had not commenced) or (3) initiated but rejected.

**1) Innovations implemented during the research period**

Organization of Nursing Staff into teams with responsibilities for particular patients.

New card index record system for patients, including new care plans.

Tea-pot tables.

Ward staff assessing patients on waiting list.

Communication folders for teams.

Drug rounds to be carried out by qualified staff only.

Nurses accompanying patients discharged to Part 3 care on their first day.

Combined Multi-Disciplinary meetings for the three Elderly Mentally Ill (E.M.I.) wards at the locality.

**2) Innovations initiated and adopted**

An objective patient assessment schedule.

Garden project - installation of a greenhouse.

Dedicated ambulance service for Day Hospital.

Phlebotomy service for the three E.M.I. wards.

Multi-disciplinary document - about future development of services for the Elderly Mentally Ill in Sheffield.

**3) Innovations initiated but rejected**

Fund-raising tea/coffee scheme for visitors.

Task allocation system on ward.

Patients to be addressed by their surnames.

New drug-record cards.

For each of the innovations a case history was written, summarising the main events, decisions etc. observed. Copies of all of these appear in appendix G. The reader is recommended to examine these

before proceeding, in order to familiarise him/herself with the innovations studied.

#### 4. COMPARISONS OF THE INNOVATION PROCESS FOR DIFFERENT INNOVATION TYPES

##### 4.1 Typology of Innovations

The typology of innovations to be used here is based on the three dimensions suggested by Zaltman et al (1973), and described in chapter three of this thesis. The dimensions are: programmed or non-programmed, instrumental or ultimate, and radicalness. The first two are dichotomous while the third is a continuum. The 'non-programmed' category of dimension one is further divided into slack and distress innovations. A fourth dimension is added - technical or administrative - taken from Damanpour and Evan (1984), and also discussed in the review of literature relating to innovation types (chapter three, section 3). Some modifications to the dimensions as defined in the literature were necessary to make it possible to apply them to the observational data of this study. These are detailed below, along with brief definitions of all the dimensions to remind the reader of the descriptions in chapter three. Following this are six predictions of differences between innovation types, drawn from the literature.

###### 4.1.1. Definitions of Typology Dimensions

###### Dimension 1: Programmed and non-programmed innovations

Programmed innovations are those whose appearance is scheduled in advance. In many cases they are recognised as the inevitable consequences of preceding changes; for instance, the introduction in a hospital of a training course for a new form of treatment, following the actual invention of the treatment.

**Non-programmed innovations** are not scheduled in advance. **Slack innovations** are stimulated by the availability of resources (financial, human or material) beyond the requirements for the maintainance of the organization (i.e. 'organizational slack'). **Distress innovations** are responses to pressing problems affecting the organization.

In attempting to classify innovations observed in the present study on the programmed - non-programmed dimension, it became apparent that the two-way division of the latter was inadequate. There were a number of innovations which were clearly not programmed, did not fit the description of "slack", but also were not responses to particular urgent problems. An example is the multi-disciplinary team document, presenting service recommendations to management; this was not purely a reaction to a recognised emergency, nor was it devised to utilise slack resources. The innovation was rather an attempt to persuade the organization that a previously unrecognised opportunity for change was worth seizing. It is proposed that this be recognised as a third type of non-programmed innovation, which I will call **pro-active**, as it characteristically involves an individual or individuals seeking to draw the organization's attention to an area where the need for change was not previously recognised.

#### **Dimension 2: Instrumental and ultimate innovations**

**Ultimate innovations** are those which can be considered ends in themselves, whereas **instrumental innovations** are those introduced in order to facilitate the subsequent introduction of ultimate innovations.

In the present study, there were no instances of unambiguously instrumental innovation - that is, where an innovation was clearly introduced with the aim of making the introduction of a specific later innovation possible or easier. However, there were several cases of innovations which were initiated with the aim of facilitating subsequent changes of a more general type (i.e. rather than one particular change); for instance the change to the drug rounds,

preventing unqualified staff from administering drugs, was a contribution towards the professionalisation of nursing. For this study, it is proposed that an innovation should be considered as instrumental if a major reason for its introduction (though not necessarily the sole reason) is to facilitate the introduction of later changes, regardless of whether details of these changes are specified.

#### **Dimension 3: Radicalness**

Radicalness consists of two components; novelty and risk. The most radical innovation is one which is both highly novel and very risky - that is, it has a high likelihood of failure and failure has potentially significant negative consequences. For the innovations observed in this study, radicalness was therefore assessed by rating novelty and risk separately and combining the scores.

#### **Dimension 4: Technical and administrative innovations**

Technical innovations are those occurring within the "technical system" of the organisation and which are "directly related to the primary work activity of the organisation" (Damanpour and Evan, 1984). For ward G, the primary work activity is the assessment of, and provision of care (physical, mental and emotional) to patients.

Administrative innovations - that is, innovations in the "social system" of the organization - are concerned with relationships between organisational members and "rules, roles, procedures, and structures that are related to the communication and exchange among people and between people and the environment" (Damanpour and Evan, 1984; p.394). Note that in the setting of a psycho-geriatric ward, staff relationships with patients must be considered part of the technical system, as the building and maintenance of such relationships is an integral part of the care role.

##### **4.1.2. Predicted Differences Between Innovation Types**

The following seven predictions are all drawn from either explicit statements or implicit assumptions about innovation types made in the

literature. The first three are concerned with combinations of types across the dimensions, the rest with differences between types within single dimensions.

*Prediction 1: Distress and pro-active innovations will tend to be more radical than slack and programmed innovations.*

*Rationale:* Because slack innovations are in a sense a 'bonus' for the organization, rather than something urgently needed, they are unlikely to be of a nature that threatens "the internal structure and operation of the organization" (Knight, 1967) or have a high probability of causing resistance. They are therefore unlikely to be highly radical. Programmed innovations too will generally be of low or moderate radicalness; advanced scheduling should lessen the appearance of novelty and the likelihood of failure due to unforeseen consequences. In contrast, distress and pro-active innovations may be both risky and novel. For distress innovations, radicalness is a result of their emergence in response to unstable, unpredictable crisis situations - the greater the crisis, the more radical the responding innovation (Zaltman et al, 1973). Pro-active innovations are unpredicted, and therefore will tend to appear novel, and are not responses to a widely recognised problem so run a high risk of rejection, especially if competing with other demands on resources.

*Prediction 2: Distress innovations will tend not to be instrumental.*

*Rationale:* Distress innovations are initiated to alleviate pressing problems. In such situations the organization is unlikely to take the indirect strategy of introducing an instrumental innovation as a means of facilitating later ultimate change(s); rather it will initiate an innovation which can deal with the problem as swiftly as possible - almost certainly an ultimate innovation.

*Prediction 3: Instrumental innovations will tend to be less radical than ultimate innovations.*

*Rationale:* According to Zaltman et al, instrumental innovations are a strategic option, whose main function is to lessen resistance to subsequent ultimate innovation. They will therefore tend to be of low radicalness, while some (though not all) ultimate innovations will be highly radical.

*Prediction 4: Pro-active innovations will tend to be successfully adopted and/or implemented less frequently than programmed, slack or distress innovations.*

*Rationale:* Because by definition pro-active innovations are not responses to widely-recognised problems, nor do they necessarily occur where resources are readily available, they are more likely to be rejected prior to adoption or abandoned prior to full implementation than distress, slack or programmed innovations.

*Prediction 5: The most radical innovations are likely to meet the most resistance.*

*Rationale:* It is widely held within the literature that the more radical an innovation is, the more it is likely to provoke resistance from those it affects. Highly radical innovations will depart considerably from the existing state of affairs (Zaltman et al, 1973) and thus appear threatening to anyone who has a vested interest in the status quo or who dislikes novelty and change.

*Prediction 6: There will be more technical than administrative innovations initiated and adopted.*

*Rationale:* There is strong evidence in the literature for higher rates of technical than administrative innovation (Daft, 1978; Damanpour and Evan, 1984). Although the focus in the past has mostly been on the adoption of innovations, there are no reasons to suppose that the same differential would not be found for initiation of innovations as well.

*Prediction 7: Administrative innovations will tend to trigger technical innovations, but not vice versa.*

*Rationale:* This prediction is taken directly from Damanpour and Evan's (1984) findings regarding "organizational lag" in a study of innovation in libraries.

As well as these seven predictions, a more general prediction was made, not directly related to the innovation typology; *that the initiation source of an innovation (i.e. who it was initiated by, and where) will influence its outcome.*

#### 4.1.3. Process Questions

For the purpose of organizing the observational data in order to test the above predictions, four questions about the progress of the innovation process were addressed to all examples. These were:

- 1) Who initiated the innovation? Where possible, the individual or group responsible for first proposing an innovation was identified. For some examples - especially those imposed from outside the ward - it was not always possible to pin-point the initiator(s) this precisely and so a general identification was made, such as "higher management". The correspondence between innovations initiated and innovations suggested by ward staff during the first observation period (on the questionnaire or elsewhere) was examined.
- 2) What were the sources of resistance to the innovation? Resistance was defined as actions taken with the intentional purpose of blocking the adoption, implementation or utilization of the innovation, or the intentional failure to take actions necessary for the successful adoption, implementation or utilization of the innovation.
- 3) What factors, other than staff and others' attitudes, influenced the innovation's progress? Factors from within and

outside the ward which had a discernable influence on how the innovation progress unfolded were recorded. Two main sets of influencing factors were identified; resources and communications.

4) What was the outcome of the innovation process, by the end of the study? Outcome was examined in terms of whether initiation of the innovation resulted in successful adoption, whether it was then fully implemented, and whether it was utilized as intended.

#### 4.1.4. Reliability of the Typology

The reliability of the innovation typology was tested across all examples, by comparing my ratings with those of an independent rater who had no prior knowledge of the material or the coding method. For the three dichotomous dimensions (programmed - non-programmed, instrumental - ultimate, technical - administrative) the independent rater was presented with definitions as proposed above (section 4.1) and asked to classify all the innovation examples accordingly. For the continuous dimension of radicalness the rater was asked to score each innovation for novelty and riskiness separately on a three-point scale, labelled 'high' (score 3), 'medium' (score 2), and 'low' (score 1) and the sums of these formed the radicalness scores. Definitions and instructions as presented to the rater, and further details of their development are included in appendix H. Two reliability statistics were calculated for each dimension; proportion of agreements between raters and Kappa coefficients. Both are shown on table 1.

On the first, second and fourth dimensions, and the novelty component of radicalness, the percentage agreements are very high and the Kappa coefficients above the acceptable .4 level. It is only on the risk component of dimension three that there appear to be problems with reliability.

Table 8.1: Reliability of the innovation typology

	Number & percentage of agreements	Kappa coefficient
Programmed -	12 (71%)	.48
Non-programmed		
Instrumental -	15 (88%)	.55
Ultimate		
Radicalness: Novelty	12 (71%)	.54
Radicalness: Risk	10 (59%)	-.04
Technical - Administrative	14 (82%)	.46

Here, the very small and negative Kappa coefficient reflects the fact that the independent rater coded all but two of the innovations as 'medium risk'; hence even though the number of agreements is quite high (ten out of seventeen) the probability of such an outcome happening by chance (given the ratings made by the two coders) is also high. The lack of variation in the independent rater's risk assessments is itself an indication of the great difficulty involved for an outsider in making judgements about such a highly subjective concept as risk. It was felt that further refinement of the coding criteria or the case histories would be unlikely to yield a substantial improvement in the level of agreement between coders, so the typology as a whole was accepted as it stood.

Following the reliability check, I discussed with the independent rater every disagreement between us, in order to decide upon the final coding in each instance. Out of twenty-two disagreements, the coding suggested by the independent rater was accepted on eight occasions. Radicalness ratings were calculated by summing scores for novelty and risk. This produced three categories: 'high' (>5), 'medium' (4) and 'low' (<3) radicalness.

## 4.2 Findings

### 4.2.1. Overall Frequencies of Types and Process Elements

The classification of each of the seventeen innovations on the four typology dimensions is shown in table 8.2. On dimension one, three of the innovations were programmed and the rest non-programmed. Within the latter category, there were five distress innovations, eight proactive innovations and only one slack innovation. On dimension two there were four instrumental innovations and thirteen ultimate innovations. The frequencies on dimension three, radicalness, were four 'high', three 'medium' and ten 'low'. Finally, on dimension four, twelve of the innovations were technical and five administrative.

By addressing the four process questions to the observational data, six process elements were identified as relevant to all the innovations. These are defined as follows:

- 1) Who the innovation was initiated by: Initiation was considered to commence at the point where an individual or group made the first concrete effort to have an innovation introduced; for instance, suggesting it at a ward or multi-disciplinary meeting, asking permission from the appropriate person(s) in authority, and so on. Merely expressing the hope that a certain innovation would be introduced did not constitute initiation. Some of the innovations were initiated either before the study began (the new card-indexes, the drug round changes, and nurses accompanying patients to part three Homes), or on the ward in the time between participant observation periods (team communication folders, and objective patient assessment schedule). In these cases, efforts were made to uncover who had been responsible for the initiation. Higher management, that is those in the administration above the level of the Senior Nurse, were counted as a single source.

Eleven innovations were initiated by ward staff (including paramedics and community/social workers attached to the ward, but excluding the Senior Nurse for wards G, H and I). Of these, five

Table 8.2: Codings on the four dimensions of the seventeen observed innovations

		<u>Dimension</u>		
	Programmed - Non-programmed	Instrumental - Ultimate	Radicalness	Technical - Administrative
nursing ams	N-P (D)	U	Low (3)	A
w card- dexes	Pr	I	Medium (4)	T
a-pot ables	N-P (Pro)	U	Low (3)	T
iting list ssessments	N-P (D)	U	High (5)	T
ommunication olders	N-P (Pro)	U	Low (3)	A
rug rounds	Pr	I	Low (3)	T
urses going to t, 3 Homes	N-P (Pro)	U	High (5)	T
combined multi- disc. meetings	Pr	I	Low (3)	A
Objective patient assessment	N-P (Pro)	U	High (5)	T
Garden project	N-P (S)	U	Low (2)	T
Day Hospital ambulance service	N-P (D)	U	Low (3)	T
Phlebotomy service	N-P (D)	U	Low (3)	T
Multi-disc. document	N-P (Pro)	I	High (6)	A
Tea/coffee scheme	N-P (Pro)	U	Low (2)	A
Task allocation	N-P (Pro)	U	Medium (4)	T
Use of patients' surnames	N-P (Pro)	U	Low (3)	T
New drug record cards	N-P (D)	U	Medium (4)	T

Key: Pr = Programmed      I = Instrumental      T = Technical  
 N-P (S) = Non-programmed (slack)      U = Ultimate      A = Administrative  
 N-P (D) = Non-programmed (distress)  
 N-P (Pro) = Non-programmed (pro-active)

came from the Charge Nurse alone. Six innovations were initiated by people outside the ward; two by higher management and four by others (e.g. medical staff, art therapist).

2) Where the innovation was initiated: The site of initiation was considered to be the place where the first initiation action (see above) took place. Seven innovations were initiated on the ward (including at ward rounds) and the same number at multi-disciplinary team meetings (two at the original meetings for Ward G only and five at the combined meetings for all three psycho-geriatric wards). The two programmed innovations introduced by higher management (new card-indexes and drug round changes) were initiated elsewhere, as were the new drug record cards (initiated by one of the ward Consultants).

3) Sources of resistance to the innovation: Resistance to an innovation was defined as conscious attempts to block its adoption or implementation, or to avoid implementing and utilising the innovation as intended. It did not include statements of negative attitudes (unless made in such a way as to represent an attempt to prevent adoption or implementation; e.g. in discussion at a decision-making meeting), or failures to fully implement/utilise which did not stem from opposition to the innovation. Eight innovations were seen to meet with resistance; one - the combined multi-disciplinary meetings - from a member of the medical staff (a Consultant), five from ward staff and three from higher management (of which one also met resistance from ward staff).

4) Resource problems for innovations: Resource problems were considered to have occurred when an innovation's adoption or implementation was abandoned or delayed, or when full implementation and utilization was unable to occur, due to unavailability of necessary resources. Resources could be financial, material or human (i.e. staffing levels). Six innovations were affected by resource problems: two involved

human resources, one involved financial resources, two involved material resources and one involved both financial and material resources.

5) Communication problems for innovations: Communication problems were defined as major obstacles to the adoption or full implementation of an innovation as a result of either lack of information or mis-information. This was found in four of the seventeen cases.

6) Outcomes of the innovations: It would be inappropriate to judge innovation outcomes solely in terms of how far the process had progressed, as many of the innovations introduced within the observation period could not have been expected to have reached full implementation by the end of it. Instead, outcomes were evaluated in terms of the extent to which each innovation had progressed as intended, without enforced delays or modifications. Four broad outcome descriptions were used: innovations which were rejected or abandoned (four cases), innovations which while not discontinued had met major problems which threatened their survival (four cases), innovations which had met with minor problems causing delays, modifications or re-clarifications but which remained on course for full implementation and use (four cases), and innovations which had so far met no significant problems.

Classifications of the innovations by process element categories are given in appendix I. The positions of the innovations on these process elements were used to examine support for the seven predictions made about the typology and to examine the relationship between innovation initiation source and outcome.

#### 4.2.2. Testing the Seven Predictions

*Prediction 1: Distress and pro-active innovations will tend to be more radical than slack and programmed innovations.*

, combining high and medium radicalness categories, a Fisher exact test could be carried out to compare distress and pro-active innovations ( $n = 13$ ) with programmed and slack ( $n = 4$ ); this shows the difference to be non-significant ( $p = .28$ ). As there were so few programmed and slack innovations, it makes sense to look at the differences between the two pairs of types more closely. None of the programmed or slack innovations were of high radicalness, and if mean radicalness scores are compared, programmed/slack are lower than distress/pro-active (mean of 3.0 compared to 3.8). The non-significant difference is therefore in the direction of the prediction. Further examination shows that it is the pro-active innovations which have the highest proportion of medium and high radicalness examples - four out of eight - compared to two out of five distress innovations. Similarly, pro-active innovations have a mean radicalness score of 3.9, compared to 3.6 for distress innovations.

*Prediction 2: Distress innovations will tend not to be instrumental.*

None of the distress innovations was instrumental; using the binomial test, the probability of this outcome is .03; the prediction is therefore supported. It may be seen that most of the instrumental innovations - three out of four - were programmed (i.e. all the programmed innovations were instrumental).

*Prediction 3: Instrumental innovations will tend to be less radical than ultimate innovations.*

Using the Mann-Whitney test, no significant difference was found between instrumental and ultimate innovations on radicalness scores ( $U = 20.0$ ). Again, further examination of the distribution is required, given the low number of instrumental innovations (four out of seventeen cases). This shows that the difference is not in the direction predicted. The proportion of high and medium radicalness innovations is similar for instrumental and ultimate innovations (two out of four, compared to five out of thirteen) and the mean radicalness score for instrumental innovations (4.0) is higher than

for ultimate (3.5). Finally, the only innovation to score a maximum six on radicalness - the multi-disciplinary document - was instrumental, while both the innovations scoring the minimum of two (the garden project and the tea/coffee scheme) were ultimate.

*Prediction 4: Pro-active innovations will tend to be successfully adopted and/or implemented less frequently than programmed, slack and distress innovations.*

In terms of outcome success, a division was made between innovations which had no significant problems or only minor problems (n=9) and those which had major problems which threatened their continuation, or were rejected (n=8). Six out of eight pro-active innovations fell into the latter category (three rejected, three with major problems), compared to two out of the other nine innovations. Using the Fisher exact test, this was found to be significant at the .05 level. The prediction was thus supported.

*Prediction 5: The most radical innovations are likely to meet the most resistance.*

This prediction was generally not supported; of eight innovations which met resistance from any source, just one was highly radical. The only evidence in line with the prediction was that the one high radicalness innovation which met resistance was the most radical of all (i.e. the multi-disciplinary document) and that it met more powerful resistance from senior management than any other innovation.

*Prediction 6: There will be more technical than administrative innovations.*

The frequencies on dimension four clearly supported this prediction - twelve innovations were technical and five administrative - although the probability of this distribution, calculated using the binomial test, fell short of significance ( $p = .07$ ).

*Prediction 7: Administrative innovations will tend to trigger technical innovations, but not vice versa.*

To conclusively test this prediction a considerably longer research period would be needed; many of the innovations were introduced half way through the research period or later, and it is quite possible that three months or less was not long enough for the triggering of further innovations to have happened. Taking this limitation into consideration, there still remains some evidence to support the prediction. Two administrative innovations were seen to trigger technical innovations; that is to say, the administrative innovations stimulated the initiation and/or adoption of the technical ones: the combined multi-disciplinary team meeting triggered the garden project, the day hospital ambulance service, and the phlebotomy service, while the new nursing teams triggered the task allocation system. There were no cases of technical innovations triggering administrative. However, there were instances where administrative innovations triggered further administrative innovations; the introduction of the team communication folders following the implementation of the new team system, and the initiation of the multi-disciplinary document following the creation of the combined multi-disciplinary team meeting.

**Findings regarding initiation source:** The initiation sources of innovations appeared to influence their outcomes. The two innovations initiated by higher management were adopted and implemented without significant problems, as opposed to only one of eleven initiated by ward staff. Amongst those initiated by ward staff, none of the Charge Nurse's five was rejected, compared to three out of six from other staff. There was some evidence of an interaction between who an innovation was initiated by and where it was initiated. Thus six out of eleven ward staff initiations met no worse than minor problems in adoption and/or implementation; however, all four cases that were initiated at multi-disciplinary meetings were either rejected (one case) or - in three cases -met major problems. (This difference was significant at the .025 level; Fisher exact test). In contrast the

three innovations initiated by non-ward staff at these meetings all met either no significant problems or only minor problems. A similar phenomenon occurred for those innovations whose adoption was decided upon at ward meetings. All four initiated by the Charge Nurse were adopted; all three initiated by other people (two by a Nursing Assistant and one by a member of the medical staff) were rejected.

#### 4.2.3. Discussion

Of the seven specific predictions, two were fully supported (2 and 4), and in three cases (1, 6 and 7) the evidence, while not conclusive, was clearly in the direction predicted. Only two of the predictions (3 and 5) received no support. In addition, there was considerable evidence which concurred with the general prediction about initiation source influencing innovation outcome.

Looking at the unsupported predictions first, the question arises as to whether these findings challenge the descriptions of the innovation types involved as they exist in the literature. On prediction three - i.e. that instrumental innovations would be less radical than ultimate - the evidence was in the opposite direction; instrumental innovations were more radical (though not significantly so). However, when we examine the case of the most radical of the instrumental examples - the multi-disciplinary team document - it can be seen that this represents a rather different usage of this type of innovation than that described as typical by Zaltman et al (1973). For them, instrumental innovation is a strategy to reduce resistance to ultimate innovation; the implication is that management are the initiators and their subordinates the potential resistors. In the case of the multi-disciplinary team document, the situation is reversed; it was initiated by nursing, medical and para-medical staff with the aim of facilitating the introduction by senior management of the kind of changes the team wanted to see happen. As this could be seen as a challenge to the positional power of senior management, it is perhaps not surprising that it met resistance from them. It may be useful therefore in future research to distinguish between top-down instrumental innovations, aimed at reducing subordinate resistance to

later changes and unlikely to be highly radical themselves, and bottom-up instrumental innovations aimed at influencing senior management to make particular changes. Where an organization has a hierarchical structure with decision-making power concentrated at the top, this latter type of innovation would be likely to appear radical because it would be both uncommon and risky.

The lack of support for prediction five - that the most radical innovations would meet the most resistance - suggests that this common assumption may be too general. In fact the only highly radical innovation which was resisted was the multi-disciplinary team document, which as has been discussed, was resisted by senior management, not ward staff. The best explanation for the lack of resistance from ward staff to the other three highly radical innovations is that there was an atmosphere favourable towards change at the time the new Charge Nurse took over. It is notable that these innovations were concerned with improving patient assessments (waiting list assessments and objective patient assessment schedule) and/or expanding the nursing role (accompanying discharged patients to part three homes and waiting list assessments); both of these areas appeared on the questionnaires at the end of observation period one and were often discussed at ward meetings and elsewhere.

Predictions six and seven, concerning technical and administrative innovations, both derived from the work of Damanpour and Evan (1984) and earlier writers such as Daft (1978) and Kimberly and Evanisko (1981). Although neither was conclusively supported, the differences between types were very much as expected, and there did not appear to be any evidence from details of particular case histories to question the theoretical bases of the predictions. The only new issue raised in this study was the observation that administrative innovations were seen to trigger further administrative innovations as well as technical innovations. This is something which Damanpour and Evan (1984) did not examine and it raises questions for future investigation; in particular, do administrative innovations tend to trigger more technical than administrative innovations (or vice

versa), and do technical innovations trigger further technical innovations?

The support for predictions one, two and four - though non-significant in the case of prediction one - indicates that there are major differences between the four types on dimension one (programmed - non-programmed), although the low frequency of programmed and slack innovations means that the data inevitably tells us less about these than about distress and pro-active innovations. The distinctions between these latter two are especially of concern as pro-active is a new addition to the typology, and for its inclusion to be worthwhile it needs to be seen to differ in important ways from the other types. This was found to be the case; the histories present a picture of pro-active innovation as rather speculative with a consequent high risk of failure but with the possibility of leading the adopting unit (i.e. the ward) in a new direction if successful. In contrast, as would be expected from the definition, distress innovations were very much concerned with putting right an immediate problem.

The differences in innovation outcome according to initiation source suggest that innovations have a higher chance of being adopted and implemented if introduced by those in a position of authority. This does not mean that in the long run such innovations will be the most successful in terms of achieving their goals, or the most appropriate for the particular situation. To determine whether this was so, the development of innovations would have to be observed over much longer periods than was possible in the present study. When considering the effects of initiation source, it would be wrong to assume that it is position power alone that facilitated adoption and/or implementation. For instance, the success of the Charge Nurse's initiations at ward meetings compared to other staff's could be due, at least in part, to his having an accurate picture of what was needed and wanted on the ward as a result of both his position and his personal qualities.

A final note should be made concerning the low number of innovation examples observed to be affected by communications problems (i.e. only

four of the seventeen). This is somewhat surprising given the frequency with which communications issues were raised in the previous two studies. However, it certainly was not the case that the ward had no communications problems - in fact they were raised often, but not particularly in relation to innovation. One reason for this may have been that a conscious effort was made to learn from mistakes in the area. After both of the innovations initiated on the ward which suffered communications problems, action was taken by the Charge Nurse to prevent them happening again. For the tea-pot tables, where there was confusion concerning how patients were to be allocated to them, this involved stressing at the next ward meeting the need to read ward meeting minutes to ensure changes were implemented as intended. For the task allocation system, the problem was that the person proposing it could not attend the ward meeting, and those present were not sure what was intended. To prevent this happening again, people were encouraged to find an advocate for their suggestions if they could not attend a meeting themselves.

## 5. COMPARISON OF MODELS OF THE INNOVATION PROCESS

This section will compare how successfully the models of the innovation process proposed by Zaltman et al (1973) and Schroeder et al (1986) can be applied to examples of innovations observed over the course of the study. It focusses on two issues - the models' reliability across independent raters and their correspondence to the selected innovations. The innovation typology developed and applied in the previous section will be used as an aid to the interpretation of the findings.

### 5.1 Outline of the Two Models

Brief summaries of the two models are presented here; for full descriptions of them the reader is referred back to chapter two, section 2.4. Zaltman et al's model is quite typical of the usual

approach to describing the innovation process (cf. Rogers, 1983; Harvey and Mills, 1970). It is conceived of as occurring in a sequence of discrete steps, and two main stages are proposed; initiation and implementation, corresponding to actions and decisions before and after the point of adoption of the innovation. Each of these stages is divided into sub-stages. Initiation consists of the knowledge-awareness sub-stage, the formation of attitudes sub-stage and the decision sub-stage, while implementation consists of the initial and continued-sustained implementation sub-stages. Like most authors of stage-based models, Zaltman et al do not suggest that the sequence is inviolate; "although the sequence...is what might be expected, it is by no means presented as a necessary or invariant order of events" (p.70). The division into stages is made "for analytical purposes". However, to actually be useful in such a way the model must at least approximate to observed events in most cases.

Schroeder et al's (1986) argument is that in reality clear stages cannot be found, and that therefore stage-based models are a hindrance in trying to understand the process. In their place they propose a model based on the detailed longitudinal study of actual cases of innovation. It consists of a series of six observations; while some of these logically must precede others, they are not presented as a fixed sequence. The observations are as follows: (1) innovation is stimulated by shocks, either internal or external; (2) an initial idea tends to proliferate into several ideas; (3) unpredictable setbacks and surprises are inevitable; (4) as an innovation develops, old and new exist concurrently, and over time link together; (5) restructuring of the organisation occurs; (6) top management are involved in the process, though more so early on.

## 5.2 Method of Analysis

### 5.2.1. Selection of Innovation Examples

It was decided not to use all seventeen of the examples included in the previous analysis, largely because for many of them there was not

sufficient information available about the development of the process to make possible a fair comparison of the models. Instead, seven examples were selected for the analysis. All these were referred to in the research records on at least five separate occasions. They represent a cross-section of types of innovation - technical and administrative, internally generated and externally imposed, radical and routine, and so on. They also vary in the point in the process which they reached during the study; three were implemented, three initiated and accepted and one initiated but rejected. The full case-histories and supporting research notes are presented in appendix G, but for the convenience of the reader summary descriptions of the seven examples follow:

- 1) New nursing teams - all members of the nursing staff were divided into teams headed by staff nurses, and each team had a group of patients allocated to it as its special responsibility. Introduced by the Charge Nurse.
- 2) New card-indexes for patients records - contained standard-format sheets for patients' nursing records, including care plans. Introduced throughout Mental Illness units in the Area.
- 3) Tea-pot tables - two tables set aside at meal times where facilities were provided for more physically and mentally able patients to serve themselves with tea. Introduced by Charge Nurse.
- 4) Objective patient assessment schedule - the proposal was for a schedule comprising some kind of check-list which staff could use to assess patients' mental and physical abilities in a more systematic and objective way than was currently possible (i.e. relying on daily and weekly nursing records). The Charge Nurse gave two members of staff the responsibility of compiling a pilot schedule.

5) Garden Project - it was proposed by the Art Therapist from the hospital's psychiatric unit that a program of improvements for the Ward G garden be instituted, so patients could get more use out of it, chief amongst which was the installation of a greenhouse.

6) Multi-disciplinary document - a document presenting the views and recommendations regarding the future of care for the Elderly Mentally Ill in the Area of all the disciplines involved in the multi-disciplinary meetings for the three E.M.I. wards. Proposed by Ward G's Charge Nurse.

7) Use of patients surnames instead of first names - suggested by a Nursing Assistant on Ward G. Rejected after unanimous opposition at two successive ward meetings.

#### 5.2.2. Reliability of the Models, and Correspondence of the models to Observed Innovations: Coding Method

To test the two models, each was divided into its constituent parts and presented to two coders with no prior knowledge of the field. For the Schroeder et al (1986) model the six observations were used, each accompanied by a brief explanation using the authors' own words as far as possible. For the Zaltman et al (1973) model, the five sub-stages were used, plus a sixth observation repeating the model's assertion that the process had two main stages - "initiation" and "implementation". Again the summary descriptions largely used the authors' own words.

The coders were presented with the seven innovation case histories, plus all the relevant extracts from the research notes; they were then given the twelve observations/stages from the models in random order, and asked to note whether each of these was supported by the case histories of each innovation example. There were four possible responses; "yes", "maybe", "no" and "not applicable". Coders were asked to record any problems they had in deciding whether particular

observations/stages were applicable to particular innovation examples. (The coding materials given to coders are included in appendix J). I coded the examples myself in the same way, before the two coders made their ratings; comparisons were then carried out between the three sets of codings.

### 5.3 Reliability of the Two Models: Findings

Two complimentary sets of reliability analysis were carried out on the data. The first was the familiar Kappa coefficient technique which gives an overall measure of the amount of agreement above chance between the three raters. The second was an "agreement" score, calculated simply by summing the number of agreements between coders on each stage/observation of the two models for each of the selected innovation examples.

#### 5.3.1. Kappa Coefficients

In order to calculate Kappa coefficients for the two models it was necessary to convert the three-point (0 to 2) rating scale of support for each stage/observation into categories. As the number of '2' ("Yes") ratings exceeded the combined number of '1' ("Maybe") and '0' ("No") ratings on both models, the scores were divided into two groups along those lines; 'full agreement' (score = 2) and 'partial or no agreement' (score = 1 or 0). This makes conceptual sense as it represents a division between cases where raters were certain of a model's correspondence to the innovation example and cases where they were not certain. Ratings of "not applicable" constituted a third category. For each model there was a total of forty-two sets of ratings (six stages/observations across seven innovation examples). The Kappa coefficients calculated for agreement between the three raters were as follows:

Zaltman et al model; Kappa = .12 (approx. Z-score = 1.47)

Schroeder et al model; Kappa = .42 (approx. Z-score = 5.71)

Schroeder et al's model is therefore clearly more reliable than Zaltman et al's; the former's Kappa coefficient is slightly above the minimum acceptable level, while that for the latter model is well below it.

### 5.3.2. Agreement Scores

Agreement scores for model stages/observations across all innovation examples

For each model stage/observation on each innovation example, the possible agreement scores were: three - where all raters agreed with each other; two - where one pair of raters agreed; zero - where there were no agreements. Table 8.3 shows the agreement scores for each stage/observation of each model across all innovations. Note that as there are seven examples, the maximum score for any one stage/observation is twenty-one (the minimum is of course zero).

Table 8.3: Agreement scores for each stage/observation of the two models

Model Zaltman et al (1973)	Agreement score	Model Schroeder et al (1986)	Agreement score
Process in two main stages:	8	Process stimulated by shocks:	18
Knowledge-awareness sub-stage:	6	Ideas proliferate:	9
Formation of attitudes sub-stage:	13	Unpredictable setbacks and surprises:	17
Decision sub-stage:	13	Old and new exist concurrently:	2
Initial implementation sub-stage:	6	Restructuring of the organisation:	7
Continued-sustained implementation:	10	Top management involved:	13
TOTAL:	56		64

As would be expected, given the higher Kappa coefficients, the total agreement score is higher for the Schroeder et al model than for Zaltman et al's. This is not significant (Mann-Whitney  $U = 14$ ), although with only six scores from each model the difference would have to be very large to attain a .05 or higher significance level. Perhaps more notable than the difference in total scores is the difference in the range of scores; for Schroeder et al's model the highest score is eighteen and the lowest two (a range of sixteen) compared to a maximum score of thirteen and a minimum of six (a range of seven) for the Zaltman et al model.

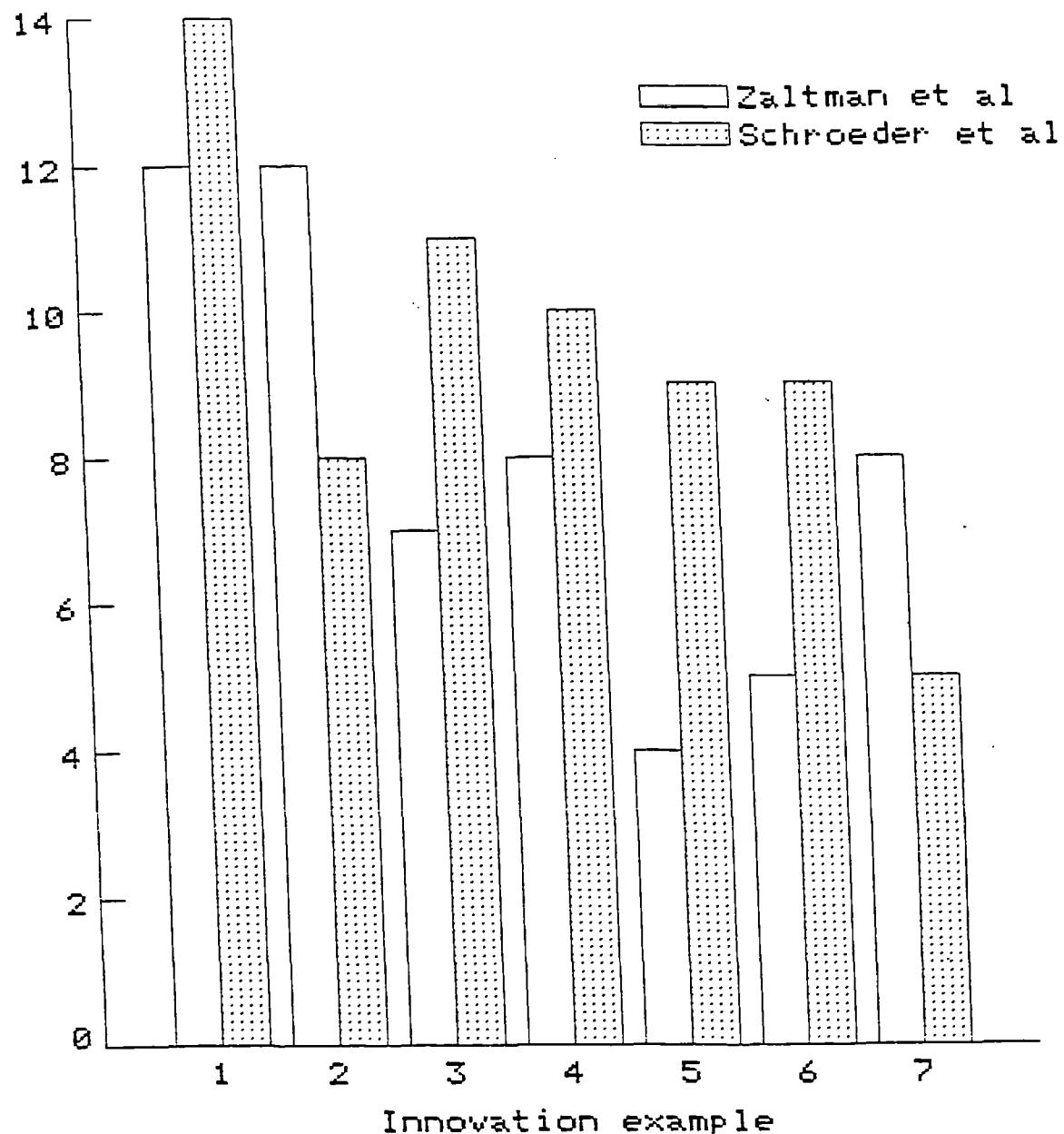
Looking at the models individually, for Zaltman et al's there is quite good agreement on the "formation of attitudes" and "decision" sub-stages of the initiation stage, but very poor agreement on the "knowledge-awareness" sub-stage. Agreement is lower for the implementation stage overall, and particularly the "initial implementation" sub-stage. There is also rather poor agreement on the observation that the process has two main stages. For Schroeder et al's model there is very good agreement on two observations; "process stimulated by shocks" and "unpredictable setbacks and surprises". The third observation with an agreement score above the mid-point of possible scores (i.e. 10.5) is "top management involved" in the innovation. At the other extreme, agreement on the observation that "old and new exist concurrently" is virtually non-existent - just two agreements out of a possible twenty-one. Agreement is also poor on the observation that there will be "restructuring of the organisation", and only slightly better on "ideas proliferate".

#### Agreement scores for the models on each innovation example

Figure 8.1 compares the agreement scores on each selected innovation for the two models. Again this difference is non-significant ( $U = 16.5$ ), but it may be seen that on five of the seven examples, the Schroeder et al model has more agreements than the Zaltman et al model. The exceptions are the "new card-index system" (example two) and "use of patients' surnames" (example seven). For both models the highest score is on the "new nursing teams" (though equalled by the

Figure 8.1: Agreement scores for both models on each innovation example

agreement score



Key:

Innovation 1 = New nursing teams      Innovation 5 = Garden project

Innovation 2 = New card-indexes      Innovation 6 = Multi-disciplinary  
document

Innovation 3 = Tea-pot tables      Innovation 7 = Use of patients'  
surnames

Innovation 4 = Objective patient  
assessments

new card-indexes for Zaltman et al); for Schroeder et al the lowest agreement score is on "use of patients' surnames" while for Zaltman et al it is the "garden project". The range of scores is almost the same for the two models - nine for Schroeder et al and eight for Zaltman et al. This is in marked contrast to the ranges within models across stages/observations as described in the previous section where that for Schroeder et al was very much the greater.

### 5.3.3. Conclusions

The evidence suggests that the Schroeder et al model is somewhat more reliable than the Zaltman et al model, though the difference in total number of agreements is not large enough to be significant. The most convincing explanation for this is that it is due to the nature of the components of the two models. Schroeder et al's is based on observations from 'real-world' innovation examples; they therefore tend to be quite precise, and the kind of information required from case histories to support or reject them is for at least half the observations relatively unambiguous - either unpredictable setbacks occurred or they did not; either top management were involved or they were not. In contrast, Zaltman et al's stages are broader and less sharply defined; mostly, it is not immediately clear what concrete observations need to be present in the case histories for the existence of stages such as "knowledge-awareness" and "initial implementation" to be confirmed. The differences between agreement scores for stages/observations within the models are in line with this interpretation. For instance, the one Schroeder et al observation with a very low score was "old and new exist concurrently"; the ambiguity of this compared to the other observations has been pointed out in chapter two. Similarly, the two Zaltman et al sub-stages which received the best support - "formation of attitudes" and "decision" - both specify the behaviours involved much more clearly than other stages.

For the Zaltman et al model, perhaps the most worrying aspect of these findings is the relatively low level of agreement on the observation that the process is in two main stages of initiation and

implementation (eight agreements out of a possible twenty-one). The existence of a division between the stages is a central assumption of the authors' theoretical predictions concerning the "innovation dilemma" (see chapters two and three). If independent raters have difficulty agreeing on whether it exists or not, it may be the case that the point at which the boundary between stages occurs is very much 'in the eye of the beholder'. There is, however, some comfort for Zaltman et al's model in the fact that agreement on this observation appeared to be related to how complete the case histories were. The two innovations for which there was full agreement were those for which the fullest descriptions of the process existed (the new nursing teams and the tea-pot tables) as both had gone from initiation to full implementation in the course of the study.

## 5.4 Correspondence of the Models to the Innovation Examples: Findings

### 5.4.1. Calculation of Correspondence Scores

Codings were scored using the following system: "yes" = 2, "maybe" = 1, "no" = 0. As the response "not applicable" was intended to represent cases where insufficient information was available to decide or where the innovation had not reached a particular point in its development, it was decided to discount stages/observations of particular innovations where at least two such codings were made. "Correspondence" scores were calculated for each stage/observation by summing the three sets of scores across all seven innovations, barring any discounted because the model was "not applicable", and dividing by the number of valid examples.

### 5.4.2. Findings

#### Support for the stages/observations of the models from all innovation examples

Correspondence scores indicating support from all seven innovation examples combined for each stage/observation of the two models are shown in table 8.4. Overall there is better support for the Zaltman et

al model than for Schroeder et al's, though as was the case for agreement scores this is not significant ( $U = 10.5$ ). Within the Zaltman et al model, all three initiation sub-stages have higher correspondence scores than both the implementation sub-stages, and support for the "initial implementation" sub-stage is particularly low (2.3). Importantly, the observation that the process is in two main stages ("initiation" and "implementation") is only moderately well supported (3.5). The best-supported stage is "formation of attitudes", with a correspondence score of 5.3. (Note a maximum score of six would represent complete agreement by all three coders that a stage was supported by all valid innovation examples). In the Schroeder et al model, the observation that there will be "unpredictable setbacks and surprises" received very strong report (5.2), and support was also strong for the first observation; "the process is stimulated by shocks". The weakest support is for the observations that "old and new exist concurrently" (2.2) and "top management are involved...[especially] early on" (2.3).

Table 8.4: Support for stages/observations of the two models across all innovation examples

<u>Model</u>		<u>Model</u>	
Zaltman et al (1973)	Correspondence score	Schroeder et al (1986)	Correspondence score
Process in two main stages:	3.5	Process stimulated by shocks:	4.2
Knowledge-awareness sub-stage:	4.3	Ideas proliferate:	2.7
Formation of attitudes sub-stage:	5.3	Unpredictable setbacks and surprises:	5.2
Decision sub-stage:	4.7	Old and new exist concurrently:	2.2
Initial implementation sub-stage:	2.3	Restructuring of the organisation:	3.0
Continued-sustained implementation:	3.8	Top management involved:	2.3
TOTAL:	23.9		19.6

### **Support for the models as a whole from each innovation example**

Before a full interpretation of the findings can be attempted is it necessary to look at how the models fared as a whole on each innovation example individually. Figure 8.2 presents such a comparison.

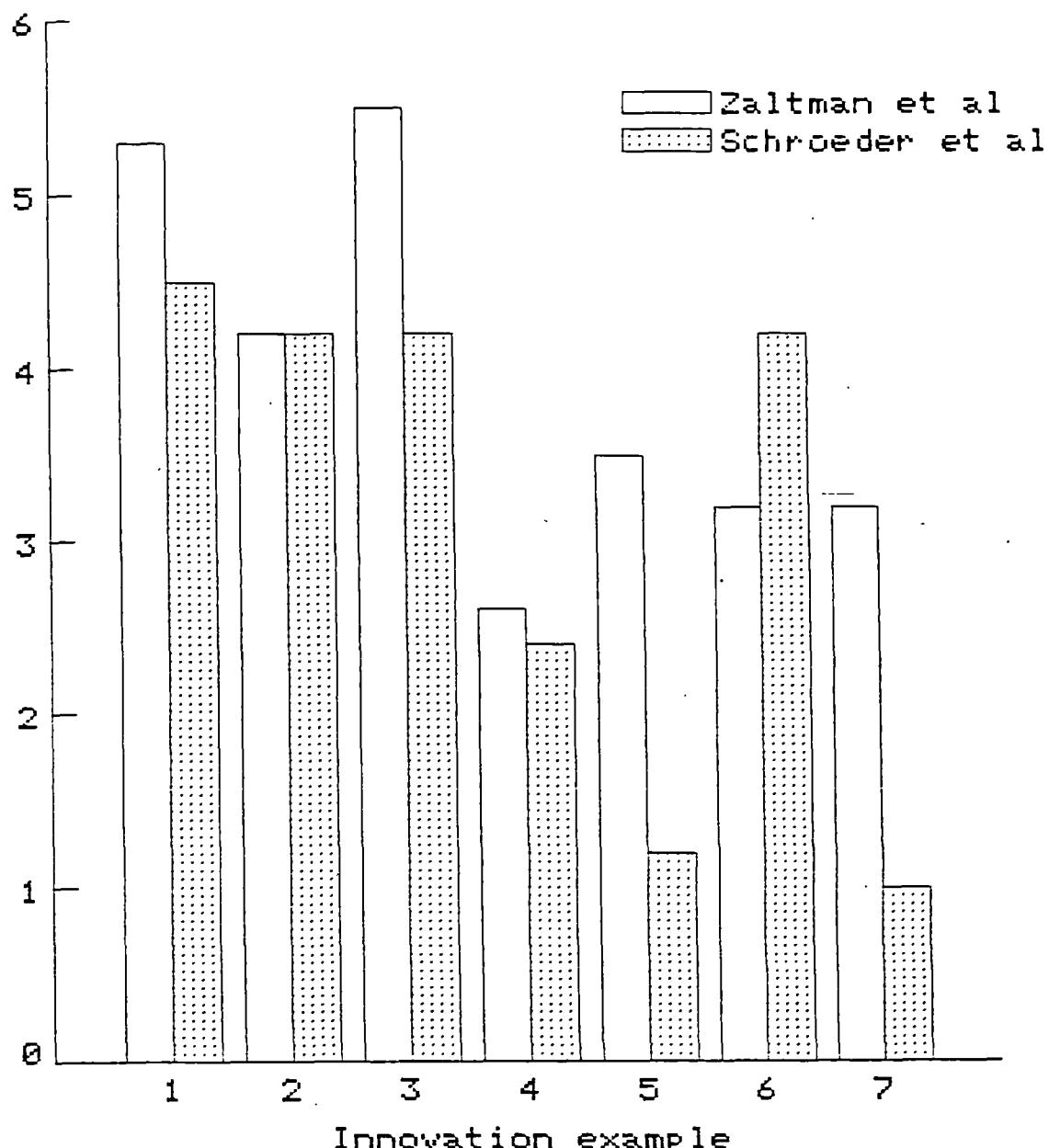
The overall pattern is that the correspondence scores for the Zaltman et al model are slightly higher than those for Schroeder et al's model (non-significant;  $U = 14$ ). On two innovations - the garden project and the use of patients' surnames - the scores for the Zaltman et al model are considerably higher; more than two points in both cases. The only innovation where the score is higher for the Schroeder et al model is the multi-disciplinary document. Overall the scores are higher for the first three innovations - the three examples from the list of "implemented changes" - than for the rest; for the Zaltman et al model, the mean correspondence scores for the first three examples was 5.0 and for the others was 3.1, while for Schroeder et al's model the score for the first three was 4.3 compared to 2.2 for the other four.

#### **5.4.3. Sequential Accuracy of the Zaltman et al Model**

It has been seen that overall the Zaltman et al model corresponds more closely to the observed innovations than the Schroeder et al model, when each stage or observation is judged individually. However, the contention of Zaltman et al's model is not just that certain patterns of events occur, but that they generally occur in a particular order. It is therefore necessary to test this aspect of the model - which I will call its "sequential accuracy" - as well as support for individual sub-stages. The first such test was carried out at the end of the coding sessions, whereby the coders were asked to place the five sub-stages from the model in the order which they felt best fitted the picture of the innovation process given by the seven case history examples as a whole. One coder ordered them exactly as described in the model, but the other placed the "formation of attitudes" sub-stage at the end of the process (i.e. after implementation) instead of in the middle of the initiation sub-stages.

**Figure 8.2: Correspondence scores for both models on each innovation example**

**Correspondence score**



**Key:**

Innovation 1 = New nursing teams      Innovation 5 = Garden project

Innovation 2 = New card-indexes

Innovation 6 = Multi-disciplinary  
document

Innovation 3 = Tea-pot tables

Innovation 7 = Use of patients'  
surnames

Innovation 4 = Objective patient  
assessments

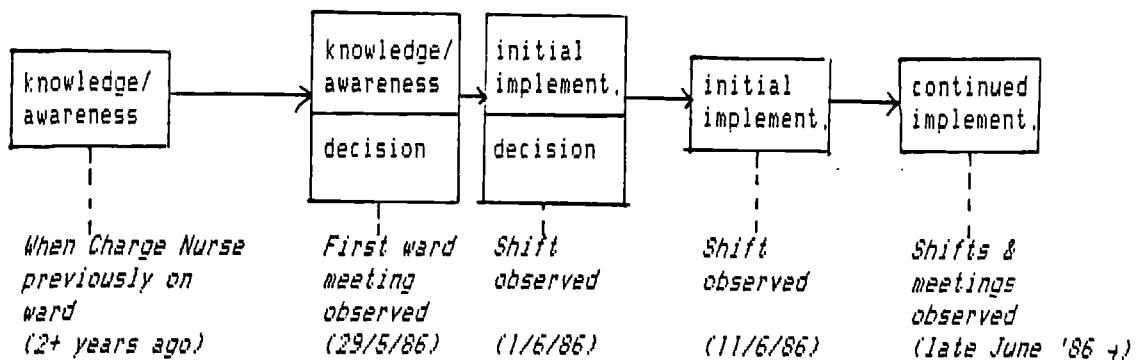
To investigate the model's sequential accuracy more thoroughly a further analysis was carried out. The two case histories used for this were the new nursing teams and the tea-pot tables; these were chosen because they were the only examples where at least two of the three raters found clear support for each of the five sub-stages of Zaltman et al's model (i.e. correspondence score  $\geq 4$ ). To test for sequential accuracy a third coder who had no prior knowledge of the material was presented with the two case histories and supporting research notes, the authors' descriptions of their five sub-stages (in random order) and background material about the ward and the study (all as used in the previous coding). For each case history, she was asked to indicate which sections supported each sub-stage. (A section could be of any length - from part of a sentence to a paragraph or more). She was permitted, where she felt it to be appropriate, to use one section as support for more than one sub-stage. (A copy of the full task instructions is included in appendix K). From this coding, flow diagrams were produced, illustrating the order of sub-stages on each innovation example as used by the coder, and the points in the process from which support for each sub-stage was derived (figures 8.3).

In both cases the coder identified the start of the process as knowledge-awareness, and the end as initial and then continued-sustained implementation. This is as stated in the model; indeed, given the way in which Zaltman et al describe these sub-stages any other positioning is almost impossible. Coincidentally, both of the examples were re-introductions of care or administrative practices which had existed in some form when the Charge Nurse had worked on the ward previously (i.e. two or more years ago). They may be compared to the Principal at Home B's re-initiation of the key worker system (see chapter five). This explains why the coder found evidence of a knowledge-awareness sub-stage at more than one point in both innovations.

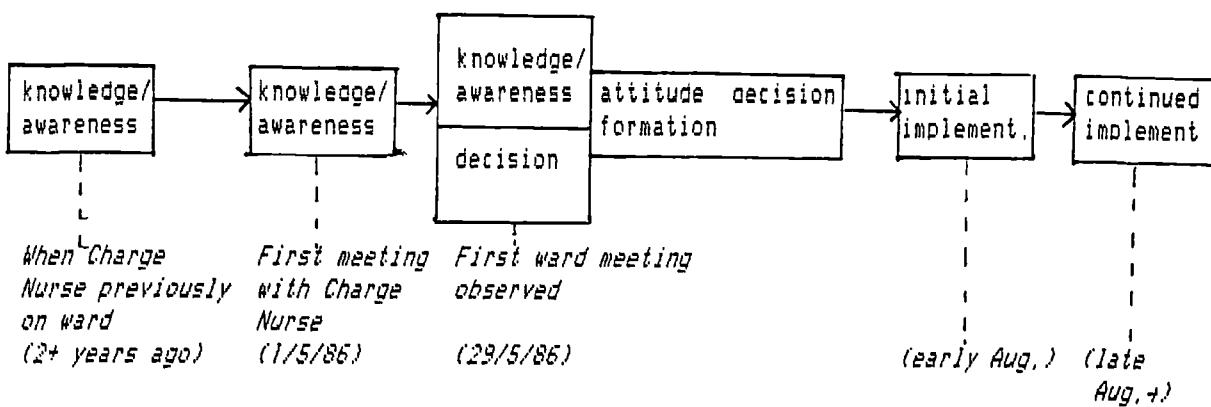
Between the start and the conclusion of the process, the ordering of sub-stages is not entirely as predicted by the model. There are two notable features of the middle part of the process in the cases

Figure 8.3: Sequence of Zaltman et al model sub-stages as determined by an independent coder

(i) TEA-POT TABLES



(ii) NEW NURSING TEAMS



examined; firstly, it covers a short period of time, and secondly, there is considerable overlap of sub-stages. For the tea-pot tables, the process moves from knowledge-awareness to initial implementation in the course of three days, while for the new nursing teams it proceeds from the end of knowledge-awareness through both decision and formation of attitudes sub-stages in the course of one ward meeting - though there is then a delay of about ten weeks before initial implementation. Within these brief periods of time, there does not appear to have been a steady progression from knowledge-awareness through formation of attitudes and decision to eventual initial implementation in either of the innovation examples. In particular, the decision sub-stage is split in two in both examples. The coder commented that the decision sub-stage in fact described two sets of activities - evaluating the proposal, and deciding whether to adopt it - which were not necessarily simultaneous; thus, in the new nursing teams case, evaluation preceded formation of attitudes which was then followed by the decision to adopt. In one case, the tea-pot tables, the coder did not find any evidence for the formation of attitudes sub-stage, in contrast to the previous coders (including myself) who had deemed the lack of resistance to the proposal from staff to be indicative of positive attitudes.

The implications of the findings regarding the sequence of sub-stages in Zaltman et al's model are discussed in the next section.

#### 5.4.4. Discussion

Again the different types of component used in the two models offers an explanation of the findings. As the stages in Zaltman et al's model are more broadly defined than the Schroeder et al observations, there is a greater range of possible supporting evidence for the former. The very low scores on certain components of both models must raise doubts as to their validity here; these are the "initial implementation substage" of Zaltman et al's model, and the observations that "old and new exist concurrently" and "top management are involved" from Schroeder et al.

There is some indication that the difference between the models in correspondence to the innovations is in part related to innovation radicalness. Using radicalness scores from table 8.2, spearman's rank order correlation coefficients were calculated between these and correspondence scores on each model. While neither was significant (with only seven cases, that would require a correlation of .89 or higher), the correlation for Zaltman et al's model was quite large, and negative ( $\rho = -.59$ ) while that for Schroeder et al's model was smaller, and positive ( $\rho = .32$ ). It may be noted that the case histories from which Schroeder et al's observations were drawn were all of large-scale, quite radical innovations, which are perhaps not applicable to smaller-scale, more routine innovations such as the garden project or the use of patients' surnames instead of christian names. The negative correlation between the correspondence scores on Zaltman et al's model and innovation radicalness may be due to the fact that highly radical innovations proceed in a less orderly step-by-step manner than less radical ones; the two highly radical innovations included in the present analysis (multi-disciplinary document and objective patient assessment schedule) both met serious problems in implementation, resulting in delays, redefinitions and so on.

The analysis of the sequential accuracy of Zaltman et al's five sub-stages raised some doubts as to how applicable the stated order is to real cases of the innovation process. Overlap between sub-stages in the middle part of the process suggests that, at least in the two examples examined, activities associated with several sub-stages are all occurring at much the same time. This kind of picture of the process is more in line with the general approach of Schroeder et al than Zaltman et al, though as we have seen some of the specific observations predicted by the Schroeder et al model are unsupported by most of the observed innovation examples (see table 8.4). A detailed discussion of how research into the sequence of events in the innovation process should proceed in future, drawing on findings from all the studies in this thesis, is included in chapter nine.

Finally, it should be noted that although the correspondence scores indicate whether the process stages or events described in the two models can be found in real examples of innovation, they do not tell us whether there are other important parts of the process in these cases which are not covered by the models. For example, on the Zaltman et al (1973) model, the new nursing teams was the best supported case history - there is some evidence for all five of the model's sub-stages - yet a large portion of its history does not correspond to any of the sub-stages; namely, the period between the decision to adopt the innovation (at the end of May) and its initial implementation (early August). During this time the innovation was not in a state of suspended animation, rather what happened was that a series of modifications to the plans were made by the Charge Nurse, some as a result of his having thought further on how best to implement the new teams and some because of the need to accommodate to other changes and innovations (the appointment of an extra Staff Nurse and the introduction of the new card-indexes for patients' records). This 'stage' of the process was clearly crucial to its subsequent outcome, yet there is no equivalent to it in Zaltman et al's model. Similar instances could be found in many of the other innovation case histories. For Schroeder et al's model (1986), because it proposes largely non-sequential 'observations' instead of developmental stages, the potential for there to be process elements not covered by it is even greater. In the present study, to take one example, there would have been considerably greater support for an observation stating that "*When two or more innovations are under way in an organization at the same time they will influence each other's development*" than the observation included in the model that "*An initial idea tends to proliferate into several ideas during the innovation process.*" For both models then, it remains a question for future research as to whether the stages or observations they propose are inclusive enough to cover all the major elements commonly found in the innovation process.

## CHAPTER NINE: DISCUSSION

### 1. INTRODUCTION

The aims of this chapter are threefold. First; to present a resumé of the principal findings from the research program described in this thesis. Second; in the light of these findings, to re-address the conceptual and definitional issues covered in chapter one. Third; to move forward speculatively from the theoretical and empirical work in this thesis to a framework for the development of a general model of the innovation process. The present chapter can therefore be seen as both an integration of the conclusions reached in earlier chapters and a guide to future research directions.

### 2. RESUME OF THE PRINCIPAL FINDINGS FROM THE RESEARCH PROGRAM

Findings from the three major field studies are summarised here; the first and second Homes for the Elderly studies, and the Psycho-geriatric ward study. In addition, brief mention will be made of some of the findings from the preliminary study of experiences of innovation. The discussion will be ordered under three headings, each focussing on a particular research area: influences on the innovation process, attitudes to innovations, and the sequence of events in the innovation process. All of these include material from more than one study.

#### 2.1 Attitudes to Innovations

The main empirical work on attitudes to innovations was the quantitative part of the first Homes for the Elderly study (chapter six), and its follow-up in the second Homes for the Elderly study (chapter seven). This was chiefly concerned with involvement in the innovation and other work-related attitudinal and dispositional

variables, examining their relative importance in predicting attitudes to specific innovations. Other areas of secondary interest were the relationship between overall acceptance or rejection of innovations and evaluations of their effects (chapter six), and differences between staff groups in attitudes towards innovations (chapters six and seven). There were also some qualitative data on attitudes to innovation in the "experiences of innovation" study (chapter four) as well as the first Homes for the Elderly study, looking especially at possible biases in attributions of positive and negative attitudes. The findings in each of these areas, and conclusions drawn from them, will be summarised below, concentrating on the analyses concerning involvement in the innovation. A final section will briefly discuss requirements of future research in the area of attitudes to innovations.

#### 2.1.1. The Relative Importance of Involvement in the Innovation

The dependent variable in chapters six and seven was a three-item measure of evaluations of the innovation. In the first Homes for the Elderly study, the main independent variable on the verbally-administered questionnaire was involvement in the innovation. The relationship between this and the dependent variable was compared with those of a range of other attitudinal, dispositional and biographical variables which could be expected to predict evaluations of the innovation. Involvement in the innovation was found to have the highest significant zero-order correlation with evaluations of the innovation, of all the independent variables. Partial correlations also showed that it was the best independent predictor of evaluations of the innovation.

In following-up these findings, the second Homes for the Elderly study differed from the first in two important ways. It was longitudinal, rather than retrospective, making judgements about the direction of causality possible. It included a measure of involvement in changes generally as well as involvement in the innovation. Additionally, it focussed on a single innovation introduced into both the Homes. A

smaller set of other independent variables than in the first Homes for the Elderly study was used, selected either because the preceding study's findings suggested the need for their inclusion or because they were considered particularly appropriate to the innovation being examined. Data were collected using questionnaires before the implementation of the innovation, at the point of initial implementation, and several months after initial implementation. However, a very poor response rate at time three meant that only data from the first two questionnaires could be utilised.

There were no significant relationships found between the dependent variable (evaluations of the innovation) and any of the time one independent variables. At time two, involvement in changes generally was significantly and positively related to evaluations of the innovation. The relationship between the dependent variable and involvement in the innovation was also positive, and only marginally short of significance ( $p=.051$ ). Partial correlation showed that involvement in changes generally was significantly related to evaluations of the innovation independent of its correlation with involvement in the innovation, but not vice versa.

Overall, the findings from the two Homes for the Elderly studies suggest that the extent to which staff felt involved in all the changes happening in the Homes influenced their evaluations of the specific innovations studied. There are three likely reasons for this relationship. Involvement in changes may make staff better informed about the purpose of a specific innovation and how it fits in with other innovations, reducing resistance due to suspicion (cf. Bedeian, 1980). It may give staff a feeling of having a stake in changes generally. It may imply the presence of other factors, such as the quality of management - staff communication. These explanations are of course not mutually exclusive.

### 2.1.2. The Relationship Between Overall Acceptance of Innovations and Evaluations of Their Effects

In the first Homes for the Elderly study, a single item was used to measure whether and to what extent respondents accepted or rejected the innovations discussed in the case history interviews. Correlations were calculated between this measure and the three items comprising the evaluations of the innovation measure; i.e. evaluations of the innovations effects on your job, the residents, and the running of the Home. For continuing innovations, only the correlation with effects on residents was significant, though it should be noted that there was very little variance in scores on the acceptance measure. For discontinued innovations, significant correlations were found with effects on respondents' jobs and on the running of the Home, but not with effects on residents.

The difference between the two sets of innovations in these relationships was probably due to the nature of the innovations involved rather than to their outcomes (i.e. whether continuing or discontinued). As has been noted in chapter five, both the continuing innovations - flexi-respite care and the short stay wing - were directly concerned with the care of residents, while the discontinued innovations - the rotating rota and the key worker system - were more concerned with the responsibilities and organization of staff. It therefore makes sense that acceptance of the innovations was related to effects on residents in the former cases, and on effects on jobs and the running of the Homes in the latter cases.

### 2.1.3. Differences Between Staff Groups in Attitudes Towards the Innovations

There were no significant differences between Care and Domestic staff in the first Homes for the Elderly study on the measure of evaluations of the innovation, either for continuing or discontinued innovations. Similarly, Care and Domestic staff's scores on the this attitude variable were compared in the second Homes for the Elderly study. The difference was very small, and not significant. From the interview transcript data of the first study, the relative frequencies of

references to positive and negative influences were compared for managerial and non-managerial staff. No significant differences were found. The findings indicate a considerable degree of consensus in attitudes. Where large differences in evaluations did occur, particularly regarding discontinued innovations in the first study, they were within rather than between staff groups.

#### 2.1.4. Attributions of Positive and Negative Attitudes

In the study of experiences of innovation (chapter four) it was found that participants own reactions to innovations were mostly reported as positive, while others' reactions were mostly reported as negative. Furthermore, all the references to participants' own negative reactions referred to attitudes towards specific innovations, rather than towards innovation in general; for others', equal numbers of specific and general negative reactions were mentioned.

Statements about attitudes towards innovations were examined in the first Homes for the Elderly study. It was found that when reporting their own attitudes towards the continuing innovations, participants described proportionately more positive attitudes than they did when reporting others' attitudes. There was no difference between own and others' innovations for discontinued innovations.

These findings suggest that innovation is seen as socially desirable, and that people will tend to under-emphasize their own negative reactions, relative to those of others - except in cases where the innovation has already "failed" (e.g. the discontinued innovation examples in the first Homes for the Elderly study).

#### 2.1.5. Attitudes to Innovations: Future Directions for Research

The findings regarding the involvement measures support the frequent recommendations in the literature for participative management styles (e.g. Peters and Waterman, 1982; Nystrom, 1979) when introducing innovations. Perhaps more importantly, they imply that it is not sufficient simply to involve staff in a single innovation and expect this to have a positive effect on their attitudes to it; they need to

feel involved in the whole range of changes happening in their organization.

To build on these findings, the first step must be to examine the generalisability of these findings; do the relationships uncovered here appear in different types of organizations, and with different types of innovations? If the relationships were found to vary for different organization types, this could provide insights into how the organizational context influences attitudes to innovations. More sophisticated measures need to be developed, and techniques such as the repertory grid might prove useful for identifying the aspects of innovations which are salient to individuals in the formation of evaluative attitudes.

As well as looking further at the relationship between involvement in changes and attitudes towards innovation, future studies should seek to examine the role played by such attitudes in the progress and outcomes of the innovation process. (In the first Homes for the Elderly study, Home staff were the most frequently referred to source of influence on innovations). Researchers need to be aware of the likelihood of attributional bias in self-reports, which may lead to participants over-emphasising their own positive attitudes. However, care must also be taken not to focus exclusively on resistance to innovation (cf. "individual blame bias"; Rogers, 1983).

## 2.2 Influences on the Innovation Process

The major investigation of influences on the innovation process was in chapter five, involving the interview transcript data from the first Homes for the Elderly study. The analyses explored differences in reported sources and directions of influence between Homes, innovation examples (continuing vs. discontinued), innovation process phases and staff groups. Influences on innovation were also examined in the "experiences of innovation" study, where the relative frequencies of external and internal facilitators and inhibitors were compared.

Findings from both these studies are summarised below, followed by a brief discussion of their implications for future research.

### 2.2.1. Findings from the First Homes for the Elderly Study

Statements relating to influences on the innovation process were identified on the interview transcripts; these were referred to as "units of relevant meaning", or "URMs", from Hycner (1985). All the statements were coded according to which innovation process phase they related to, what the source of the influence referred to was, and what the direction of the influence was. Scores for all participants on these coding dimension were obtained, by calculating the proportion of URM<sub>s</sub> in each category for each coding dimension. A series of exploratory comparisons was then carried out, as described below.

#### Comparisons between Homes and between innovation examples

All the significant differences between the Homes were on the influence source dimension. For continuing innovations, the only significant difference was on the category Home staff. For discontinued innovations, there were significant differences on clients and Home staff, and on the source not determinable category.

Comparisons of participants' scores between continuing and discontinued innovations were carried out for all three dimensions. Significant differences were found between innovation examples on two influence source categories - clients and Home staff - and on two influence direction categories - positive and negative.

Overall, there were more and greater differences between continuing and discontinued innovation examples than between Homes, suggesting that the scores were not principally determined by unique characteristics of each Home. It was therefore possible to carry out analyses for the two Homes combined, on both sets of innovations. The exception was for the influence source category on discontinued innovations; analyses of combined scores were not carried out here,

because of significant differences between the Homes on three out of five categories.

#### Comparisons between innovation process phases

Two broad phases of the innovation process were defined, based on common features of existing models; initiation and implementation-absorption. Scores on the influence source dimension for statements relating to each phase were compared. Only data from continuing innovation examples were used, for reasons given in the previous section. Clients were mentioned significantly more often at the implementation-absorption phase, while Home staff and Home management were mentioned significantly more often at the initiation phase. The pattern indicated a shift from the influence of those involved in planning the innovations at initiation, to those they were designed to benefit at implementation-absorption.

Influence direction scores for each phase were compared for both continuing and discontinued innovations. Both sets of innovations showed a clear preponderance of positive over negative influences at the initiation phase, with significant declines in positive scores and increases in negative scores at the implementation-absorption phase. In part, the high scores for negative influences at the implementation-absorption phase may have reflected the salience to interviewees of current or recent difficulties with the innovations. However, the size and consistency of the findings suggests that in these cases, people generally became aware of problems for the innovation process after implementation had begun.

#### Comparisons Between Staff Groups

Staff were either divided into managerial and non-managerial groups, by post, as was deemed appropriate for each analysis on the basis of initial examination of the data. On the innovation process phase dimension, managerial staff were found to refer more often to initiation than non-managerial staff, and vice versa for the implementation-absorption phase (continuing innovations only). This

reflects the Home managements' greater concern with and involvement in the planning stages of the innovations.

There were no significant differences between staff groups (divided by post) on the influence source dimension (except on the source not determinable category). This implies the existence of shared perceptions of factors influencing the innovations between staff groups; a conclusion in accordance with descriptions of the atmosphere and recent history of both Homes.

On the influence direction dimension, for continuing innovations, a significant correlation was found between positive influences and staff status rank (i.e. with Principals highest and Domestics lowest); the higher the status rank, the more positive influences were reported. The opposite relationship was not found for negative influences, indicating that the higher status groups (Principals and Senior staff) were not unaware of negative influences on the innovation process. These findings suggests an attributional bias, such that the greater a group's stake in an innovation, the more they stress positive influences on the process.

.2.2. Findings from the "Experiences of Innovation" Study  
More than half of the statements specifically concerning innovation in this study referred to influences on the process; either facilitators (56%) or inhibitors (44%). Following Amabile (1983, 1984), influencing factors were identified as either external ("extrinsic") or internal ("intrinsic"). Amongst the internal factors, a very large preponderance of facilitators over inhibitors was found, as was the case in Amabile's (1984) study of R&D personnel. However, almost as many external facilitators as inhibitors were found, in contrast to the predictions of Amabile's theory. The division of influences into internal and external factors is probably too simplistic, especially for the examination of innovation in field settings.

### 2.2.3. Directions for Future Research

Two general recommendations for the development of research into influences on the innovation process can be made from the findings of the first Homes for the Elderly study. Firstly, there is a need for longitudinal studies, able to examine when and how influences change as the process unfolds. Secondly, data relating to influences should be collected directly, ideally using observational methods, as well as indirectly, from participants spoken or written reports. This would provide the researcher with a base-line from which to view individual or group differences in accounts.

Turning to more specific recommendations, the two main findings regarding differences between innovation phases should be tested in other settings. These were: for influence source, the apparent shift in emphasis from those involved in planning innovations (initiation phase) to those the innovations were aimed at (implementation-absorption phase); for influence direction, the higher scores for positive influences at initiation and negative at implementation-absorption. Researchers should be sensitive to developments in the study of the sequence of events in the innovation process, as at this stage it is unclear whether the division of the process into initiation and implementation-absorption phases is the most appropriate.

Regarding differences between staff groups, future research should where possible use larger sample sizes (i.e. either larger, or more organizations), to avoid the problem of very small groups which occurred here. Important issues to address include whether a lack of shared outlook, or "vision" (West, 1989) leads to inter-group differences in perceptions of influences, and if so, whether this has a deleterious effect on innovation outcomes. Also, the possibility that positive influences become more salient to those with the highest stake in an innovation should be investigated.

The "experiences of innovation" study's findings suggest that the comparison of internal/intrinsic and external/extrinsic factors is not

a profitable way forward for the field. This division may be appropriate to the study of creativity, but it has little to offer towards increasing our understanding of innovation.

## 2.3 The Sequence of Events in the Innovation Process

Two main questions about the sequence of events in the innovation process were addressed in this thesis. The first, covered in chapter five (section 3) and chapter eight (section 5), was whether it is legitimate to represent the innovation as a series of discrete steps, stages or phases, as is the case in most conventional models of it. The second (chapter eight, section 4) was whether key aspects of the process differed for different types of innovations. There were occasional references to these, or similar, issues in the other studies (chapter four and chapter seven), which will be included in the discussion where appropriate.

### 2.3.1. Evidence for the Existence of Discrete Stages

In the first Homes for the Elderly study, three process phases were defined, representing common features of existing process models; initiation, implementation, and absorption. The case histories of the four innovations were examined to see whether events and actions corresponding to these phases occurred in the straightforward linear sequence stated, with definable boundaries between phases. In three of the four cases (i.e. all except the short stay wing at Home B), the simple three-phase sequence was not found, and in one case (the key worker system) the process deviated very markedly from the sequence. It was fairly easy to identify boundaries between initiation and implementation phases, apart from in the case of flexi-respite care (Home A). In contrast, it was found to be impossible to distinguish a precise boundary between implementation and absorption for any of the cases.

Examination of the process for the innovation in the second Homes for the Elderly study repeated some of the findings from the first study.

In both the Homes, there were two phases of initiation and of implementation, the second initiation phase occurring simultaneously with the first implementation phase. This is another alternative to the simple linear sequence usually presented.

These findings were not conclusive, but they raised doubts about whether discrete process stages of innovation can be identified. What was required was for innovations to be studied *over time, as they occurred*, allowing the comparison of a conventional model with one which does not propose discrete developmental stages. This was carried out in the psycho-geriatric ward study, described in chapter eight.

The major investigation of issues related to the sequence of events in the process was in the psycho-geriatric ward study, using predominantly a participant observation methodology. Seventeen innovations introduced during the research period were observed, and case histories written for all of them. Using data from seven of these, two models of the innovation process were tested; one a conventional stage-based model (Zaltman et al, 1973), and the other representing an alternative approach, not proposing discrete stages (Schroeder et al, 1986). Comparisons were carried out of the models' reliability and of how accurately they corresponded to the innovation process as observed in these cases. Generally, the Schroeder et al model appeared to be more reliable (in terms of inter-rater agreements), while the Zaltman et al model corresponded more closely to the observed sequence of events. The nature of the component elements of the models appeared crucial here. Schroeder et al's presents quite precise observations; the choice as to whether a particular observation was supported in a particular case history was therefore fairly unambiguous. Zaltman et al's model presents rather broad and loosely defined stages, which appears to have led to more disagreements between raters than for the Schroeder et al model. However, the less specific descriptions of the components in Zaltman et al's model meant that a wider range of events or actions could be seen as at least partially supporting the existence of a stage or

observation. This explains the higher correspondence scores for the Zaltman et al model.

An additional analysis was carried out on the Zaltman et al model, in order to determine whether the stages it proposes occurred in the specified order. Using the two most complete case histories, an independent rater was asked to identify the sequence of stages. In both of them, considerable overlap was found between stages, particularly in the middle part of the process, though the actual sequence of stages did not deviate greatly from that proposed. Only in one case was the proposed order violated, with regard to one stage. These findings reveal problems with Zaltman et al's model, but do not constitute an outright rejection of it. Schroeder et al's approach has the advantage over it in terms of precision, and hence reliability, but its generalisability is doubtful because it is based on observations from a limited number of innovation cases.

### 2.3.2. Variations in the Process for Different Innovation Types

As well as the comparison of innovation process models described above, the observational data from the psycho-geriatric ward study was used to examine whether there were systematic differences between innovation types in how the process developed. The typology used was derived from one proposed by Zaltman et al (1973), including the dimensions programmed - non-programmed, instrumental - ultimate, and radicalness. An extra category of non-programmed innovation was included - pro-active - and a fourth dimension was added, technical - administrative (Damanpour and Evan, 1984).

Seven predictions were made (derived from the literature) of how the innovation types were likely to differ. Of these, two were fully supported by the evidence, three partially supported, and two not supported. The reader is referred back to chapter eight, section 4.2.II for complete details of the findings for all seven predictions. Those relating to the pro-active category of non-programmed innovations were of especial interest, as they supported the notion that these innovations had characteristics distinguishing them from

both distress and slack innovations. Also of particular interest was the fact that, contrary to common assumptions in the literature, the most radical innovations did not meet with the most resistance. Finally, the outcomes of innovations appeared to be influenced by who they were initiated by; problems in adopting and implementing innovations occurred most often when the initiator was not in a position of authority.

### 2.3.3. Directions for Future Research

There has been little empirical research examining the sequence of events in the innovation process, as was pointed out in chapter two. The work described above suggests a number of promising directions to take up in future. The issue of whether discrete process stages exists still remains open. In this thesis, support was somewhat stronger in the first Homes for the Elderly study than in the psycho-geriatric ward study. It is likely that the retrospective design of the former study lead to stages being more readily identifiable than they would have if the innovations had been followed as they happened. In future investigations of this issue, a particular focus on attempting to identify boundaries between proposed stages may be the most profitable approach.

More work is required on the development of alternatives to models based on discrete stages. In the psycho-geriatric ward study, it appeared that at least two of the observations in Schroeder et al's (1986) model were inappropriate to the setting. More in-depth case studies of innovations are required, involving a wider range of organizations and innovation types than those upon which Schroeder et al's model is based.

There is clearly a need for researchers to pay much more attention to differences between types of innovation in future. Observational case history work will enable us to uncover the fine details of how and why the innovation process differs for different types. It will also provide a pool of knowledge which could be drawn upon for theory-building, which is at present lacking in this area.

## 2.4 Inter-relationships Between Research Areas Covered in this Thesis

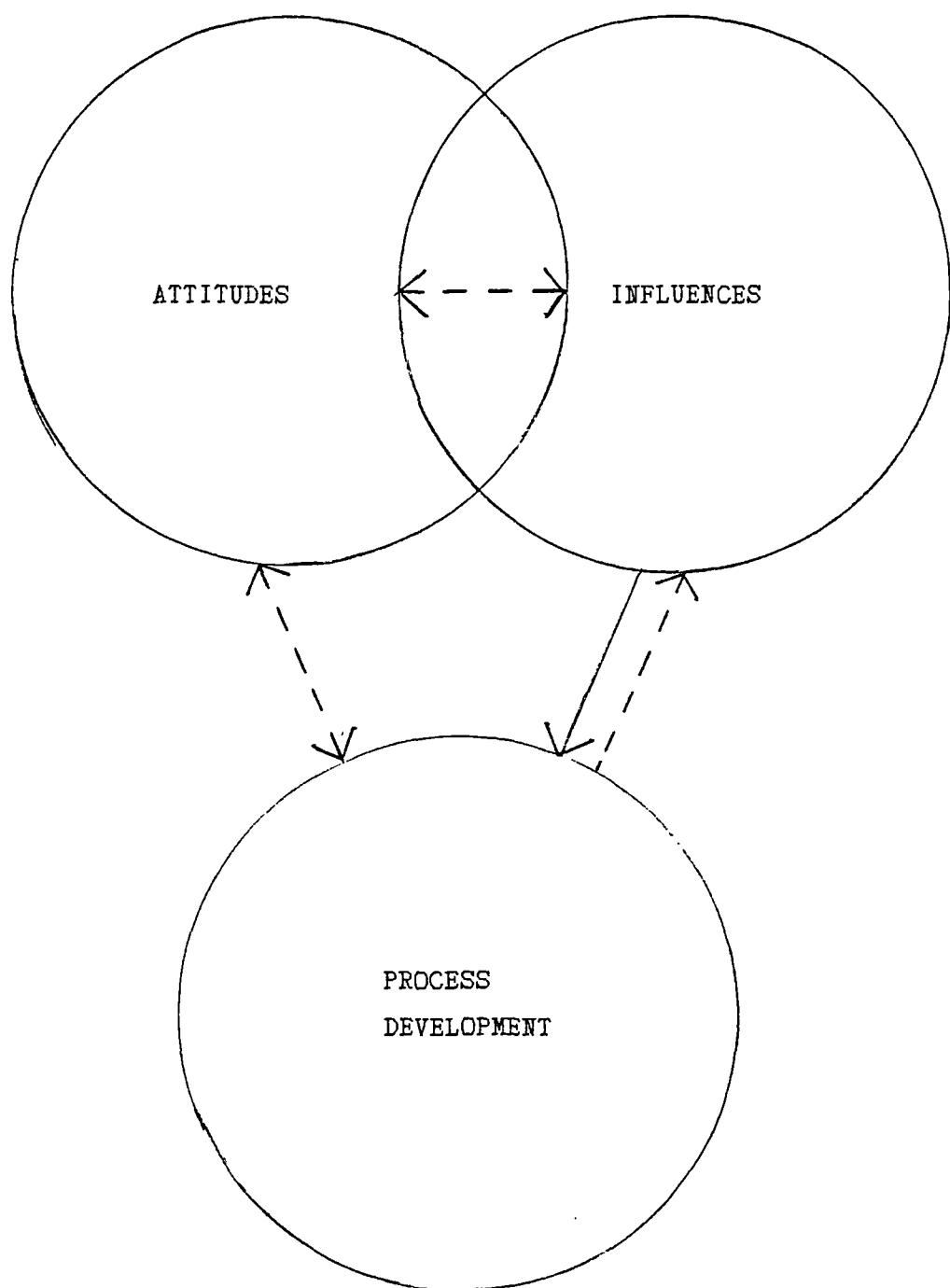
Before moving on to re-assess the conceptual issues from chapter one, it will be useful to briefly consider how the research areas covered in this thesis are related to one another.

Figure 9.1 illustrates the impact of research in any one area on understanding of the other areas. The areas of 'attitudes' and 'influences' overlap, because staff attitudes are one of the chief sources of influence on innovations - though not all attitudes towards innovations are influences, and there are influences other than attitudes. Studying either one of these areas will often provide insights into the other. For instance, the finding in the second Homes for the Elderly study that general involvement in changes was the best predictor of staff attitudes to a specific innovation suggests that the overall way in which change is managed will influence the development of individual innovations. However, a study focusing on the influence of resources may tell us nothing about attitudes to innovations. The relationship between these areas is therefore symbolised by a broken two-way arrow.

Because innovation is defined here as a process, any study of influences on it must have implications for our understanding of the development and/or outcome of the process. Thus the transcript analysis in the first Homes for the Elderly study showed differences in influences between innovation process phases, and between types of innovation. This relationship is represented by the solid arrow. Study of the development of the process may give insights into influences on innovation, but not inevitably so, hence the broken arrow. Similarly, attitudes research will sometimes - but not always - be relevant to process development, and vice versa (relationship shown by a two-way broken arrow).

In conclusion, these three research areas are all at least potentially inter-related, and a single study may well have implications for all of them. This was the case in the interview part of the first Homes

Figure 9.1 Inter-relationships between the research areas covered in this thesis



for the Elderly study (chapter five), which looked at the sequence of process phases, and influences on the process, including staff attitudes as a source of influence.

### 3. A RE-ASSESSMENT OF CONCEPTUAL ISSUES

As well as providing directions for future research, the findings of the studies in this thesis present an opportunity to re-assess some of the conceptual issues discussed in the first chapter. This section will therefore examine the applicability of the innovation definition proposed in chapter one, and will consider its effectiveness in distinguishing innovation from creativity and non-innovative change.

#### 3.1 Definitive Characteristics of Innovations

For the convenience of the reader, the definition presented in chapter one is repeated here;

Innovation is the sequence of activities by which a new element is introduced into a social unit, with the intention of benefiting the unit, some part of it, or the wider society. The element need not be entirely novel or unfamiliar to members of the unit, but it must involve some discernable challenge to the status quo.

The crucial elements of the definition are that it views innovation as a process, it demands intention of benefit, and it demands challenge to the status quo, though not absolute novelty. The practical consequences on the main empirical studies of each of these three definitional requirements are discussed in turn below.

##### 3.1.1. Innovation as a Process

There was no difficulty in the main studies in conceiving of innovation as a process. In most of the cases followed, a sequence of

activities and interactions - often quite complex and lengthy - was seen, relating to the introduction of the "new element". Only in a minority of the innovations in the psycho-geriatric ward study was the transition from first proposal of an idea to its implementation apparently made in a single step (e.g. communications folders and combined multi-disciplinary meetings: see chapter eight). The process approach did create practical difficulties for research design and data collection in all the main studies: the reconstruction of innovation histories from retrospective accounts in the first Homes for the Elderly study; questionnaire response rate for repeated measures in the second Homes for the Elderly study; and the demands of keeping track of a quite large number of ongoing innovations in the psycho-geriatric ward study. However, these problems were outweighed by the advantages in terms of insights into the nature of innovation which would not have been gained from a product-based approach (for details, see the relevant chapters).

### 3.1.2. Intention of Benefit

Application of this criterion was very straightforward. There were no difficulties in any of the studies in determining whether particular changes had been introduced intentionally, and no cases were found of changes intentionally introduced without the aim of benefiting the organization (in whole or part) or the wider society. It may be argued that in practice the 'intention of benefit' criterion is redundant, as the types of change which fail it - unintentional changes and acts of sabotage - would be unlikely to be considered as innovations by anyone. Against this it must be stated that for a definition intended to be of practical utility, such as the present one, it is important to cover as wide a range of eventualities as possible, however unlikely. For the sake of completeness then, this criterion should be retained.

The stipulation regarding the direction of intended benefit is an important part of the definition (i.e. benefiting the unit of adoption, some part of it, or the wider society). It draws attention to the fact that innovations may be introduced with the aim of

benefiting one group, regardless of negative consequences to another. Examples of this can be seen in the psycho-geriatric ward study, where the new card-indexes for patients' records and the changes to the drug rounds were aimed at contributing to professionalisation for qualified nurses, but in doing so withdrew responsibilities from Nursing Assistants. This part of the definition also implies the possibility of differing perspectives within an organization (or other unit of adoption) - something we saw to be important in the first Homes for the Elderly study.

### 3.1.3. Relative Novelty

The definition requires that to be called innovative, a change must challenge the status quo. Unlike the 'intention of benefit' criterion, there were some difficult borderline cases here, in particular with two changes in the psycho-geriatric ward study which were effectively modified re-introductions of previously existing practices (i.e. the tea-pot tables and the new nursing teams). Both of these were seen as a 'return to old ways' by almost half of the staff, but as novel to the rest. The focus on challenge to the status quo was helpful here. As the practices concerned had been out of use for a considerable length of time, their re-introduction did constitute a disruption of the routines which had developed in the ensuing period. They may be contrasted with the re-introduction of regular ward meetings, after a lapse of a few months; this could not be seen as a challenge to the status quo, and was therefore not counted as an innovation.

Judgements regarding novelty are always likely to present problems in applying definitions of innovation - as T.S.Eliot says; "All cases are unique, and very similar to others" ("The Cocktail Party"). Nevertheless, by not insisting on absolute novelty, and by adding the criterion of 'challenge to the status quo' to that of newness, the approach used here has proved itself of practical as well as theoretical utility.

### 3.2 Distinguishing Innovation from Creativity and Non-Innovative Change

A guiding principal behind the definition in chapter one, and the main empirical work of the thesis, was that innovation should be conceived of as a concept distinct from that of creativity. Also, innovation was viewed as a special kind of change, which should be distinguished from non-innovative change as far as possible. These two issues are considered in this section.

#### 3.2.1. Innovation and Creativity

In the exploratory study of individual experiences of innovation, the definition in chapter one was not employed, and interviewees were allowed to use the terms 'innovation' and 'creativity' interchangeably, which some frequently did. The limitations of this kind of research are pointed out in chapter four. The major empirical studies focussed on innovation as a social process, in line with the definition discussed above. As a result there was no confusion between the concepts of creativity and innovation, and research was able to investigate issues outside the traditional scope of creativity research; for instance, differences in perceptions of innovations, and process differences between innovation types.

Chapter one argued that invention (a sub-set of creativity) always preceded innovation, but it was not always part of the process within a particular unit of adoption. Most of the innovation cases studied did not involve the invention of something new, as the practices, products or services involved already existed outside of the units of adoption. For example, flexi-respite care and rotating rotas were not new to elderly care, but they were new to Home A in the first Homes for the Elderly study. However, few innovations were imported wholesale from outside. The commonest strategy was to devise within the organization a new version of an idea already known at least to those managing the innovation, adapting it to the circumstances at hand. This is close to the concept of "re-invention" which has attracted considerable interest in diffusion research (Rogers, 1983).

It would be appropriate in future to include this option in representations of the relationship between creativity and innovation (see chapter one, figure 1.1).

### 3.2.2. Innovation and Non-Innovative Change

This issue has largely been covered in the re-assessment of the definition presented in section 3.1. As has been seen, in the main studies it was possible to distinguish innovation from other non-innovative types of change by application of the criteria of intentionality, and challenge to the status quo. The three major studies all found evidence that innovations were affected by non-innovative changes (and vice versa) and in the second Homes for the Elderly study, involvement in changes generally (rather than specifically in the innovation) emerged as the best predictor of attitudes to the innovation. It can be expected that within any unit of adoption, innovative and non-innovative change will always be inter-related, and, as highlighted in the discussion of the definition, there will always be borderline cases where distinction is very difficult. Despite this, there are characteristics of the kinds of changes referred to as innovative which make them worthy of separate study, and it is these which the definition used here is based upon: social process; intentionality; the possibility of differential effects; challenge to the status quo.

## 4. TOWARD A GENERAL MODEL OF THE INNOVATION PROCESS

Having recapped on the main findings, and re-assessed the conceptual position of the thesis, this final section will propose a framework from which a general model of the innovation process might be developed in future. The purpose of building a general model and the elements which it should consist of will be discussed, before a speculative example of such a model is presented, with recommendations for its development.

## 4.1 Building a General Model of the Innovation Process

### 4.1.1. The Purpose of a General Model

Before making recommendations about how a general model of the innovation process should be constructed, the question needs to be addressed of the purpose of such a model. The aim *should not* be to present an inviolate order of process stages or events, applicable to all cases. The findings in this thesis (and elsewhere) make it clear that this would be doomed to failure from the start; if there can be major differences in the process within one area - elderly care - differences across diverse areas are inevitable. For the same reason it would be wrong to make universal prescriptions for 'successful' innovation. Instead, a general model should provide a single framework for illustrating and interpreting the innovation process in all cases, enabling meaningful comparisons between different types of innovation in different settings to be carried out, and acting as a foundation for theoretical and empirical developments.

### 4.1.2. The Component Elements of a General Model

The first crucial issue for any attempt to build a new general model of the innovation process is what the component elements should be. As we have seen, the conventional approach - typified by Zaltman et al (1973) - is for models to be composed of a sequence of discrete stages. Each stage describes the dominant activities occurring at its particular point in the process. In Schroeder et al's (1986) alternative approach the model is built from a series of "observations" common to all the innovation examples they studied longitudinally.

The advantages and disadvantages of the two types of model were discussed in chapter two, and compared empirically in the psycho-geriatric ward study. (The main findings are summarised in the resumé at the start of this chapter). Put at its simplest, there appeared to be a choice between usability (stage-based models), and reliability (Schroeder et al's approach), related to the type of component element selected. The speculative model which follows challenges the need for

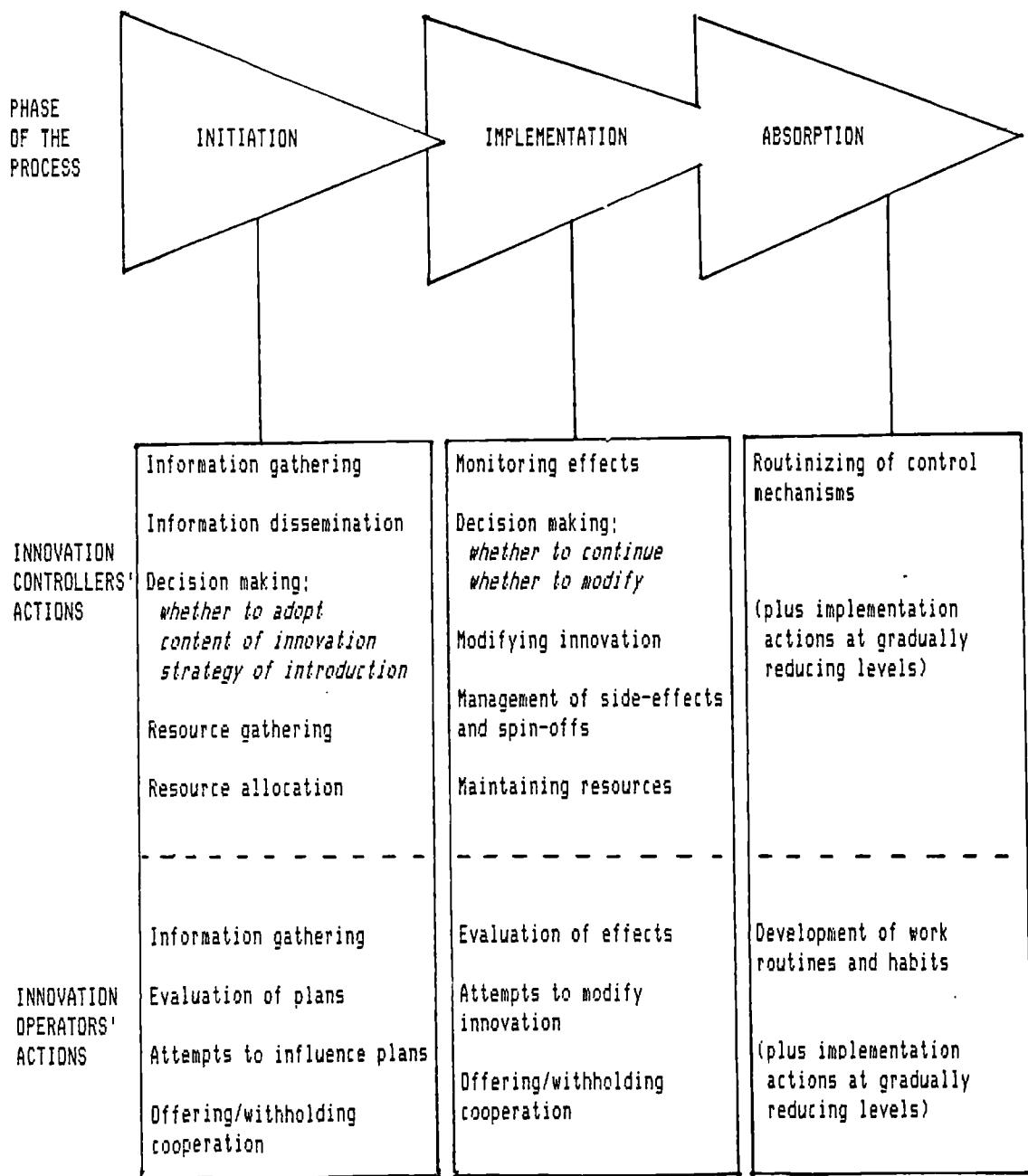
this choice; instead a synthesis of the two approaches is used, including a sequence of phases and a set of precisely-specified "actions", comparable to Schroeder et al's (1986) "observations". It takes the position that while it is of practical and theoretical use to describe the innovation process as a sequence of phases, these phases should not only be defined in broad and general terms (as has been the case in the past) but also in terms of the specific actions of those involved in the innovation. The phase which an innovation has reached may therefore be readily identifiable by observing what kind of actions dominate at any given point.

In all the main empirical studies, it was apparent that the kind of actions engaged in by those in the position of controlling an innovation were often quite different from the actions of those who were (or would be) required to operate the innovation. To take an example from the first Homes for the Elderly study, during the initiation phase of flexi-respite care, the Principal alone had to negotiate with higher management and other outside agencies; the staff's main actions were discussions with her and her management team, and evaluation of the plans. For this reason, the new model presents the phase-related actions of innovation controllers and innovation operators separately. Controllers are those who have the authority to make decisions regarding the introduction of an innovation, while operators are those who have to use the innovation once introduced. (The implications of this are discussed further below).

#### 4.2. Outline of a New General Model of the Innovation Process

The new model is shown in figure 9.2. The phase sequence is taken from that used in the first Homes for the Elderly study: initiation, implementation, and absorption. These are defined as they were in chapter five:

Figure 9.2: A general model of phases in the innovation process



Initiation consists of all the actions, communications and negotiations occurring from conception of an innovation to the point where an organization starts to use it.

Implementation is where the organization brings an innovation into use, sometimes - but not always - for an initial trial period.

Absorption describes the events, interactions etc, through which an innovation becomes a routine part of organizational life.

Initiation is depicted as separate from implementation, but with the possibility of some degree of overlap - as happened, for instance, with the new supervision arrangements in the second Homes for the Elderly study. There is no clear boundary between implementation and absorption - one merges into the other - but they are regarded as distinct phases, with differences in the patterns of typical actions associated with them.

The model is presented in an 'ideal' form; that is, where the process proceeds through to absorption without discontinuities, although it is recognised that this will probably occur only in a minority of cases. In reality the process will frequently come to a halt and cycle back to a previous phase, or be discontinued. An innovation may also take different courses in different parts of an organization, or some parts of it may progress faster than others.

The actions listed as typical of each phase should be regarded as speculative suggestions, based on material from the present research program and common observations in the literature. One of the first empirical steps in the development of this model must be to determine what the most appropriate actions to include here are. It can be seen that within phases there are actions common to both controllers and operators. We may expect that the more participative the management style and the less rigidly hierarchical the organizational structure, the more similarities will be observed between controller and operator

actions. There are situations in which the controllers and operators may be the same people; for instance, a management team might introduce a new format for meetings. Here, the model would still distinguish between their actions as controllers of the innovation and their actions as operators, although both sets of actions would be applicable to all those involved.

It will be noted that while the actions listed under the initiation and implementation phases differ quite considerably, all the implementation actions are also applicable to absorption. This reflects the lack of any clear boundary between the latter two; what marks the move into absorption is the gradual reduction in the incidence of implementation-type events, to be replaced by routinizing and habituating activities, as shown.

#### *4.3 Research Implications of the Model*

According to this model, the development and outcome of the process is determined by the effects of the actions comprising each phase. Thus failure to secure adequate resources on the part of innovation controllers at the initiation phase may result in delays in implementation, or negative evaluations of the innovation by operators may result in implementation being discontinued. This implies that in order to study influences on the innovation process, the researcher needs to look at how particular factors affect the outcomes of particular actions. To give a hypothetical example; a study looking at the impact of different intra-organizational communications systems should focus on their effects on information gathering and dissemination at the initiation phase, and at information available for monitoring and evaluating actions at the implementation phase.

Similarly, the model can provide a framework for understanding differences between innovation types. Slack and distress innovations, for example, should face fewer problems with resource gathering than

pro-active innovations, and therefore may be expected to be abandoned at the initiation phase less frequently.

It must be stressed again that this model is at present only speculative. It requires a considerable amount of exploratory field work and conceptual work to be carried out on it before it can be accepted as a valid general description of the process of innovation. Nevertheless, it does represent a fresh approach to the question of how to model the innovation process, building on the empirical evidence of this thesis and the existing literature to open up promising opportunities for future research.

REFERENCES

Ackermann, C. and J. Harrop (1985). "The management of technological innovation in the machine tool industry: a cross-national regional survey of Britain and Switzerland", *R&D Management*, 15, pp. 207-218.

Agor, W.H. (1986), "The logic of intuition: how top executives make important decisions", *Organizational Dynamics*, pp. 5-18.

Aiken, M. and R. Alford (1970). "Community Structure and Innovation: The Case of Urban Renewal", *American Sociological Review*, 35, pp. 650-665.

Aiken, M. and J. Hage (1971). "The Organic Organization and Innovation", *Sociology*, 5, pp. 63-82.

Amabile, T.M. (1983). *The Social Psychology of Creativity*, New York: Springer-Verlag.

Amabile, T.M. (1984). *Creativity Motivation in Research and Development*, Symposium paper at the American Psychological Association, Toronto, August.

Amabile, T.M. (1986). *A Model of Organizational Innovation*, Paper presented at the Annual Convention of the American Psychological Association, Washington DC, August.

Asch, S.E. (1956). "Studies of independence and conformity: A minority of one against a unanimous majority", *Psychological Monographs*, 70, no. 9.

Atkinson, R.C. and R.M. Shiffrin (1971). "The Control of Short Term Memory", *Scientific American*, 225, pp. 82-90.

Baldridge, J.V. and R.A. Burnham (1975). "Organizational innovation: individual, organizational and environmental impacts", *Administrative Science Quarterly*, 20, pp. 165-176.

Barnett, H.G. (1953). *Innovation: The Basis of Cultural Change*, New York: McGraw-Hill.

Bartlett, F.C. (1932). *Remembering: A study in experimental and social psychology*, Cambridge: Cambridge University Press.

Basadur, M., G.B. Graen and G. Green (1982). "Training in creative problem solving: Effects on ideation and problem finding and solving in an industrial research organization", *Organizational Behaviour and Human Performance*, 30, pp. 41-70.

Beal, G.M. and E.M. Rogers (1960). *The Adoption of Two Farm Practices in a Central Iowa Community*, Iowa Agricultural and Home Economics Experiment Station, Special Report 26.

Becker, S. and T.L. Whisler (1967). "The Innovative Organization: A Selective View of Current Theory and Research", *The Journal of Business*, 40, pp. 462-469.

Beckhard, R. (1969). *Organization Development: Strategies and Models*, Reading, Mass.: Addison-Wesley.

Bedeian, A.G. (1980). *Organizations: Theory and Analysis*, Illinois: Dryden Press.

Bell, W. (1963). "Consumer innovators: A unique market for newness", *Proceedings of the American Marketing Association*: 85-95.

Beyer, J.M. and H.M. Trice (1978), *Implementing Change*, New York: Free Press.

Bouwen, R. and R. Fry (1988). "An Agenda for Managing Organizational Innovation and Development in the 1990s", in *Corporate Revival*, M. Lambrecht (Ed.) Leuven, Belgium: Catholic University Press.

Bower, M. (1965). "Nurturing Innovation in an Organization", in G.A. Steiner (Ed.), *The Creative Organization*, Chicago: Chicago University Press.

Brooks-Rooney, A. et al (1987). *The Development of Managers as effective Organisational Resources: A Summary of findings in the Wool Textiles Industry*, MRC/ESRC Social and Applied Psychology Unit, University of Sheffield, Memo no. 916.

Brown, R. (1965). *Social Psychology*, New York: Free Press

Bunce, D. and M.A. West (1988). "Innovation as a Response to occupational stress?", *The Occupational Psychologist*, 6, pp. 22-25.

Burns, T. and G.M. Stalker (1961). *The Management of Innovation*, London: Tavistock.

Carlson, R.O. (1968). "Summary and Critique of Educational Diffusion Research", *Research Implications for Educational Diffusion*, Michigan Department of Education.

Carne, G.C. and M.J. Kirton (1982). "Styles of creativity: Test-score correlations between Kirton Adaption-Innovation Inventory and Myers-Briggs Type Indicator", *Psychological Reports*, 50, pp. 31-36.

Carroll, J. (1967). "A note on departmental autonomy and innovation in medical schools", *Journal of Business*, 40, 531-534.

Caplow, T. (1964). *Principles of Organization*, New York: Harcourt, Brace and World.

Child, D. (1973). *Psychology and the Teacher*, Holt-Rheinhart.

Cohen, J.A. (1960). "A coefficient of agreement for nominal scales", *Educational and Psychological Measurement*, 20, pp. 37-46.

Coleman, J. (1966). *Medical Innovation: A Diffusion Study*, New York: Bobbs-Merrill.

Cook, J. and T.D. Wall (1980). "New work attitude measures of trust, organizational commitment and personal need non-fulfilment", *Journal of Occupational Psychology*, 53, pp. 35-52.

Cooper, R.G. (1984). "The strategy-performance link in innovation", *R&D Management*, 14, pp. 247-267.

Coopey, J.G. (1987). *Creativity in Complex Organizations*, Paper presented at the Annual Occupational Psychology Conference of the British Psychological Society, University of Hull, January.

Crosby, A. (1968). *Creativity and Performance in Industrial Organization*, London: Tavistock.

Cross, D. (1973). "The worker opinion survey", *Occupational Psychology*, 47, pp. 193-208.

Daft, R.L. (1978). "A dual-core model of organizational innovation", *Academy of Management Journal*, 21, pp. 193-210.

Damanpour, F. and W.M. Evan (1984). "Organizational innovation and performance: The problem of 'organizational lag'", *Administrative Science Quarterly*, 29, pp. 392-409.

Downs, G.W.Jr. and L.B. Mohr (1976). "Conceptual issues in the study of innovation" *Administrative Science Quarterly*, 21, pp. 700-714.

Dreistadt, R. (1969). "The use of analogies and incubation in obtaining insights in creative problem solving", *Journal of Psychology*, 71, pp. 159-175.

Duncan, R. (1972). "Organizational climate and climate for change in three police departments: Some preliminary findings", *Urban Affairs Quarterly*, 17, pp. 205-245.

Eindhoven, J.E. and W.E. Vinacke (1952). "Creative processes in painting", *The Journal of General Psychology*, 47, pp. 139-164.

Eiser, J.R. (1980). *Cognitive Social Psychology*, London: McGraw-Hill.

Ettlie, J.E. (1983). "A note on the relationship between managerial change values, innovative intentions and innovative technology outcomes in food sector firms", *R&D Management*, 13, no.4.

Evan, W.M. (1966). "Organizational lag", *Human Organization*, 25, 51-53.

Farris, G.F. (1973). "The technical supervisor: Beyond the Peter Principle", *Technical Review*, 75, April.

Fiedler, F.E., M.M. Chelmers, and L. Mahar (1976). *Improving Leadership Effectiveness: The Leader Match Concept*, New York: Wiley.

Fischer, W.A. and C.M. Farr (1985). "Dimensions of innovative climate in Chinese R&D units", *R&D Management*, 15, pp. 183-190.

Fleiss, J.L. (1981). *Statistical Methods for Rates and Proportions*, New York: Wiley and Sons.

Foster, R. (1986). *Innovation: The Attacker's Advantage*, New York: MacMillan.

Fulgosi, A. and J.P. Guilford (1968) "Short term incubation in divergent production", *American Journal of Psychology*, 81, pp. 241-246.

Geschka, H. (1983). "Creativity techniques in product planning and development: a view from West Germany", *R&D Management*, 13, pp. 169-183.

Glassman, E. (1986). "Managing for creativity: back to basics in R&D", *R&D Management*, 16, pp. 175-183.

Goldberg, D. (1972). *The Detection of Psychiatric Illness by Questionnaire*, Oxford: Oxford University Press.

Goldsmith, R.E. and T.A. Matherly (1987). "Adaption-innovation and creativity: A replication and extension", *British Journal of Social Psychology*, 26, pp. 79-82.

Gough, H.G. (1952). *The Adjective Checklist*, Palo Alto: Consulting Psychologists Press.

Gross, N., J.B. Giacquinta and M. Bernstein (1971). *Implementing Organizational Innovations: A Sociological Analysis of Planned Educational Change*, New York: Basic Books.

Grossman, J.B. (1970). "The Supreme Court and social change", *American Behavioural Scientist*, 13.

Guilford, J.P. (1959). "Traits of creativity", in H.H. Anderson (Ed.) *Creativity and its Cultivation*, Harper, pp. 142-61.

Hage, J. and M. Aiken (1967). "Program change and organizational properties, a comparative analysis", *American Journal of Sociology*, 72, pp. 503-519.

Hage, J. and M. Aiken (1970). *Social Change in Complex Organizations*, New York: Random House.

Hage, J. and R. Dewar (1973). "Elite values versus organizational structure in predicting innovation", *Administrative Science Quarterly*, 18, pp. 279-290.

Hagen, E.E. (1962). *On the Theory of Social Change*, Homewood, Ill., Dorsey Press.

Handy, C. (1985). *Understanding Organizations*, Harmondsworth: Penguin.

Harrison, E.F. (1975). *Managerial Decision Making Process*, Boston: Houghton Mifflin.

Harvey, E. and R. Mills (1970). "Patterns of Organizational Adaptation: A Political Perspective", in M.N. Zald (Ed.), *Power in Organizations*, Nashville: Vanderbilt University Press.

Hersey, P. and K. Blanchard (1982). *Management of Organizational Behaviour: Utilizing Human Resources* (4th ed.), Englewood Cliffs, N.J.: Prentice Hall.

Hurt, H.T., K. Joseph and C.D. Cook (1977). "Scales for the measurement of innovativeness", *Human Communications Research*, 4, pp. 58-65.

Hycner, R.H. (1985). "Some guidelines for the phenomenological analysis of interview data", *Human Studies* 8, pp. 279-304.

Isaacs, B. (1984). "The Nature of Innovation", in B. Isaacs and H. Evers (eds.) *Innovations in the Care of the Elderly*, London: Croom Helm.

Isen, A.M., K.A. Daubman, and G.P. Nowicki (1987). "Positive affect facilitates creative problem solving", *Journal of Personality and Social Psychology*, 53, pp. 1122-1131.

Jackson, P.R. (1983). "An easy to use BASIC program for agreement amongst many raters", *British Journal of Clinical Psychology*, 22, pp. 145-146.

Janis, I.L. (1972). *Groupthink*, Boston: Houghton Mifflin.

Jones, L. (1987). *Barriers to Creativity*, Paper presented at a British Psychological Society seminar on Stimulating Creativity at Manchester Business School, 13th June.

Kanter, R.M. (1983). *The Change Masters*, New York: Simon and Schuster.

Kaluzny, A., J. Veney and J. Gentry (1974). "Innovation of health services: A comparative study of hospitals and health departments", *Health and Society*.

Kaplan, N. (1963) "The Relation of Creativity to Sociological Variables in Research Organizations", in C.W. Taylor and F. Barron (Eds.), *Scientific Creativity: Its Recognition and Development*, New York: Wiley.

Kassarjian, H.H. (1977). "Content analysis in consumer research", *Journal of Consumer Research*, 4, pp. 8-18.

Katz, R. (1982). "The effects of group longevity on project communication and performance", *Administrative Science Quarterly*, 27, pp. 81-104.

Kimberly, J.R. (1976). "Organizational size and the structuralist perspective: A review, critique, and proposal", *Administrative Science Quarterly*, 21 pp. 571-597.

Kimberly, J.R. (1981). "Managerial Innovation", in P.C. Nystrom and W.H. Starbuck (Eds.) *Handbook of Organizational Design*, Oxford: Oxford University Press.

Kimberly, J.R. and M.J. Evanisko (1981). "Organizational innovation: The influence of individual, organizational, and contextual factors on hospital adoption of technological and administrative innovations", *Academy of Management Journal*, 24, pp. 689-713.

Kinch, J., R.F. Falk and D. Anderson (1983). "A self-image inventory: Its theoretical background, reliability, and validity", *Symbolic Interaction*, 6, pp. 229-242.

Kingston, W. (1984). *The Political Economy of Innovation*, The Hague: Martinus Nijhoff.

Kirton, M.J. (1976). "Adaptors and innovators: A description and measure", *Journal of Applied Psychology*, 5, pp. 622-629.

Kirton, M.J. (1978). "Have Adaptors and innovators equal levels of creativity?" *Psychological Reports*, 42, pp. 695-698.

Klein, D. (1967). "Some Notes on the Dynamics of Resistance to Change: The Defender Role", in G. Watson (Ed.) *Concepts for Social Change*, Washington D.C.: National Training Laboratories.

Knight, K. (1967). "A descriptive model of the intra-firm innovation process", *Journal of Business*, 40, pp. 478-496.

Lamm, H. and D.G. Myers (1978). "Group-induced Polarization of Attitudes and Behaviour", in L. Berkowitz (Ed.), *Advances in Experimental Social Psychology*, Vol. 11, New York: Academic Press.

Lippitt, J.W. and B. Westley (1958). *The Dynamics of Planned Change*, New York: Harcourt, Brace and Jovanovich.

Lovelace, R.F. (1986). "Stimulating creativity through managerial intervention", *R&D Management*, 16, pp. 161-174.

Maass, A. and R.D. Clark (1983). "Internalization versus compliance: differential processes underlying minority influence and conformity", *European Journal of Social Psychology*, 13, pp.197-215.

Maslow, A.H. (1943). "A theory of human motivation", *Psychological Review*, pp. 370-396.

Meadows, I.S.G. (1980). "Organic structure and innovation in small work groups", *Human Relations*, 33, pp.369-382.

Merritt, R.L. and A.J. Merritt (1985). *Innovation in the Public Sector*, Beverly Hills: Sage.

Meyer, A.D. (1982). "Adapting to environmental jolts", *Administrative Science Quarterly*, 27, pp. 515-537.

Michael, R. (1979). "How to find - and keep - creative people", *Research Management*, September, pp. 43-45.

Miles, R.E. and C.C. Snow (1978). *Organizational Strategy, Structure and Process*, New York: McGraw-Hill.

Miller, R.E. (1971). *Innovation, Organization and Environment*, Sherbrooke: Université de Sherbrooke.

Milo, N. (1971). "Health care organizations and innovation", *Journal of Health and Social Behaviour*, 12, pp. 163-173.

Mohr, L.B. (1969). "Determinants of innovation in organizations" *American Political Science Review*, 63, pp. 111-126.

Morgan, G. (1986) *Images of Organization*, Beverly Hills: Sage.

Moscovici, S., G. Mugny, and E. van Avermaet (1985). *Perspectives on Minority Group Influence*, Cambridge: Cambridge University Press.

Myers, S. and D.G. Marquis (1969). *Successful Industrial Innovations*, National Science Foundation, NSF 69-17

Mytinger, R.D. (1968). *Innovation in Local Health Services*, Arlington, Virginia: Public Health Service, Division of Medical Care Administration, U.S. Department of Health, Education and Welfare.

MacKinnon, D.W. (1962). "The personality correlates of creativity: A study of American architects", *Proceedings of the Fourteenth Congress on Applied Psychology*, vol.2, Munksgaard, pp. 11-39.

McCarrey, M.W., and S.A. Edwards (1973). "Organizational climate conditions for effective research scientist role performance", *Organizational Behaviour and Human Performance*, June, pp. 439-59.

McGrath, J.E. (1985). "Groups and the Innovation Process", in R.L. and A.J. Merritt (Eds), *Innovation in the Public Sector*, Beverly Hills: Sage.

Neal, R. and M. Radnor (1971). *The Relationship between Formal Procedures for pursuing OR/MS Activities and OR/MS Group Success*, paper presented at 40th National Conference of the Operations Research Society of America, at Anaheim, California, October.

Nemeth, C.J. and J. Wachtler, (1983). "Creative problem solving as a result of majority vs. minority influence", *European Journal of Social Psychology*, 13, pp.45-55.

Nicholls, J.G. (1972) "Creativity in the person who will never produce anything original and useful: The concept of creativity as a normally distributed trait", *American Psychologist*, August, pp. 717-727.

Nicholson, N. (1984). "A theory of work-role transitions", *Administrative Science Quarterly*, 29, pp. 172-191.

Nicholson, N. (1990). "The Cultural Deconstruction of Innovation", in M.A. West, and J.L. Farr (Eds.) *Innovation and Creativity at Work: Psychological Approaches*, London: Wiley.

Nicholson, N. and M.A. West (1987). *Managerial Job Change: Men and Women in Transition*, Cambridge: Cambridge University Press.

Normann, R. (1971). "Organizational innovativeness: Product variation and reorientation", *Administrative Science Quarterly*, 16, pp. 203-215.

Nystrom, H. (1979). *Creativity and Innovation*, London: Wiley and Sons.

Parmeter, S.M. and J.D. Gaber, (1971). "Creative scientists rate creativity factors", *Research Management*, November, pp. 65-70.

Olton, R.M. (1979). "Experimental studies of incubations: Searching for the elusive", *Journal of Creative Behaviour*, 13, pp. 9-22.

Olton, R.M. and D.M. Johnson (1976). "Mechanisms of incubation in creative problem solving", *American Journal of Psychology*, 89, pp. 617-630.

Patrick, C. (1935). "Creative thought in poets", in R. Woodworth (ed.) *Archives of Psychology*, 178.

Patrick, C. (1937). "Creative thought in artists", *Journal of Psychology*, 4, pp. 35-73.

Patti, R.J. (1974). "Organizational resistance and change: The view from below", *Social Service Review*, 48, pp. 367-383.

Pelz, D.C. (1981). *'Staging' Effects in Adoption of Urban Innovations*, Paper presented at the Evaluation Research Society, Austin.

Pelz, D.C. and F.M. Andrews (1976). *Productive Climates for Research and Development*, Ann Arbor, Michigan: Institute for Social Research, University of Michigan.

Peters, T.J. and R.H. Waterman (1982). *In Search of Excellence: Lessons from America's Best Run Companies*, New York: Harper and Row.

Pierce, J.L. and A. Delbecq (1977). "Organizational structure, individual attitude and innovation", *Academy of Management Review*, pp. 27-33.

Poincaré, H. (1924). *The Foundations of Science*, (trans. G.B. Halstead) Science Press.

Read, J.D. and D. Bruce (1982). "Longitudinal tracking of difficult memory retrievals", *Cognitive Psychology*, 14, 280-300.

Rogers, C. (1954). "Toward a theory of creativity", *A Review of General Semantics*, 11, pp. 249-260.

Rogers, E.M. (1983) *Diffusion of Innovations*, (3rd Edition), New York: Free Press.

Rogers, E.M. and R. Agarwala-Rogers (eds.) (1976). *Communications in Organizations*, New York: Free Press.

Rogers, E.M. and F.F. Shoemaker (1971). *Communication of Innovations: A Cross-Cultural Approach*, New York: Holt, Rinehart and Winston.

Sapolsky, H. (1967). "Organizational structure and innovation", *Journal of Business*, 40, 497-510.

Sarnof, D.P. and H.P. Cole (1983). "Creativity and personal growth", *The Journal of Creative Behaviour*, 17, pp. 95-102.

Schein, E.H. (1969). *Process Consultation: It's Role in Organizational Development*, Englewood Cliffs, New Jersey: Prentice-Hall.

Schein, E.H. (1971). "Occupational socialization in the professions: The case of the role innovator", *Journal of Psychiatric Research*, 7, pp. 401-426.

Schroeder, R., A. Van de Ven, G. Scudder and D. Polley *Observations leading to a Process Model of Innovation*, Discussion Paper #48, Strategic Management Research Center, University of Minnesota.

Shaw, B. (1985). "The role of the interaction between the user and the manufacturer in medical equipment innovation", *R & D Management*, 15, pp. 283-292.

Shephard, H.A. (1967). "Innovation-resisting and innovation-producing organizations", *Journal of Business*, 40, pp. 470-477.

Sherif, M. and C.W. Sherif (1969). *Social Psychology*, New York: Harper and Row.

Simon, H.A. (1960). *The New Science of Management Decision*, New York: Harper and Row.

Smeltz, W. and B. Cross (1984). "Toward a profile of the creative R and D professional", *IEEE Transactions on Engineering Management*, February, pp. 22-25.

Spielberger, C.D. (1979). *The State-Trait Personality Inventory; Self Analysis Questionnaire*.

Staw, B.M. (1984). "Organizational Behaviour: A review and reformulation of the field's outcome variables", *Annual Review of Psychology*, 35 pp. 627-666.

Stoner, J.A.F. (1968), "Risky and cautious shifts in decisions: The influence of widely held values", *Journal of Experimental Psychology*, 4, pp. 442-459.

Tajfel, H. (Ed.) (1978). *Differentiation Between Social Groups: Studies in the Social Psychology of Inter-group Relations*, London: Academic Press.

Taylor, J.C. and D.G. Bower (1972). *Survey of Organizations: A Machine Scored Standardized Questionnaire Instrument*, Michigan: University of Michigan Institute for Social Research.

Teger, A.I. (1980). *Too Much Invested to Quit*, New York: Pergamon.

Torrance, E.P. and R.G. Horng (1980). "Creativity and style of learning and thinking characteristics of adaptors and innovators", *The Creative Adult and Child Quarterly*, 5, pp. 80-85.

Towell, D. and C. Harries (1979). *Innovation in Patient Care*, London: Croom-Helm.

Tushman, M.L. (1977). "Special boundary roles in the innovation process", *Administrative Science Quarterly*, 22, pp. 587-605.

Utterback, J.M. (1975). "Innovation in industry and the diffusion of technology", *Science*, 183, pp. 620-626.

Van de Ven, A. (1986) "Central problems in the management of innovation", *Management Science*, 32, pp. 590-607.

Vernon, P.E. (ed) (1970). *Creativity*, Harmondsworth: Penguin.

Wahba, M. and L. Bridwell (1976). "Maslow reconsidered: A review of the research on the need hierarchy theory", *Organizational Behaviour and Human Performance*, 15, pp. 212-240.

Wallace, M. (1987). *Innovation in Primary Health Care Teams*, Unpublished M.Sc. Thesis, MRC/ESRC Social and Applied Psychology Unit, University of Sheffield, U.K.

Wallach, M.A. and N. Kogan (1965). "A new look at the creativity - intelligence distinction", *Journal of Personality*, 33, pp. 348-369.

Wallas, G. (1926). *The Art of Thought*, Jonathon Cape, pp. 79-96.

Walton, R.E. (1987). *Innovating to Compete: Lessons for Diffusing and Managing Change in the Workplace*, San Fransisco: Jossey-Bass.

Warr, P., J. Cook and T.D. Wall (1979). "Scales for the measurement of some work attitudes and aspects of psychological well-being", *Journal of Occupational Psychology*, 52, pp. 129-148.

Watson, G. (1971). "Resistance to change", *American Behavioural Scientist*, 14, pp. 745-766.

Watson, G. (1973). "Resistance to Change", in G. Zaltman, *Processes and Phenomena of Social Change*, New York: Wiley.

Weisberg, R.W. (1986), *Creativity: Genius and other Myths*, New York: Freeman.

West, M.A. (1987). "Role innovation in the world of work", *British Journal of Social Psychology*, 26, pp. 305-315.

West, M.A. and J.L. Farr (1990) "Innovation at work: Psychological perspectives", *Social Behaviour*, 4, pp. 15-30.

West, M.A. and Y. Savage (1987). "Innovation among Health Care Professionals", Paper presented at Annual Occupational Psychology Conference of British Psychological Society, University of Hull, January. Abstract in *Bulletin of British Psychological Society*, 40, A34.

Wilson, J.Q. (1966) "Innovation in Organizations: Notes towards a Theory", in J.D. Thompson (Ed.), *Approaches to Organizational Design*, Pittsburgh: Pittsburgh University Press.

Zajonc, R.B., R.J. Wolosin and M.A. Wolosin (1972). "Group risk-taking under various group decision schemes", *Journal of Experimental Social Psychology*, 8, pp. 16-30.

Zaltman, G. and R. Duncan (1977). *Strategies for Planned Change*, New York: Wiley.

Zaltman, G., R. Duncan and J. Holbek (1973) *Innovations and Organizations*, New York: Wiley.