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ABSTRACT

Dynamic Concept Analysis (DCA) is introduced as a means of building conceptual models in case studies and using information of concept relations in developing general and individual models to depict a particular phenomenon. DCA enables holistic studies of complex phenomena and analyzes the relationships between concepts to express these relations as an information structure. DCA is applied in the following studies: (1) "Dynamic Concept Analysis (DCA): Integrating Information in Conceptual Models" by S. Kontiainen uses DCA to analyze different phenomena by building "information structures" and "conceptual models"; (2) "Individual Models of Adult Learning" by S. Kontiainen uses DCA to analyze adult learning processes; (3) "Institutional Models of Higher Education" by S. Kontiainen and M. Tight uses DCA in a study of British institutions of higher education and defines five ideal-typical institutional types; (4) "Individual Models of Moral Judgement" by S. Kontiainen and K. Helkama looks at Kohlberg's stages of moral reasoning in terms of DCA; (5) "Understanding Different Outcomes in Decision Making" by S. Kontiainen and others uses DCA in studies of different outcomes in decision-making processes, focusing on how conceptual analyses and models are useful when trying to understand a particular decision; and (6) "Transforming a General Model into Individual Models: Individual Models of Affective Experience of Unemployment" by S. Kontiainen and J. Manninen uses DCA to transform a general model of experience of unemployment into individual models; and (7) "Supervision of Teaching Practice in Adult Education: Student's and Supervisor's Perceptions of Supervision" by S. Kontiainen and J. Hobrough gives an example of the use of DCA and conceptual models in analyzing supervision in teaching practice. (RLC)

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RESEARCH BULLETIN 78

USE OF CONCEPTUAL MODELS IN CASE STUDIES

Dynamic Concept Analysis

SEPPO KONTIAINEN

Applications in collaboration with

Klaus Heikama, Peter Herriot, John Hobrough, Jyri Manninen, John Roscoe and Malcolm Tight

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Department of Education, University of Helsinki
Head: Anna-Liisa Leino, Professor of Education (Swedish)
Bulevardi 18, SF-00120 Helsinki, Finland

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USE OF CONCEPTUAL MODELS IN CASE STUDIES

Dynamic Concept Analysis 237 pages

by Seppo Kontiainen

Applications in collaboration with Klaus Helkama, Peter Herriot, John Hobrough, Jyri Manninen, John Roscoe and Malcolm Tight.

SUMMARY

The paper introduces a research method, the Dynamic Concept Analysis (DCA), for building conceptual models in case studies. DCA is a strategy of using information of concept relations in building both general and individual models to depict a particular phenomenon. The approach enables holistic studies of complex phenomena, analyses of how parts make the whole.

The basic idea of the Dynamic Concept Analysis is to analyse the relationships between concepts and to express these relations in a form of an information structure. In building conceptual models DCA allows systematic use of this information.

Conceptual relations of a particular phenomenon can be described by general (i.e. most probable) or individual conceptual models.

DCA has been applied in this paper in six different studies. The first study demonstrates the use of DCA in analyses of adult learning processes. The second study is an analysis of institutional cultures in higher education. The third study produces individual conceptual models of moral judgement. The fourth application demonstrates how conceptual models can be used in analyses of decision making. The fifth study gives an example of the use of DCA in transforming a general model of experience of unemployment into individual models, and finally, the sixth study gives an example of the use of DCA and conceptual models in analysing supervision in teaching practice.

Key words: conceptual models, information structure, meta analysis, case studies, general models, individual models, learning models, institutional models, models of decision making, models of moral judgement, models of supervision.

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Available from: Department of Education
University of Helsinki
Bulevardi 18
SF-00120 Helsinki
Finland

AUTHORS

Dr KLAUS HELKAMA, Professor of Social Psychology, Department of Social Psychology, University of Helsinki, Finland.

Dr PETER HERRIOT, Professor of Occupational Psychology, Department of Occupational Psychology, Birkbeck College, University of London (now at Sundridge Park Management Centre, London), England.

Dr JOHN HOBROUGH, Senior Lecturer, Department of Educational Studies, University of Surrey, England.

Dr SEPPO KONTIAINEN, Professor of Adult Education, Department of Education, University of Helsinki, Finland.

Mr JYRI MANNINEN Postgraduate Student in Adult Education, Department of Education, University of Helsinki, Finland.

Dr JOHN ROSCOE, Department of Forensic Psychiatry, Institute of Psychiatry, University of London (now at SEER Management Limited, London), England.

Dr MALCOLM TIGHT, Senior Lecturer, Department of Continuing Education, University of Warwick, England.

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PREFACE

Use of conceptual models in case studies is based on the application of the Dynamic Concept Analysis (DCA).

The Dynamic Concept Analysis is a method to analyse a phenomenon by conceptual models. Both general and individual models can be derived from the same structure of information. DCA combines the nomothetic and idiographic approaches: the same data base can be used in describing of a phenomenon in general as well as in case studies.

DCA consists of three phases: (1) selection and definition of key concepts to characterize a phenomenon, (2) definition of the relationships between the concepts, and (3) building of conceptual models using the information of concept relations.

The theoretical basis of DCA is introduced in Chapter 1*. DCA enables the use of quantitative and/or qualitative data in building an **information structure**, a matrix of concept relations, which serves as basis for building **conceptual models**.

DCA is a general method for studies of complex phenomena, especially if there is a need to understand how parts make the whole. A conceptual model shows how concept relations appear in a case with a particular combination of characteristics. The case studies of this research report show how these models can be built.

In addition to the theoretical basis (Chapter 1), six different applications of DCA are included in this report. The applications consist of individual learning models (Chapter 2), models of higher education institutions (Chapter 3), individual models of moral judgement (Chapter 4), models of a decision making process (Chapter 5), and transformation of a general model into individual models (Chapter 6). Finally, Chapter 7 gives examples of conceptual models in studies of supervision in teaching practice using the same data base as the theoretical examples in Chapter 1; these two chapters could be studied together because

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* Chapter 1 is a revised version of an earlier paper: Kontiainen, S. 1989. Integrating Information in Conceptual Models. Use of an information structure in building conceptual models for behavioural studies. Department of Education, University of Helsinki: Research Bulletin No. 70 (out of print).

Chapter 7 shows step by step how the information structure is used in building conceptual models of supervision.

This report can be read either by starting from the theoretical paper (Chapter 1) or by reading at first one or more of the applications (Chapters 2-7). All the chapters are independent studies. Therefore, there is some repetition concerning DCA as the research method.

DCA has been applied here to case studies in the fields of adult education and social psychology. However, relations of concepts could often be defined more accurantly, for instance, in natural sciences or in economics.

As stated above, DCA is considered as a general method to study complex phenomena by conceptual models. Simulations with different models could be used in planning of change or in the search of future models. There is more discussion about possible applications in Chapter 1.

I would like to thank Klaus Helkama, Peter Herriot, John Hobrough, Jyri Manninen, John Roscoe and Malcolm Tight for inspiring collaboration. Special thanks are addressed in each chapter to those involved in the study.

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Helsinki, May 1991

Seppo Kontiainen

CHAPTER 1.

DYNAMIC CONCEPT ANALYSIS (DCA)
Integrating Information in Conceptual Models

Seppo Kontiainen

Abstract

The study introduces a strategy for analysing different kinds of phenomena by building 'information structures' and 'conceptual models'. In describing phenomena both linear and nonlinear relationships between concepts will be taken into consideration. The approach combines nomothetic and idiographic views: the same information structure can be used both for general and individual descriptions.

Consequently the study provides general guidelines for analysing how 'parts' make a 'whole' in complex systems. It has aspects in common with some other approaches which also aim at understanding phenomena in a holistic manner.

It is pointed out that there are altogether five ways in which two concepts can combine with each other. All these types can be identified by an information structure, and the information can be used in building conceptual models. The strategy for using information about concept relations available in an information structure is called here 'Dynamic Concept Analysis', DCA. The dynamic nature of a behaviour will be identified by conceptual models, which show simultaneously types of relationships between all the properties in question.

The analyses presented in the paper are primarily conceptual. Conceptual models can be considered as hypothetical models of actual life; reliability and validity of these analyses will be finally assessed in actual contexts.

The paper gives theoretical bases for building information structures. Data from an earlier study on supervisory behaviour in teacher training as assessed by student teachers is used for demonstration only; to give an example of how to build an information structure and how to use this information in building conceptual models for general and individual descriptions of a behaviour. A demonstration is also given of how to apply DCA in studies of change.

The strategy introduced in the paper may be of use when there is a need to understand complex systems or situations; e.g. in various studies of adult education when education is seen as closely related to individual and environmental issues.

Finally the paper introduces some areas of research where this approach could be applied: conceptual analyses, theory building and research design, analyses of change, historical studies, futures research, decision making, innovative studies, and educational planning and assessment.

1.1. INTRODUCTION

Development of the research strategy presented in this paper started in the early 1970's when I was doing research on interaction processes between trainers and trainees in teaching practice. I shall in this paper return to an old study 'The behaviour of supervisors assessed by student teachers' (Kontiainen 1973). Referring to this study does not necessarily mean that the research results as such are of special importance. However, I have become more interested in further development of the research strategy introduced in the paper, which now serves as a source of information for demonstrations.

In studies of human behaviour we are likely to speak about individual processes and dynamics. Nevertheless, many studies of human behaviour concentrate on producing general information or new conceptions of phenomena with little or no direct connection to individuals, or on case studies with loose connections to generalisations. Nomothetic and idiographic approaches are easily accepted as being mutually exclusive; studies seek either generalisations or understanding of individual behaviour, too seldom an integration of both.

An aim of this paper is to develop a research strategy which combines nomothetic and idiographic approaches so that the same source of information could be used both for generalisations and for describing individual behaviour. In addition, the paper touches problems of describing processes and dynamics in studies of a behaviour. When accepting the dynamic nature of human behaviour, there should be ways to point this out in research into a behaviour; conceptual models in this study aim at answering to this question.

In a study of behaviour the research concepts used may be identical, parallel, overlapping or independent when compared with the concepts used in another study of the same behaviour. Each study tends to produce its own terminology or the same concept may have a different meaning in different studies. New research may sometimes cause more confusion than a new structuring in a research area. This is why there is a need to find ways of integrating research findings in a field and to develop methods for conceptual analysis in order to reduce conceptual confusion and to define key concepts for research.

One reason for the lack of relevant theories or conceptual frameworks in a field is the lack relevant of conceptual analyses. This paper gives an example of doing conceptual analyses and of producing conceptual models for theory building. An aim of this study is to demonstrate how an approach of analysing concepts could help in searching new theoretical frameworks for research in a field.

Human behaviour and a reality where an individual lives can be considered as a complex network of various processes. When trying to understand this complexity there is a need to find research methods which show the dynamic nature of a behaviour or show how relations between 'parts' make a 'whole'. Conceptual analyses and conceptual models in this paper aim at satisfying this need.

A general aim of this study is to find more structure and to reduce the degree of subjectivity in use of information concerning human behaviour. Information derived from studies of behaviour is often used more or less haphazardly, leaving too much scope for individual, subjective interpretations of how different things are related with each other. This can be seen as a central problem when applying research findings into practice.

The approach presented in this paper could be regarded as a general guideline for behavioural and educational studies, but it may be worth applying in some other areas of research, too. Much research is still needed to find new views of understanding social and behavioural problems in a more holistic manner than at the present, and to reduce the degree of fragmentation in research and in how the world around us is realized.

This paper introduces a strategy of using information structures in building conceptual models. Firstly, central terms of the study are defined and connections of this approach to some other orientations are investigated. Secondly, the basis of building an information structure and conceptual models are given. Finally, some remarks are made on methodological questions and on possible uses of this strategy in various kinds of research.

1.2. TERMINOLOGICAL DEFINITIONS

(1) **Reality** refers to an entity where people live and where different things occur, and from where concepts for behavioural and other studies are derived.

(2) **Concept** refers to any variable or quality (behavioural, social etc.) used in describing a particular state or a process.

(3) **Information structure** is here a matrix of concept relations where relations of all concepts included in a study are gathered, and from where information will be taken for analyses of a behaviour both in general terms and in individual cases.

(4) **Conceptual model** is a model of concept relations built by information available in an Information Structure.

(5) **DCA** = Dynamic Concept Analysis, a strategy of building an information structure and using information of concept relations available in an Information Structure.

(6) **Process of change** will be indicated here by changes in conceptual models as related to time.

(7) **Planning of change** means analyses of a present conceptual model and simulations on it in order to produce new relations between the concepts used or to add new elements or new concepts into conceptual analyses and conceptual models to indicate alternatives or directions for change.

(8) **Dynamic** can be understood here in two different ways: a) refering to the dynamic nature of concept relations in a conceptual model, and b) refering to changes in conceptual models as a function of time.

1.3. CONNECTIONS TO OTHER ORIENTATIONS

1.3.1. General Orientation of This Study

David Bohm (1980, 1) writes about the fragmentation of reality: "Fragmentation is now very widespread, not only throughout society, but also in each individual; this is leading to a kind of general confusion of mind, which creates an endless series of problems and interferes with our clarity of perception so seriously as to prevent us from being able to solve most of them."

Bohm continues: .."Man's natural environment has correspondingly been seen as an aggregate of separately existent parts, to be exploited by different groups of people. Similarily each individual human being has been fragmented into a large number of separate and conflicting compartments, according to his different desires, aims, ambitions, loyalties, psychological characteristics, etc., to such an extent that it is generally accepted that some degree of neurosis is inevitable, while many individuals going beyond the 'normal' limits of fragmentation are classified as paranoid, schizoid, psychotic, etc."

In using information of psychological tests, for instance, there are difficulties in achieving a holistic view of an individual behaviour; use of information is often too dependent on experience and personal interpretations of a practitioner; on individual ways of seeing how different things may be interrelated. Therefore there is a need to decrease subjectivity and to find structured ways to combine information.

Besides subjectivity involved in using information about human behaviour, fragmentation of reality, as Bohm sees it, is evident. This has partly guided thinking in this paper: a need to find more structured ways to work on information of human behaviour to get a comprehensive or holistic view of people in their complex interactions with themselves, with others and with their environments; to achieve understanding about how the 'parts' make a 'whole'.

At the same time the dynamic nature of behaviour needs to be taken into consideration; this has led to an interest in building conceptual models which illuminate a behaviour as a complex network of concept relations.

1.3.2. Holistic View

The approach here stresses the importance of finding a holistic view of a behaviour taking at the same time into consideration the elements, 'parts' of a 'whole'. A holistic view will be achieved by analyses of relations between parts with an assumption that a whole is more than a sum of its parts; this will be shown in analyses of conceptual models.

When speaking about holistic approaches, it will be realized that a holistic view of a behaviour, for instance, is rather an aim than something we can fully achieve in practice. Research concepts we are using in a study are likely to limit possibilities of getting a comprehensive picture about a reality; this will be demonstrated also in this study where only a limited number of concepts representing a reality or a phenomenon are taken into analyses.

In striving towards a more comprehensive view of a phenomenon, it is of crucial importance how central are the concepts we are using. Generation of relevant concepts for a study creates necessary conditions for conceptual analyses introduced in this paper.

Fragmentation of reality, an atomistic view, has been very dominant in studies of human behaviour. Effects of the atomistic tradition of natural sciences is still strong within the human and social sciences. In natural sciences there is now some tendency to move towards less atomistic approaches (cf. e.g. Bohm 1980, Capra 1982, 1983). Similar trends are obvious in behavioural sciences, too. A holistic view is seen as essential, in cognitive psychology (e.g. Engeström 1987), studies of world views (e.g. Neisser 1982), of human activity systems (cf. Checkland 1981) or in studies on 'wholeness' in psychology and education (e.g. Lindholm 1985, Sandelin 1985).

In general: theories, theoretical frameworks and research models (e.g. Mezirow 1981, Popkewitz 1984) aim at finding a comprehensive and a holistic view of a phenomenon.

This study shares an interest in holistic approaches with the studies mentioned above, but does not lean directly on any of them.

1.3.3. Systems Thinking

Checkland (1981, 3) writes in his book on 'systems thinking', about the use of a particular set of ideas in order to understand the world's complexity: "The central concept 'system' embodies the idea of a set of elements connected together which form a whole, this showing properties which are properties of the whole, rather than properties of its component parts."

This study can be seen as an example of a kind of systems thinking, which is not, however, identical to that of Checkland's. The approach introduced in this paper shows relationships between properties and uses conceptual models to illustrate a whole. Checkland follows in his analyses a certain structure. The idea of a set of elements connected together to form a whole will be shared with Checkland. However Checkland is following a particular order 'catwoe' in building a whole.

In this study a whole is achieved by a comprehensive analysis of relations between the parts. When this information is put together it makes a 'whole', in which the meaning and the function of a 'part' will be understood by its realtionships with the other parts of the whole.

1.3.4. Analyses of Change

Prigogine's theory, 'order through fluctuations' (Nicolis & Prigogine 1977; Prigogine 1980; Prigogine & Stengers 1984) gives an example of how a change occurs in metastable open systems, and reveals, too, how a temporary stage of 'disorder' is a prerequisite for promoting qualitative changes in a system. In this paper a temporary disorder might be identified in a conceptual model, and qualitative changes of a system as qualitative changes in conceptual models.

In his book 'Wholeness and the Implicate Order' Bohm (ibid., 204) writes: "..each moment of consciousness has a certain explicit content, which is a foreground, and an implicit content, which is corresponding background. We now propose that not only is immediate experience best understood in terms of the implicate order, but thought also is basically to be comprehended in this order. Here we mean not just the **content** of thought for which we have already begun to use the implicate order. Rather, we also mean that the actual **structure**, **function** and **activity** of thought is in the

implicate order." In his study Bohm used the idea that consciousness can be described in terms of a series of moments, and continues: "..one moment gives rise to the next, in which content that was previously implicate is now explicate while the previous explicate content has become implicate..", and "The continuation of the above process gives an account of how **change** takes place from one moment to another." (ibid., 205).

A similar kind of orientation is in the background of this study when using conceptual models in describing processes of change from one moment to another.

In this approach there may also be some similarities with the thinking of Jantsch (1976, 39) on interactive processes which define temporary structures, and which guide new processes, which in turn rise new temporary structures. Conceptual models in this paper could be regarded as temporary structures.

There seems to be much scepticism concerning the possibilities of planning a change (e.g. Goodman et al., 1984). Nevertheless, this study introduces an example of using conceptual analyses and conceptual models in planning. These analyses are close to approaches of systems thinking and futures research (e.g. Allen 1985).

1.3.5. Conceptual Models

Models can be regarded as simplifications of reality. Lindén (1986) discusses about different types of models: models exist on several levels of abstraction, varying from metaphysical models (metamodels) or 'paradigms' (cf. Kuhn 1970) or 'world views' to models of specific scientific theories.

How well a model describes the real world varies according to the nature of a model. Metamodels are superordinated and they cannot be proven true or false. Specific theoretical models can be concretely specified and could be empirically tested (e.g. Reese 1970).

Models are often presented either in the form of general conceptual frameworks or as statistical models. Model typologies are given in many studies (cf. Kaplan 1964, Tatsouka 1968, Bunge 1973, Hermerén 1974,

Nurmi 1975, Urban 1978 and Keeves 1984). The nature of models in educational research is discussed in various publications (cf. Lindén 1986, Reese and Overton 1970, Overton and Reese 1973).

A distinction can be made between mechanistic and organismic models (e.g. Overton and Reese 1973, Murray 1984). In her research report on behavioural development, Lindén (ibid., 7) describes these two models: "Mechanistic models focus on the analysis of elements, and development is seen as consisting of behavioral changes as additive components, which implies that later behavior is reducible to or predictable from, its antecedents. Organismic models stress the synthesis of organized complexities, and development is seen as consisting of structural change in which later states are not reducible to previous states." This is similar to a description given earlier by Hultsch and Plemons (1979). Lindén sees the human organism as an active totality, and regards it as a fundamental issue to determine principles of organization. In the organistic approach both qualitative and quantitative changes are possible.

Events and elements are important, but examination of them as such is not enough to describe a phenomenon; this gives reasons to develop models, which identify complex networks of concept relations as well as to study changes in concept relations accepting both qualitative and quantitative information into the analyses.

The conceptual models introduced in this paper are based on analyses of elements (parts) resulting in models which illuminate how 'parts' make a 'whole', i.e. a conceptual model makes a synthesis of different types of concept relations. This means in practice that in building an information structure a kind of mechanistic approach may be used to show relationships between parts or elements in an information structure, but when using this information for building conceptual models, a more organismic approach will be adopted; for example in studies of structural changes in paragraph 1.7.

Statistical models are often built by multivariate analyses of research data. This means that research is based on a general assumption of linearity. The approach introduced in this paper differs from statistical models; both linear and nonlinear relationships between the concepts included in a model will be taken into consideration. Nevertheless, statistical analyses may be used as a way to bring information about concept relations into an information structure as shown later in 1.6.2.

An interesting question in this study is the question of relations between conceptual models and theories. Information structures are regarded here, as shown later, as theoretical frameworks from where conceptual models can be derived.

1.4. BUILDING AN INFORMATION STRUCTURE

The basic idea of building information structures is to bring together information and data considered central in understanding a particular phenomenon or a problem so that the structure serves as a source of information for various kinds of conceptual analysis.

A structure of concept relations (here: a matrix) can include information from one study only or it may combine information from various studies. A matrix can also be formed by hypotheses of concept relations or it can be a mixture of hypotheses and research findings. The principles of building an information structure will be presented as follows:

At first, different types of relations between two concepts will be shown in paragraph 1.4.1. An example of concept relations from a previous study will be given in paragraph 1.4.2. and building of an information structure is demonstrated in paragraph 1.4.3.

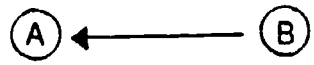
1.4.1. Different Types of Relations

In building an information structure of relations between concepts, it is essential to realize how two concepts can be related to and with each other. Five types of relations are given below with concepts A and B.

Type 1.

A and B (or the qualities they stand for) do not have a direct influence to each other; this may mean that they do not belong to the same entity or a group of concepts characterising a particular phenomenon. Links between A and B could, however, be found through their relations with other concepts as shown below (Types 4 and 5). In the above model A and B are nonrelated.

Type 2.

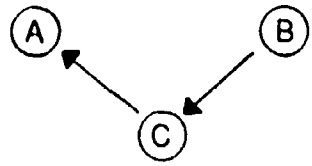


A and B may have a one-way relation as shown above: there is a direct influence of B on A.

Type 3.

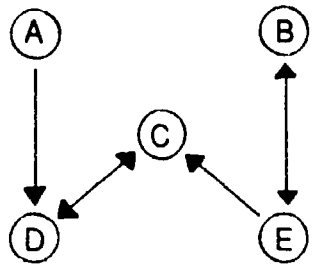
A and B have a two-way relationship with each other.

Type 4.



A and B do not have a direct relation with each other, but the relation will be found by a third concept C as in the model above.

Type 5.



The relation between A and B will be here defined via a longer chain of relations, for instance, by relations of A and B with concepts C, D and E in a way demonstrated in the model. The model actually includes three main types of relations between concepts: Type 1 (with A/B, A/C, A/E, B/D, B/C, D/E; some of these relations, e.g. A/C, becomes realised in the model as Type 4), Type 2 (with A/D, C/E) and Type 3 (with B/E, C/D).

Type 5 demonstrates what is meant by a conceptual model in this paper: a **conceptual model** is a network of concept relations as in Type 5. in which different types of relations appear in a model.

Types 4 and 5 are networks of concept relations. Between two concepts there are in fact three possible types of relations: Type 1, Type 2 and Type 3.

The aim in building an information structure is to produce a matrix which includes all information of the types of relations between concepts included in a study. The matrix is here called the information structure, i.e. the structure of concept relations.

1.4.2. An Example of Types of Concept Relations

In an earlier study (Kontiainen 1973), authoritarian attitudes of supervisors were analysed in the context of teacher training. Analyses were based on assessments by student teachers of the supervisory behaviour of their trainers. The study will be introduced in more detail later, in paragraph 1.4.3, where building an information structure will be demonstrated.

In the following, analyses are based on use of the information structure built for analyses of supervisory behaviour. An example of 'authoritarian' attitudes and four other characteristics of the behaviour is given to demonstrate different types of relations between concepts (here: attributes or subconcepts).

This demonstration is considered as a necessary step to make it easier to understand what is meant by information structures and conceptual models later in this paper.

The following gives an example of a combination which was found to be one of most typical cases of authoritarian supervisory behaviour in the context of teacher training. The qualities are:

1. General Attitudes:	1a authoritarian
2. Role Stability:	2b unstable
3. Style of Working:	3b serious
4. Effect of Supervision:	4b negative
5. Attitudes to Individuals:	5b unsympathetic

Symbols 1a, 2b etc. are used here to specify a subconcept for each concept; a subconcept is here called an 'attribute'. All attributes are given later in Table 1.1. and content of each attribute is shown in the Appendix 1.1. (p. 49). The procedure to identify relation types from an information structure is shown in 1.4.3.2.

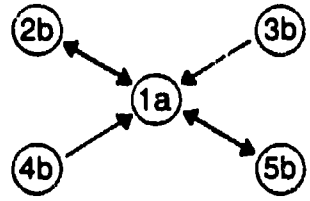
Types of relations with 'authoritarian' attitudes:

1a authoritarian 2b unstable	(1a) ←——→ (2b)	Type 3
1a authoritarian 3b serious	(1a) ←—— (3b)	Type 2
1a authoritarian 4b negative	(1a) ←—— (4b)	Type 2
1a authoritarian 5b unsympathetic	(1a) ←——→ (5b)	Type 3

The above relations with 'authoritarian' attitudes can be presented in a model where types of relations are shown simultaneously. Model 1.1. brings together the characteristics of supervisory behaviour which have a direct relation of Type 2 or Type 3 on attribute 1a:

Model 1.1.

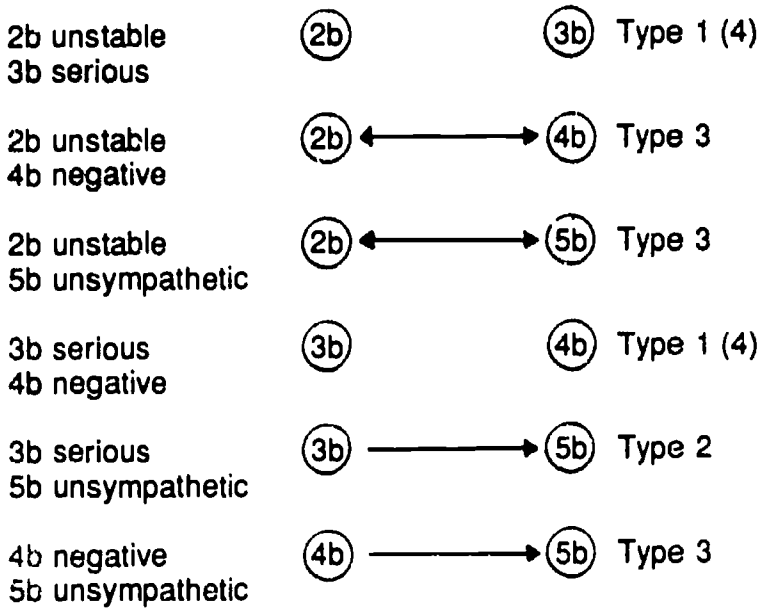
1a authoritarian
2b unstable
3b serious
4b negative
5b unsympathetic



Model 1.1. indicates that 'authoritarian' attitudes (1a) will be understood here by close relations (Type 3) with a supervisor's 'unstable' role (2b) and with his or her 'unsympathetic' attitudes towards individual students (5b). In addition, authoritarian attitudes can be considered as a response to a failure in supervision, 'negative' effect (4b) and his or her 'serious' style of working (3b); with 3b and 4b there is a one-way relation (A<--B) of Type 2, i.e. 3b and 4b have an influence on 1a, but these two are not directly influenced by authoritarian attitudes (1a).

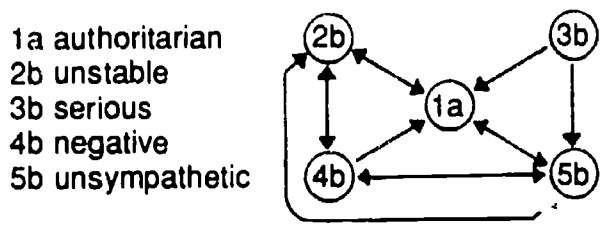
As seen above, one aspect of a behaviour (here: authoritarian attitudes in supervisory behaviour) does not as such tell about the role this characteristic has in a wider context. The content and meaning of a characteristic will be understood better if it is put in connection with other aspects of a particular behaviour and if the types of these relations are pointed out.

In order to understand the whole picture, it is not enough to study one aspect only in its relationships with the other. The types of relations between all aspects should be identified. In the following, the types of relations between the four other attributes of supervisory behaviour are given:



When this information of the types of relations is added into Model 1.1., new information results in Model 1.2 where all relationships are illustrated at the same time.

Model 1.2.



Model 2.2. demonstrates what is meant in this paper by a conceptual model; it shows types of relations between the concepts used to describe a particular behaviour or a process.

Model 2.2. gives relations between attributes in one the most typical combinations - when authoritarian attitudes are obviously strong as shown in the previous study. The model shows how the meaning and status of a concept will be specified by the other concepts in a certain context, in a 'whole' defined by relationships with 'parts'.

When all relations between concepts in Model 2.2. are taken into consideration, this case of authoritarian supervision could be interpreted in the following way:

The effect of supervision is negative (4b); this is characterized primarily by unstable role (2b) and unsympathetic attitudes (5b). Failure in supervision is likely to reflect on unstable role (2b) and to authoritarian attitudes (1a) and unsympathetic attitudes towards individuals (5b) Serious style of working (3b) is a characteristic both in general and in individual attitudes (1a and 5b), not directly in the other attributes. It was concluded in the previous study (ibid., 78-79) that the major problems of this kind of authoritarian behaviour are both in the supervisor's difficulties in finding his or her identity in the role of supervisor and in difficulties in communicating with individual students.

It can be stated, that the actual content and meaning of any aspect or characteristic of a behaviour will be understood only if its relations with the other aspects of the given behaviour are known. All relations between the concepts used need to be identified in order to find a holistic picture of roles different properties play in a given behaviour. Model 2.2. shows the network of all relations between the attributes in a case of supervisory behaviour with strong authoritarian attitudes as analysed in the previous study.

Although there is still scope for individual interpretations, a conceptual model gives a structure for interpretations and reduces subjectivity in seeing how different properties are related in a particular case.

In the original study of the behaviour of supervisors it was pointed out that there were 81 different ways in which authoritarian attitudes may result in different conceptual models, depending on what are the other attributes of the behaviour they are combined with. A change in one characteristic only may cause a drastic change in the whole structure of a behaviour as demonstrated by conceptual models.

1.4.3. Information Structure

All analyses above refer to an information structure from where the information of relations between concepts is derived. Principles of building an information structure will be discussed and demonstrated in the following.

As defined earlier an information structure is a **matrix** of concept relations where the information needed for conceptual analysis and for constructing conceptual models is available in a coherent format.

The information of concept relations can be drawn into a matrix from various sources, for instance:

a) from one study only; quantitative and/or qualitative data,
b) from various studies; either by combining information from different studies (to produce a better coverage of concepts to describe a particular phenomenon), or using information of concept relations achieved in several studies (to test reliability of information given by one study alone);
c) by building a matrix based on hypotheses about the nature of relationships (by a researcher or a practitioner);
d) by combining research findings and hypotheses in the same information structure.

It is always necessary to realize what sort of information will be gathered into a matrix of concept relations. This reflects on validity and reliability of the analyses based on a matrix. An information structure is a hypothetical structure of concept relations and relevancy of conceptual models derived from it will become finally assessed in actual contexts.

1.4.3.1. Concepts of Supervisory Behaviour

Principles of building a conceptual structure will be easier understood by using actual concepts available in a study. The above demonstration with authoritarian attitudes in supervisory behaviour was based on an previous study by the author (Kontiainen 1973). The same study will be used in the following analyses, too. Without going into many details concerning the previous study, some information regarded as central to this paper will be given.

The study was based on a semantic differential type questionnaire by which student teachers (N=189) assessed the behaviour of their supervisors (N=32) in the context of teacher training. The assessments (altogether 1528 individual trainee-trainer interactions) were analysed by factor analysis which resulted in five factors/concepts of supervisory behaviour; these are with specifications (attributes) given in Table 1.1. Qualities of each attribute are given in Appendix 1.1 (p. 49).

Table 1.1. Concepts and Attributes of the Behaviour of Supervisors

Factors	Concepts*	Attributes**
F1/C1	General attitudes	1a authoritarian
		1n neutral ***
		1b non-authoritarian
F2/C2	Role stability	2a stable
		2n neutral
		2b unstable
F3/C3	Style of working	3a easy-going
		3n neutral
		3b serious
F4/C4	Effect of supervision	4a positive
		4n neutral
		4b negative
F5/C5	Individual attitudes	5a sympathetic
		5n neutral
		5b unsympathetic

* 'Concept' refers here to the interpretation of the factor

** 'Attribute'is a subconcept identified in the study of supervision by f-scores in a factor (a=high, n=medium, b=low).

*** 'neutral' refers here to attitudes which are not obviously either authoritarian or non-authoritarian.

Use of factor analysis and factor scores in specifying the attributes of a concept, as done in the study given as an example, is however, only one way to produce concepts for analyses. The technical details are not repeated in this paper: they can be found in the original report (ibid., 1-70). It is worth noting, too, that this paper does not follow the previous analysis in all respects, although the basic principles are still mostly the same.

1.4.3.2. Information Structure of the Supervisory Behaviour

Analysis of an authoritarian behaviour in paragraph 1.4.2. was based on an information structure of concept relations in the study of the behaviour of supervisors as assessed by student teachers. The information structure, the matrix of concept relations will be introduced here.

In Matrix 1.1. all attributes of the study are listed on the left and a row brings together the attributes among the other attributes most likely to have Type 2 (A<--B) relation to the attribute in question; i.e. qualities which together specify the content and meaning of this particular attribute in the conceptual framework of a study. Matrix 1.1. is a slightly modified version of the matrix given in the original study (ibid., 70).

In this study attributes for each row were identified by analysing frequency distributions of factor scores; various other techniques can be developed.

Matrix 1.1. Information Structure of the Supervisory Behaviour

	F/C			C1			C2			C3			C4			C5		
Row			Attributes	a	n	b	a	n	b	a	n	b	a	n	b	a	n	b
1		1a	authoritarian	a			a		b			b			b			b
2	F1/C1	1n	neutral		a				b		n	b		n	b		n	
3		1b	non-authoritarian			a		n			n		a	n		a		
4		2a	stable	a			a					b		n	b		n	b
5	F2/C2	2n	neutral		n			n			n	b		n			n	
6		2b	unstable	a					a		n				b			b
7		3a	easy-going			b		n	b	a				n	b			b
8	F3/C3	3n	neutral	a		b			b		a			n		a		
9		3b	serious		n		a					a		n		n		
10		4a	positive			b	a				n	b	a				n	
11	F4/C4	4n	neutral		n			n	b		n			a			n	
12		4b	negative		n	b			b	a	n				a			b
13		5a	sympathetic		n			n				b	a	n		a		
14	F5/C5	5n	neutral		n			n				b	a				a	
15		5b	unsympathetic	a					b		n	b			b			a

- A cell shows the relationship between two concepts.
- A row shows the attributes with Type 2 (A<--B) relation to the attribute in question

Rows in Matrix 1.1. show the attributes most likely to combine with each of the fifteen subconcepts or attributes in the study. A row shows those attributes which have a relation of Type 2 (A<--B) to the attribute in question. For instance, it is stated on row 1 that there are two typical ways how the attributes of concept 2 (role stability) relate to the authoritarian attitudes (1a): both stable role (2a) and unstable role (2b) can have a Type 2 (A<--B) relation to 1a. The other attributes with Type 2 relation

to 1a (authoritarian) are: 3b (serious style), 4b (negative effect) and 5b (unsympathetic attitudes).

Relation of Type 2 (A<--B) between two attributes may change into Type 3 (A<-->B), when information from two rows concerning these attributes is put together in a conceptual model.

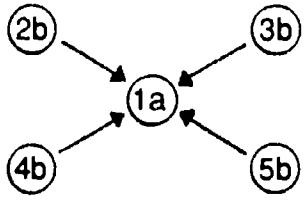
Row 1 brings together those attributes which have a relation of Type 2 on 1a 'authoritarian', i.e. the attributes which together specify the content of authoritarian attitudes in the given conceptual framework.

There are two typical cases of authoritarian behaviour as indicated in Row 1; one combined with supervisor's stable role and the other with unstable role. The latter with unstable role was introduced in paragraph 1.4.2. The same example will be used here, too, to make it clearer how the information structure in Matrix 1.1. serves as a basis to point out the types of the concept relations. This will be shown step by step also in Chapter 7.

Row 1 shows in fact the attributes which have direct relation of Type 2 on 1a, 'authoritarian' attitudes. This can be illustrated by the following model, which is a part of Model 1 presented earlier:

Model 1.1. Type 2 (A<--B) Relations to Attribute 1a

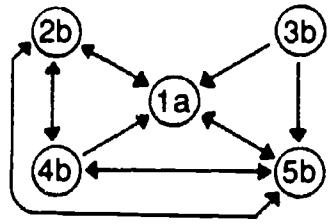
1a authoritarian
2b unstable
3b serious
4b negative
5b unsympathetic



To get a comprehensive picture of all relations in question, Model 2 was produced by using the information in Matrix 1.1. of all Type 2 reations between the five attributes. Model 1.2. shows how a Type 2 (A<--B) relation may change to a Type 3 (A<-->B) relation. The model shows also that there is a Type 4 relation between 1a and 3b. The procedure of showing the other relations is introduced in the following.

Model 1.2. Relations between all five Attributes

1a authoritarian
2b unstable
3b serious
4b negative
5b unsympathetic



Row 6 shows the attributes which characterize 'unstable' role in the supervisory behaviour. Among the attributes in the combination three attributes 1a (authoritarian), 4b (negative) and 5b (unsympathetic) have a direct relation of Type 2 to unstable role. Serious style (3b) does not characterize unstable role (2b), but there is an undirect relation between the two as seen in Model 1.2.

Row 9 gives the attributes wnich have a relation of Type 2 to 'serious' style of working (3b); none of the attributes in this combination has a direct relation to serious style; this indicates that serious style in this combination has a less central position. This can be recognized also in Model 1.2.

Row 12 gives attributes characterizing 'negative' effect (4b); only 2b (unstable) and 5b (unsympathetic) have a direct relation of Type 2 to negative effect in this attribute combination.

Row 15 gives attributes with 'unsympathetic' attitudes (5b). All the other four attributes have a direct relatioı ›f Type 2 on these attitudes. This is also seen in Model 1.2.

The information of concept relations concerning only the five characteristics under study can be taken from Matrix 1.1. into a submatrix, Matrix 1.1.1. which can be used for building a conceptual model; here Model 1.2.

Matrix 1.1.1. Type 2 (A<--B) Relations (+) to the Attributes

	1a	2b	3b	4b	5b
1a authoritarian		+	+	+	+
2b unstable	+		–	+	+
3b serious	–	–		–	–
4b negative	–	+	–		+
5b unsympathetic	+	+	+	+	

In the matrix '+' points out those attributes, which have a direct relation of Type 2 (A<--B) on the content and meaning of the attribute in question. '–' shows the attributes which do not have a direct influence, i.e. the relationship may be found by analysing other rows, other attribute qualifications (cf. Types 1, 2, 4 and 5; this eliminates only Type 3, A<-->B).

Similar kinds of submatrices and models can be made for all possible combinations of attributes. It was mentioned earlier in this paper that from Matrix 1.1. you can find altogether 81 different combinations of attributes with 'authoritarian' attitudes: i.e. more or less different ways of being an authoritarian supervisor. Matrix 1.1. includes information of 243 different combinations of characteristics of the behaviour of supervisors as assessed by student teachers. The number of possible combinations is dependent on the number of concepts or subconcepts included in a study.

1.4.3.3. Number of Individual Models

If the concepts are divided into three subconcepts or attributes as in the example given here, the number of possible combinations varies according to the number of concepts as shown in Table 1.2.

Table 1.2. Number of different combinations of attributes as related to the number of concepts (n) included in an information matrix

Number of concepts (n)	Total number of combinations (3^n)*	Number of combinations with one attribute (3^{n-1})*
2	9	3
3	27	9
4	81	27
5	243	81
6	729	243
7	2 187	729
8	6 561	2 187
9	19 683	6 561
10	59 049	19 683

* 3 refers here to three subconcepts or attributes for each concept

Table 1.2. shows that it is possible to identify almost sixty thousand different combinations and different conceptual models derived from a matrix of concept relations of ten concepts, when using the same procedure as in this study (three subconcepts for each concept).

1.5. GENERAL AND INDIVIDUAL DESCRIPTION

Matrix 1.1. makes it possible within the framework of concepts included in the study to describe supervisory behaviour in general and altogether in 243 different individual cases.

A general description is possible when different attributes in their typical combinations with other attributes are analysed (cf. analysis of authoritarian attitudes above/Row 1). 'Subtheories' of the behaviour of supervisors can be found by building conceptual models for each attribute with its typical combinations (Matrix 1.1.; Rows 1-15) or by finding most probable combinations of attributes and conceptual models for them.

It can be stated that Matrix 1.1. includes information for a theory or gives a conceptual framework of supervisory behaviour within the limits of these

concepts. Nevertheless, this 'theory' cannot be spelt out so that all possible combinations and concept relations could be verbally expressed at the same time.

This also demonstrates how difficult it is to define a general theory; a conceptual model or a verbal statement is always a partial explanation of a phenomenon. Nevertheless, an information matrix, like the one given in this study, represents a general theory in a form of a general structure (cf. Matrix 1.1.) from where substructures (cf.Matrix 1.1.1.) can be derived for building conceptual models.

Individual substructures and models of a behaviour can be found for any combination of attributes (here 243 combinations).

Use of the same information structure for both general and individual studies, is a way to combine nomothetic and idiographic approaches in the same study.

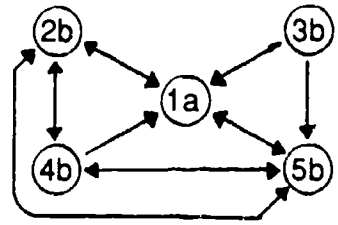
The following demonstrates, with some examples, how general and individual conceptual models can be found.

1.5.1. General Models

The attribute combinations for general descriptions can be found on each row in the Matrix 1.1. For instance, Row 1 gives two most typical ways of how authoritarian attitudes manifest in the supervisory behaviour; one combination with stable and the other with unstable role behaviour. The conceptual model with unstable role has already been given in Model 1.2., which will be now presented together with Model 1.3., with stable role, to visualize the differences between the two cases.

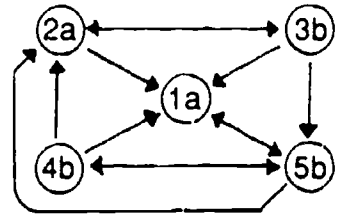
Model 1.2. Type 2 (A<--B) Relations Authoritarian Attitudes with Unstable Role

	1a	2b	3b	4b	5b
1a authoritarian		+	+	+	+
2b unstable	+		–	+	+
3b serious	–	–		–	–
4b negative	–	+	–		+
5b unsympathetic	+	+	+	+	



Model 1.3. Type 2 (A<--B) Relations Authoritarian Behaviour with Stable Role

	1a	2a	3b	4b	5b
1a authoritarian		+	+	+	+
2a stable	+		+	+	+
3b serious	–	+		–	–
4b negative	–	–	–		+
5b unsympathetic	+	–	+	+	



Model 1.2. and Model 1.3. show how the 'dynamical' structures, the concept relations differ in these two cases of authoritarian behaviour when there is only one attribute different in the two models. This reflects, however, upon many other concept relations, too, as seen below when the types of relations are looked at in these two cases:

Relation Types with Attributes 2a stable and 2b unstable

	(Model 1.3.) 2a stable	(Model 1.2.) 2b unstable
1a authoritarian	Type 3 (A<-->B)	Type 3 (A<-->B)
3b serious	Type 3 (A<-->B)	Type 1 (A B)
4b negative	Type 2 (A<-- B)	Type 3 (A<-->B)
5b unsympathetic	Type 2 (A<-- B)	Type 3 (A<-->B)

The types of relations are used for interpretations of these two cases of authoritarian behaviour. The differences in concept relations indicate, that Models 1.2. and 1.3. describe two quite different kinds of behaviour with authoritarian attitudes.

Although the above two attribute combinations stand now to characterize especially authoritarian supervisory behaviour in general they can be attribute combinations in some actual cases, too.

Another way to find general models is to study most typical combination of attributes (most typical cases).

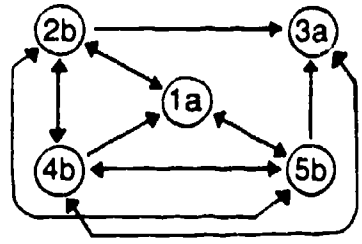
1.5.2. Individual Models

When it is accepted that individuals behave individually, there is a need to illustrate this also in conceptual models. Individual models could be seen as hypothetical models for actual behaviour; in each actual case it will be worth analysing how well a given model represents an individual behaviour.

In the following, some possible attribute combinations for individual cases are studied. Now authoritarian attitudes (1a) and unstable role (2b) are included in the combinations, but in each case one or two of the other three attributes has been changed. Matrix 1.1. serves still as the source of information.

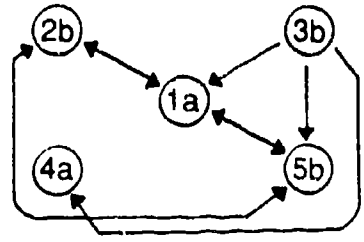
Model 1.4.

	1a	2b	3a	4b	5b
1a authoritarian		+	–	+	+
2b unstable	+		–	+	+
3a easy-going	–	+		+	+
4b negative	–	+	+		+
5b unsympathetic	+	+	–	+	



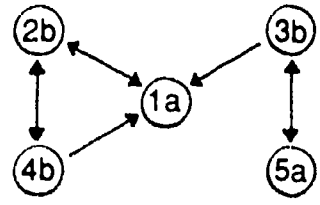
Model 1.5.

	1a	2b	3b	4a	5b
1a authoritarian		+	+	–	+
2b unstable	+		–	–	+
3b serious	–	–		–	–
4a positive	–	–	+		–
5b unsympathetic	+	+	+	–	



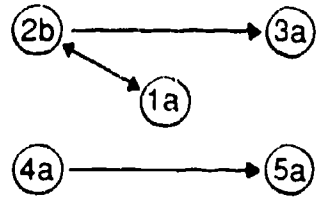
Model 1.6.

	1a	2b	3b	4b	5a
1a authoritarian		+	+	+	–
2b unstable	+		–	+	–
3a serious	–	–		–	+
4b negative	–	+	–		–
5a sympathetic	–	–	+	–	



Model 1.7.

	1a	2b	3a	4a	5a
1a authoritarian		+	–	–	–
2b unstable	+		–	–	–
3a easy-going	–	+		–	–
4a positive	–	–	–		–
5a sympathetic	–	–	–	+	



Models 1.4.-1.7. give some examples of how conceptual models may differ in individual cases. Every model could be described by its types of concept relations. Interpretation of a behaviour with five concepts only in a conceptual model is relatively easy. When the number of concepts increases, the task may be more difficult. Suitable computer programmes may help in describing more complicated models.

Models 1.4., 1.5. and 1.6. make a network of concepts, where each attribute is in one way or another in relation with other attributes.

Model 1.7. demonstrates a case where the attributes do not form an uniform model. This kind of broken model may indicate a) that the concepts used do not sufficiently cover a behaviour and the relevance of concepts have to be reconsidered, or b) that a behaviour actually is nonlogical or 'broken'.

1.6. BUILDING AN INFORMATION STRUCTURE; some remarks

A conceptual model gives a hypothesis of how different attributes are likely to become related in a real life situation or a process. Thus the analyses presented in this paper are primarily conceptual analyses which produce hypotheses of actual behaviour of supervisors. How well a model represents an actual case should be tested in practice.

An information structure can be built by observations and research, or by theoretical analyses of concepts, or by judgements of an expert and/or a practitioner or a team.

How concept relations are defined in an information structure may be effected by a structure builder's world view and values, especially if a structure is produced by personal judgements.

The following stages in building an information structure are common to all approaches:

1. **Select** relevant concepts for the information structure.
2. **Identify** the nature of the concept; use specifications if possible (cf. three attributes in the study demonstrated here).

3. **Analyse** in each row (or cell) of the matrix how the two concepts in question are related to each other; by using information already available in one or more studies or by constructing hypotheses of the types of relationships.
4. **Build** the information structure by filling in the in formation of concept relations into a matrix.

Selection of concepts is a crucial phase. Therefore, it is essential to find concepts which cover well enough a phenomenon or a problem under study.

Concepts may be found from various sources. They can be derived from theories or models available or they can be research concepts of one or more studies. Concepts can also be named by one person (cf. Chapter 2.) or a team, e.g. as a part of problem solving or decision making (cf. Chapters 4 and 5).

It will be reasonable to work on key concepts as early as possible, although the strategy introduced here is sufficiently flexible to accept new concepts into a matrix or to take off concepts which do not appear worth keeping in a structure.

An information structure may include different kinds of concepts, characteristics or elements (semantic, dichotomic or qualities of concepts in more than two categories, e.g. three attribute categories of concepts in Matrix 1.1.).

Some principles of building an information structure and of analyses of producing information will be discussed in the following.

1.6.1. Direct and Nondirect Relations

In a matrix of concept relations, an information structure, there can be information of three types of relations: Type 1 (no direct relation between two characteristics), Type 2 (one-way relation) and Type 3 (two-way relation). Information about a type of relation between two characteristics is available in a matrix in two rows concerning these two: combining information in these rows finally defines a type of relation.

Nondirect relations of Type 4 and Type 5 become manifest in a conceptual model in which information of all relations in a given combination is given simultaneously.

1.6.2. Different Ways to Analyse Relations

As mentioned earlier, building the information structure of the behaviour of supervisors was based on an empirical study of more than fifteen hundred individual student/supervisor interactions (factor analysis, factor scores) (ibid. 57-70). However, it is worth emphasizing that the given empirical approach is only one among many, and not necessarily the best; various other approaches could be developed. Some other ways of acquiring information for a matrix will be introduced here.

There are two main ways to fill a matrix with information:

1. To analyse each concept or subconcept (here: attribute) separately to produce the most typical combination(s) of this attribute with the other attributes included in a matrix. This means analyses by **Rows** in a matrix.

2. To analyse relations between two concepts (e.g. here between C1 'general attitudes' and C2 'role stability') by **Cells** in a matrix.

A general principle in analysing relationships between concepts was to study the qualities of supervisory behaviour there where they appear most obvious and clear. For instance, attributes in Matrix 1.1./ row 1 were found by analyses in two samples of interactions (N=100 and N=50) where authoritarian attitudes were strongest as indicated by high factor - scores in Factor 1. Row 1 gives the attributes of other four concepts which are most probable to join to attribute 1a 'authoritarian' (using a procedure based on quartiles and medians of factor score distributions).

An alternative to the analyses by rows is to analyse conceptual relations of two concepts at a time by cells of a matrix. This makes it possible to use information of correlational analyses, for instance, in building an information structure. Correlational analyses show, however, only linear relations between two concepts.

Finding alternative ways to define concept relations is important, especially if information from different studies is to be integrated in an information structure.

Use of correlation coefficients in defining concept relations is a practical way to bring information from various studies into the same information structure; most quantitative analyses are based on correlations. This does not exclude the use of information in qualitative analyses as well because the relationships can be expressed in the similar way with a direct attention to the qualities of two concepts, for instance: 'the more authoritarian the more unsympathetic' (cf. Matrix 1.1., cell C1/C5).

A statistically significant linear correlation between two concepts can result in a cell in one of the following ways showing a linear relationship:

significant positive correlation	a n b	or	significant negative correlation	b n a	

A nonsignificant correlation or 0-correlation suggests that there could be a nonlinear relation between two concepts. This can be found by analyses on the rows. Information of a nonlinear relation between two concepts may appear in the following form in a cell (cf. Matrix 1.1., cell C1/C2):

		C2		
		2a	2n	2b
C1	1a	a		b
	1n			b
	1b		n	

When the relations are defined by judgements by a researcher or a practitioner or a team, it will be decided at first whether there is a linear, a nonlinear or no relationship between two concepts. In the case of nonlinearity, there is a need to go into more detailed discussion of the relations on the rows. Only linear relations entitle us to make decisions by cells.

1.6.3. Asymmetry

A matrix of concept relations is not a correlation matrix, and asymmetry in the matrix of concept relations is accepted. Asymmetry is due to nonlinear relationships between concepts included in a matrix.

1.6.4. Direction of Explanation

Analyses introduced in this paper are primarily analyses of concepts and analyses of conceptual models which can be regarded as hypotheses of an actual behaviour.

Arrows in a conceptual model bring together those properties which together specify the content of an attribute in a particular combination.

Another question is how a conceptual model describes an actual behaviour. When a conceptual model is used to describe a behaviour in practice special attention should be paid to relations of Type 2 (one-way relation), which are in a central position to show the dynamical nature of a behaviour (e.g. Model 1.4., relations 1a/4b, 2b/3a and 3a/5b).

1.6.5. Integration of Information

An information structure may include information from different studies or other sources. Integration of information will be realized in information structures and in conceptual models when defining relationships between the concepts.

1.6.6. Universality of Concept Relations

In the earlier paper it was assumed (Kontiainen 1973, 31), that the relations of concepts of a behaviour are common to all individuals, but the behaviour of different individuals as described by these concepts may be different. An information structure is a common structure for general and individual descriptions as demonstrated in this paper.

Although relations between concepts can be regarded as general, i.e. as common to most individuals, it does not necessarily mean that the

behaviour of each individual could be equally well described by common concept relations. It was stated in the earlier paper (ibid., 32-33) that the relationships between concepts can be considered logical, but the behaviour of an individual can be illogical or contradictionary; this may result in a 'broken' model as illustrated in Model 1.7. or a behaviour may not fit into a model at all. On the other hand, an individual may have a different conceptual framework or a different way of seeing the relations between concepts. A 'broken' model could be only an individual case in which further information is needed in order to understand the case in his/her own terms.

The principle of universality of concept relations is accepted in this paper with some reservations. There might be cultural differences, for instance, in ways to relate concepts to describe a phenomenon in different cultures. Therefore, the relevance of concepts and concept relations in an information structure should be assessed before using information in a new context.

1.6.7. Invariancy of Information

The context where information is used finally defines which concepts are relevant to be included in an information structure.

An information structure can be modified or rebuilt according to needs of studies in different contexts or different times. It is sufficiently flexible to accept new concepts in and to give up a concept not considered relevant.

Rebuilding information structures may be an essential task when applying this approach in historical and other analyses of change.

1.7. STRUCTURE, PROCESS AND CHANGE

A conceptual model shows the dynamic nature of a phenomenon at a given moment. A series of conceptual models in a given period indicate step by step how a process may proceed.

Dynamic description refers here to the use of an information structure to point out relations between concepts and to the use of conceptual models, networks of concept relations, to show the roles different properties play in a given context at a given moment.

Process and change are considered here as partly overlapping. In any change there is an element of process either before the change or as a response to change. A change can be identified here as a change in a conceptual model.

A process does not necessitate a change. It may continue as the same for a period. The dynamic nature of this kind of 'static' process can be found in concept relations of a conceptual model, which is the same throughout a process. This refers especially to processes which maintain a prevailing behaviour or circumstances.

Nevertheless, any process encounters changes in a shorter or longer period of time. An important question is how a change intervenes in a process and how a change could be forecasted or planned.

Planning of change can start from analyses of present information structure and present conceptual model. Quite often there may be a need to start analyses already before a present stage in order to understand better the developmental nature of a phenomenon; this may emphasize a need to include historical analyses in planning of change.

A change can be planned by simulations with new conceptual models. Often a change brings new elements into an information structure. In planning of change relevancy of concepts in the structure will be assessed first.

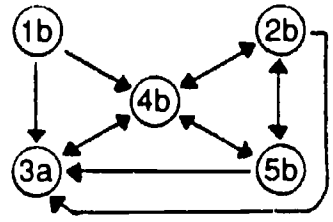
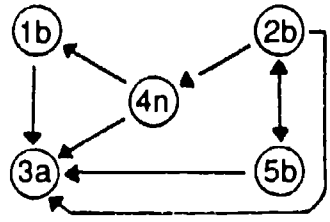
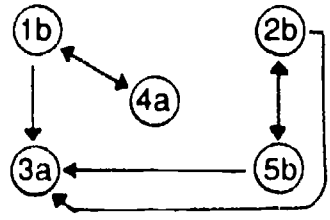
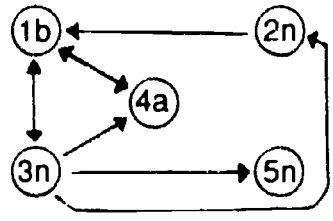
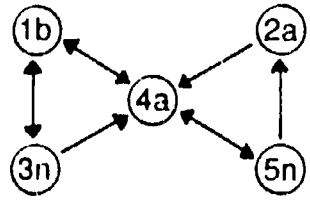
The following example demonstrates how an information structure can be used in analysing possible directions for change. The example is still based on Matrix 1.1., the information structure of supervisory behaviour, and the analyses are reported in an earlier paper (Kontiainen, 1977).

Planning of change aims at finding new directions for change and showing how a change may appear. Another question is how a change could be achieved in practice; this may be a matter of education, counselling or therapy, for instance, and necessitates different planning and various other approaches.

In Table 1.3. a present supervisory behaviour is described by a combination of attributes with the conceptual model (Phase 1). Then different attribute combinations are produced in order to find a conceptual model, where effects of supervision were as positive as possible. Four alternatives for change are given. Phase 5 supports best positive effect in supervision and the model shows how different elements are closely related together to result in a positive effect (4a).

Table 1.3. could be regarded here as an example of analysing directions for change, but also as a description of a process of change which has already happened.

Table 1.3. A Change Process/Planning of Change

	Attribute combination	Model
Phase 1.	1b non-authoritarian 2b unstable 3a easy-going 4b negative 5b unsympathetic	
Phase 2.	1b non-authoritarian 2b unstable 3a easy-going 4n neutral 5b unsympathetic	
Phase 3.	1b non-authoritarian 2b unstable 3a easy-going 4a positive 5b unsympathetic	
Phase 4.	1b non-authoritarian 2n neutral 3n neutral 4a positive 5n neutral	
Phase 5.	1b non-authoritarian 2a stable 3n neutral 4a positive 5n neutral	

PROCESS of CHANGE

If analyses in Table 1.3. are used to demonstrate planning of change, Phase 5 could be selected as a possible direction for changes in supervisory behaviour, because all properties of supervisory behaviour have a direct relationship with positive effect (4a). This means in practice (compare Phase 1 and Phase 5), that a supervisor's non-authoritarian attitudes (1b) will be supported, his or her skills in supervision need development or training (change from 2b unstable towards 2a stable), the style of supervision will be developed from easy-going (3a) towards slightly more serious (3n) and there is a need to develop some new ways to communicate with individual trainees (change from 5b to 5n).

As seen above, when an information structure and conceptual models are used in planning, it is possible to produce various alternatives or steps for defining directions for change. How a desired change will be achieved should be planned separately.

If Table 1.3. is used to describe a process of change which has already happened, Phases 1 to 5 show how the process has developed as indicated by structural changes in conceptual models.

In planning behavioural changes it will be realistic to accept that some characteristics in a behaviour are difficult to change. Conceptual analyses ~~is~~ give, however, a way to point out perhaps most 'economical' directions for change. For example: if it is considered difficult to change authoritarian attitudes in a behaviour, a change in some other characteristic may result in a behaviour, where the role of these attitudes is less central. A change in one characteristic only may reflect to the whole dynamical nature of a behaviour as shown by conceptual models.

1.8. POSSIBLE APPLICATIONS OF DCA

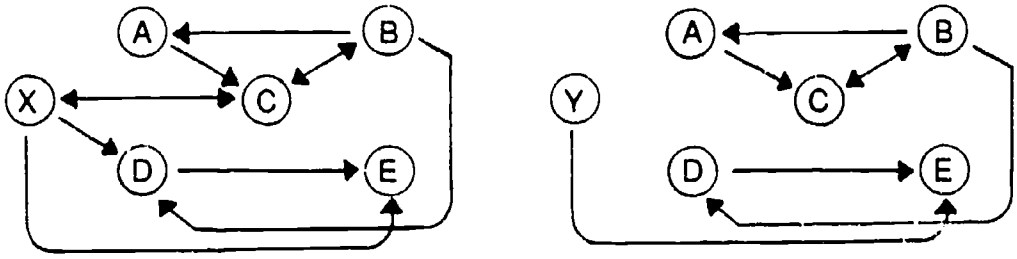
In paragraph 2, the strategy of using information available in an information structure was called Dynamic Concept Analysis, DCA. Examples of possible applications are given in the following. This is not a detailed description of how DCA could be applied, but rather an indication of those areas where it could be valuable. Chapters 2-7 in this publication give specific examples of applications of DCA.

1.8.1. Conceptual Analyses

DCA can be used to integrate information from one or more studies in an information structure and to build conceptual models as demonstrated in this paper.

1.8.2. Analyses of Similarities and Differences between Concepts

Similarities or differences between two concepts can be analysed by including them in an information structure in a particular context and by comparing conceptual models. If it is argued that two concepts are identical, the relations of these concepts with the other concepts in the structure should also be identical. In the following example concepts X and Y are given in their relations with concepts A, B, C, D and E.



The above models show that there is one difference between concepts X and Y: X has a relation of Type 3 with C whereas Y has a nondirect relation with C. The other relations are identical.

This kind of 'concept laboratory' may be of use, for instance, when selecting concepts for inclusion in an information structure or when there are other reasons for understanding in more detail how two concepts differ from each other.

1.8.3. Theory Building and Research Design

An information structure is a theoretical framework for analysing a phenomenon. A structure includes information for theory building, i.e. key concepts and their relations. Nevertheless, it was stated earlier in paragraph 1.5., that a 'theory' cannot be spelt out from an information struc-

graph 1.5., that a 'theory' cannot be spelt out from an information structure so that all concept relations included in it could be taken into consideration at the same time. This may be the case with theories in general: only subtheories can be specified in the form of conceptual models.

An information structure can be used in planning of research. The research concepts may be derived from theories or models describing a phenomenon or a researcher defines the concepts he is going to work with in a study. An information structure shows various possibilities to focus research. A research task may cover the whole information structure or some parts of it. In some cases it will be enough to study relations between two concepts only to acquire specific information.

An information structure can serve as a theoretical framework for a research project or a particular study. At the beginning of a study the researcher may make hypotheses of concept relations based on earlier research or on his/her own judgements.

If the information structure is filled in at the planning stage of a study, conceptual models derived from this hypothetical structure may be used to specify a research task.

Without going into conceptual models, an information structure as such may help to define a research problem and to make hypotheses. This follows closely the ordinary procedure of planning research (e.g. use of information in previous studies, defining research questions and specifying hypotheses). This approach may, however, help to place a study into a wider framework and to point out various alternatives for research. The approach can be used at the planning stage of a research without any further claims to apply it otherwise in a study.

1.8.4. Historical Studies and Analyses of Change

Information structures and conceptual models may be used in historical analyses to describe development of different phenomena in longer or shorter periods; development as indicated in changes in information structures and in conceptual models. The analyses of the process of change given in this paper are equivalent to historical analyses.

The following scheme illustrates how information structures and conceptual models make a chain throughout a period:

```
                Structure 1.          Structure 2.          Structure 3.
time ----------------|-------------------------|-------------------------|------------>
                Models                Models                Models
```

Changes in information structures may be caused by changes in the concepts included: new concepts can be added or old concepts taken away.

1.8.5. Planning of Change and Futures Research

Information structures and conceptual models can be used in describing and structuring a process of change, and in planning change or innovation, i.e. by bringing new elements into an information structure or by finding new ways to combine the present properties. Analyses of change are demonstrated in paragraph 1.7.

1.8.6. Educational Planning and Assessment

Education is closely related to the concept of change. Conceptual models can be used in analyses of a present situation or in analyses to produce various alternatives or directions for change as demonstrated in paragraph 1.7.

In addition, information structures and models can be used as an aid for the assessment of effects of education. This can be done by comparing a conceptual model representing a desired change with a model in a reality where changes aided by education should have appeared.

1.8.7. Studies of Educational Processes

Building information structures and use of conceptual models may be a part of learning and teaching processes. In this case, e.g. in adult education courses, course participants can produce an information structure and build conceptual models. This may happen in cooperation with teachers. Joint planning may be needed to decide what additional information

or knowledge should be acquired during the course to achieve better understanding of a phenomenon or a problem under studies.

DCA might also be used in describing educational processes, if there is a need to find structured pictures of how a learning process proceeds (cf. Chapter 2).

1.8.8. Decision Making and Problem Solving

Analyses of change demonstrate in this paper how building an information structure and use of conceptual models might be employed in decision making and problem solving as well. The concepts for analyses will be selected and analysed by a researcher, a problem solver or a consultant.

1.8.9. Diagnostics

The strategy could be used in analysing complex situations, if there is a need to integrate various types of information, as in psychodiagnostics or in planning or following up psychotherapeutic processes.

1.8.10. Comparative Studies

The approach may find applications in comparative studies too, when there is an interest to find out, for instance, how a phenomenon exists in two different cultures. This may lead to analyses in which information structures are built for both cases separately: this makes it possible to compare similarities or differences in how the 'same' phenomenon is realized in these two cases. It is also possible to study a phenomenon in one culture by conceptual structure of the other in order to understand better differences between the two.

1.8.11. Innovatory Approaches

To bring present properties to new relations with each other or to bring new elements in connection with the present ones.

1.8.12. Other Studies

DCA may be applied in various other kinds of research, whenever there is a need to analyse how parts make a whole in complex systems or situations.

1.9. DISCUSSION

An aim of this paper was to develop a research strategy to combine nomothetic and idiographic approaches so that the same source of information could be used to describe a given phenomenon both in general and in individual cases. An information structure is introduced here as a common basis for conceptual analyses.

Although the general principles of this approach may be accepted, a crucial question will be what are the concepts which become included in a structure and how are the relationships between concepts to be defined. This is not such a crucial question in meta-analyses or when using this approach to clarify personal judgements.

At the metalevel, building conceptual models is a kind of intellectual exercise without any urgent need to prove models true or false. In analyses based on individual judgements, subjectivity in assessments of concept relations will be accepted, and it will be up to an individual to assess information structures and conceptual models derived from them; although use of this approach may often happen with guidance a specialist or an expert.

A more demanding task is building information structures based on empirical analyses and data, especially if information from different studies is used. This paper gives an example of using frequency distributions in building an information structure and refers to possible use of correlational studies to show linear relationships between two concepts. However, there is a need to find various other ways to define concept relations and to build information structures (cf. Chapters 1-7).

The analyses and demonstrations in this paper are primarily conceptual analyses. This theoretical paper does not go into actual contexts to

assess conceptual models, which are regarded here as hypothetical models of actual behaviour, or to assess information structures used as the basis of these analyses.

The analyses given in the paper can be seen as basis for finding a general guideline for conceptual studies; more research and applications are still needed for further development of this research strategy, where an information structure has a central position in building conceptual models for various kinds of analyses as suggested in paragraph 1.8.

If the general principles of using an information structure for building conceptual models, as presented in this paper, is accepted, conceptual models can be considered as complex networks of concept relations, which illustrate dynamic nature of phenomena and show how a synthesis of relations between different properties may increase understanding of phenomena in a more holistic manner.

Conceptual models can be considered as structured simplifications of a reality and as hypothetical structures of actual life. When speaking about the use of conceptual models in understanding dynamical processes, for instance, it is reasonable to admit that an actual behaviour will not necessarily become sufficiently understood by conceptual models only. Nevertheless, conceptual models can be useful in finding structures which may serve as basis for deeper analyses of a behaviour or a phenomenon.

Analyses in behavioural and educational studies are often done without placing a phenomenon in a wider context; studies may concentrate on some minor details with little or no reference to the context of which they are a part. Information structures here are regarded as frameworks for analysing behaviour more comprehensively, i.e. showing a synthesis of relations between different properties in a special context.

When using this approach, it is important to realize, who brings concepts into an information structure and who finally defines the relationships between concepts used as basis for analyses with conceptual models. In this paper the demonstrations were based on an empirical data of a study, and conceptual models were seen as hypothetical models for actual supervisory behaviour. This can be regarded as an example of applying 'theory in practice' assuming that a 'practice' finally tests a 'theory'. The demonstrations in this paper do not, however, go into actual

cases. They do not therefore include assessment of the information structure or conceptual models in actual contexts, although this should often be considered as a necessary phase in a study (cf. Chapter 7).

In some other cases, producing concepts and defining concept relations and building an information structure may start directly from everyday experiences. This may be a reasonable way in analyses in which attention is mainly paid to structuring ongoing processes or when this approach is used, for example, in decision making and problem solving as suggested above. An information structure is now a hypothetical framework for a 'theory', and its relevance can be considered in relation to theoretical information or knowledge available. This kind of 'practical theories' can play an important role in theory building; e.g. by bringing relevant concepts into analyses.

Information structures derived from practice may as such, without reference to other information or research, help an individual to find a structure for a phenomenon or to build personal models to clarify his or her own life situation as a complex network of various aspects to be taken into consideration at the same time.

Building an information structure and using conceptual models may be a useful technique in planning of research. An information structure can now serve as a theoretical framework for a study, including the main concepts and their relationships based on previous studies or on a researcher's own judgements.

When studying a complex phenomenon, it is unlikely that there is enough information available to identify all relationships between concepts included in an information structure. 'Empty cells' in a structure reveal what information is especially needed by new research to get a more comprehensive picture of the phenomenon in question. A researcher can, as usually, make his or her own hypotheses of these relations, and they will be taken into account in conceptual models which can be used as hypothetical models to become tested in a study.

In planning research, an information structure can give some detailed information of what kind of information will be needed to understand better a research problem. An information structure may be used as help in selecting or constructing research techniques for quantitative and

qualitative analyses. Conceptual models may be used to specify research problems and hypotheses for a study as suggested earlier.

Various possible areas of applying DCA have been tentatively introduced in this paper. The approach is general by nature and it may be of use both in theoretical and empirical studies.

The approach introduced in this paper can use information acquired by different other research methods. The intention here is not to place other methods by a new one, but to find ways to integrate informaticn produced by various methods. A most typical feature of this approach is, however, to show by conceptual models how concept relations vary in different contexts.

It is worth emphasizing once again, that in applying this approach, an information structure is the basis of building conceptual models. Relevance of an information structure finally determines success or failure in producing valid and reliable pictures of a reality in the form of conceptual models.

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APPENDIX 1.1. Qualities of Attributes of the Supervisory Behaviour

1. General Attitudes	**1a authoritarian**	**1n***	**1b non-authoritarian**
- personal approach to teaching	inflexible		flexible
- involvement in student's decisions	restrictive		encouraging independence
- reaction to student's opinions	intolerant		tolerant
- general attitudes	authoritarian		non-authoritarian
- view of teacher's tasks	narrow-ranging		wide-ranging
- personal style of working	fastidious		careless
- general tone of evaluation	negative		positive

2. Role Stability	**2a stable**	**2n**	**2b unstable**
- clarity of instructions	clear		unclear
- certainty in making comments	confident		unsure
- relevance of evaluation	relevant		irrelevant
- impartiality of evaluation	impartial		biassed

3. Style of Working	**3a easy-going**	**3n**	**3b serious**
- requirements for lesson plans	general		detailed
- personal style of working	careless		fastidious
- attitudes to his/her own work	easy-going		serious

4. Effect of Supervision	**4a positive**	**4n**	**4b negative**
- on student's style of working	positive		negative
- on student's self-knowledge	positive		negative
- on student's self-confidence	positive		negative
- on ability to vary teaching methods	positive		negative

5. Attitudes to individuals	**5a sympathetic**	**5n**	**5b unsympathetic**
- attitudes to individual students	concerned		indifferent
- agreeableness	sympathetic		unsympathetic
- general attitudes	non-authoritarian		authoritarian

* 'n' = 'neutral' shows no particular trend towards either of the other two attributes

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CHAPTER 2.

INDIVIDUAL MODELS OF ADULT LEARNING

Seppo Kontiainen

Abstract

The paper introduces the use of Dynamic Concept Analysis, DCA, developed by Kontiainen (Chapter 1), in building conceptual models of adult learning processes. The same learning situation can be experienced differently by different individuals. The aim of this paper is to show, that besides the need to find general models of adult learning, there is also a need to find structured ways to study individual learning processes and to understand differences between individuals.

The study employs concepts of some previous studies of adult learning. The paper demonstrates how to build conceptual models by the information of concept relations of adult learning. An information structure serves as basis for building conceptual models which could describe learning processes in general (most probable cases) or in individual cases. A model gives a hypothesis of how learning is likely to take place in a particular process. Relevancy of models can be tested against information of actual learning processes.

The paper includes: (1) The definition of the concepts which are considered central in understanding adult learning processes. (2) Relations between the concepts are specified in an information structure. (3) Sixteen individual conceptual models are built by this information. (4) The models are described by the author and the descriptions are assessed by the students (participants of a course) themselves.

The models gave relevant information about the individual cases. Conceptual models could be considered useful in finding structures for and understanding of individual learning processes. The study confirms the notion that learning is a highly individual process: all sixteen learning models were different.

Conceptual models are used in the study in analyses and evaluation of learning processes. Simulations with desiderable models could be of help, for instance, in course design and in educational planning.

2.1. INTRODUCTION

Adult learning is a complex individual process with close connections to the learner's life experience, values and attitudes, and to the properties of social and psychological environments.

The aim of this study is to analyse how a learning process can be understood as interrelations between various aspects of learning. A conceptual model is here a network of the relations between different properties of a learning process.

A model is a simplification of reality. Models are often presented as general conceptual frameworks or as statistical models. Use of models in education is discussed in more detail, for example, by Reese and Overton (1973).

Theories and models of learning processes aim at finding principles and understanding of these processes. In studies of adult education and learning, theoretical approaches vary from presenting general principles of learning to specific theories and models, for instance: Dewey (1938), Knowles (e.g. 1984), Freire (1972), Mezirow (1981), Argyris (1982), Kolb (1984), Jarvis (1987) and Engeström (1987). Nature and development of models for teaching adults is discussed for example by Brookfield (1986).

Many of these theories and models are expressed in highly general terms, and it may be difficult to find paths from the general level into individual cases or vice versa. Some other approaches, for example, personal constructs by Kelly (1963), emphasize the need of building individual models to understand a particular phenomenon. Systems approach (e.g. Checkland 1981) uses a certain common structure to guide and analyse learning processes.

Conceptual models of this paper are built by applying the Dynamic Concept Analysis, DCA, developed by the author (Chapter 1). The main difference, when compared with the other models of the learning processes, is that this approach makes it possible to use the same source of information for building both general and individual models.

This study concentrates on the analyses of different properties of a learning process. A model gives an overall picture of a process or a given

moment of this process. A 'process', as seen as function of time, could be understood as a serins of moving and changing pictures of a reality, i.e. by a series of models. On the other hand, a process could be understood, as in the case studies of this paper, as a dynamical overall description of a whole process, in which verbs are taken in the description of structural qualities (attributes) of the learning process.

The study demonstrates how to build models and how to use the information of learning. A model makes a hypothesis about an actual case. This study includes sixteen individual cases.

The analyses are completed in the following order: Firstly, the conceptual framework of the study is specified. Secondly, the methodological basis of the study is introduced, and thirdly, how to build conceptual models is demonstrated by case studies.

2.2. CONCEPTUAL FRAMEWORK

The conceptual framework of this paper is defined primarily in discussion with the elements of adult learning produced by Jarvis (1987) for the model of the learning processes. His model (ibid., 25) includes nine categories: (1) the person, (2) situation, (3) experience, (4 & 9) learning outcomes/change, (5) practice and experimentation, (6) memorisation, (7) reasoning and reflecting, and (8) evaluation. The model shows the relationships between different categories, and nine responses to a potential learning experience are mapped out of the model to show different routes and forms of learning. The study by Jarvis produced useful elements and concepts of adult learning to be considered in this study. His model of learning routes is not otherwise used in the analyses of this paper.

Kidd (1976, 269) specified five elements of learning: the learner, the teacher, the group (usually), the setting or situation, and the subject matter.

Some new categories and concepts are introduced in this paper, and the terminology to specify the content and the meaning of a component is in some cases different as compared to those of Jarvis and Kidd. This is

partly due to the research method employed here, and partly because a different term is, for a reason or an other, considered better for analyses in this paper.

The components of adult learning are devided here in five main areas or categories:

A. Learner/Practitioner
B. Learning Environment
C. Learning/Teaching
D. Outcome
E. Evaluation

Each category includes one or more variables of the learning process. In this study, there are altogether twelve variables to descibe different qualities of adult learning. These are given in Table 2.1. This conceptual framework will be used later in the paper as the background to built detailed individual models of the learning processes.

Category A is named 'Learner/Practitioner' because an adult learner often brings into learning processes his/her own experience of everyday life, or learning is related to the development of work and/or personal competences. The variables 1 (Autonomy), 2 (Involvement) and 3 (Motivation) are the characteristics of the student's orientation to learning. Content Relevancy (4) is placed under Category A because it has been considered that it is finally up to the learner him/herself to assess the relevancy before, during or after a learning experience.

Table 2.1. Categories of Learning

A. Learner/Practitioner

1. Autonomy
2. Involvement
3. Motivation
4. Content Relevance

C. Learning/Teaching

7. Approach to Learning
8. Reflectivity
9. Memorisation

12. Evaluation

5. Social Interaction
6. Learning Climate

B. Learning Environment

10. Learning Type
11. Change

D. Outcome

Category B includes two variables specifying qualities of the learning environment. Social Interaction (5) refers to a group working together (in some cases a group could have a wider meaning, i.e. those people s/he lives or works with while being a learner). Learning Climate (6) refers to the general atmosphere or climate in which learning occurs. The learning climate is developed by the student, the teacher and/or the group. In addition, the climate is dependable on the content, and on how the content is dealt with in learning situations.

Category C includes variables (7, 8 and 9) which specify the qualities of strategies used or developed for learning and teaching. Learning and teaching strategies are developed by the learner or by the teacher or in a dialogue between the learner and the adult educator.

Category D consists of two variables relating to outcomes of learning. Learning Type (10) refers to the amount of innovatory experiences in learning. The other variable Change (11) means actual changes in the

learner's habits of thinking, and the reflections of the learning experience into practice.

Evaluation gives the learner's assessment of a learning experience.

The concepts or elements of a learning situation or a process are specified in this study by three attributes. The 'neutral' or 'medium' level of a concept refers to a situation where there may be a combination of qualities of the two pole attributes of the dimension or the attribute 'neutral' indicates 'neutrality' towards the quality in question. The concepts with the attributes given in Table 2.2.

Table 2.2. Concepts and Attributes of Adult Learning

	Concepts	**Attributes**		
A.	Learner/Practitioner			
A1	Autonomy	autonomous	medium	non-autonomous
A2	Involvement	active	medium	passive
A3	Motivation	high	medium	low
A4	Content	meaningful	neutral	meaningless
B.	Learning Environment			
B5	Interaction	active	medium	passive
B6	Climate	informal	non-formal	formal
C.	Learning/Teaching			
C7	Approach	theoretical	neutral	practical
C8	Reflectivity	reflective	medium	non-reflective
C9	Memorisation	high	medium	low
D.	Outcome			
D10	Learning Type	innovative	neutral	conformist
D11	Change	high	medium	low
E12	Evaluation	positive	neutral	negative

2.3. DEFINITIONS OF THE CONCEPTS

The content and the meaning of the variables in categories A–E will be discussed in the following.

A. Learner/Practitioner

(1) Autonomy (autonomous - medium - non-autonomous)

The learner status will be defined here by the degree of autonomy the learner has in a learning process. The learner him/herself can be the agent of learning or have an object role. This is close to the terms 'self-directed and 'other directed' or 'agent' and 'reactor' (Jarvis 1987, 66). Non-autonomous position is similar to Freire's (1972) perception of an 'oppressed' person.

The status of a learner depends on the roles s/he takes or the roles given to the learner. The degree of independency or autonomy of the learner will be defined in practice by a combination of the learner's self-perception of the role, the views of the role in an learning institution, and the others' expectations of the role (e.g. significant others, organisations).

(2) Involvement (active - medium - passive)

The learner role means the nature of involvement the learner has in a learning process. This refers to the terms 'pro-active' and 'reactive', which are defined by Jarvis (ibid., 66): "..., the pro-active/reactive dimension refers to the extent to which individuals have 'created' the situations in which they are or whether they are reacting to a situation which has been created by others." However, Jarvis does not have a special category for the status of the learner, and he combines the information of two distinct categories of this paper (1) learner status (autonomy) and (2) learner role (involvement).

It is assumed here, that autonomy of the learner has an impact on the learner's involvement but it is accepted, too, that even a non-autonomous learner can be actively involved in a learning process, and an autonomous learner can adopt a passive role.

(3) Motivation (high - medium - low)

Jarvis (ibid., 93) refers to disjuncture, disconnection or distance when talking about the learner's personal relationship with a learning process. Disjunction or discontinuity means a gap between the individual biography and the learning experience. Similarily Mezirow (1981, 6-9) uses the term 'disorientating dilemma' as the first stage leading to self-examination. Learning is affected by the learner's actual needs to establish harmony between the biography and the present experience or between the biography and the idealised experience.

The term 'disjuncture' is placed here by 'motivation', because the latter is in wic .se, and because there are four different variables in Category A to ind .te personal qualities of the learner, which Jarvis covers by one dimension 'proactive/reactive'. Nevertheless, 'disjuncture' could be an appropriate term to express the nature of motivation in adult learning.

(4) Relevance of Content (meaningful - neutral - meaningless)

The relevance of content is defined here by the dimension between 'meaningful' and 'meaningless'. The use of these attributes is motivated by the notion that an individual is a meaning-seeking being.

B. Learning Environment

(5) Social Interaction (active - medium - passive)

Social interaction refers to the qualities of social processes in learning (group processes, tutoring etc.). An individual learning process may be promoted by positive, supportative cooperation with others. In contrast, a conflict or lack of interaction may have (often) a negative, preventive influence on learning.

Many studies of adult learning (e.g. Knowles 1984, 14-17) emphasize the importance of setting a suitable climate in which adults may learn. Jarvis (ibid.,67) relates proactive/reactive approaches to group situations, too.

Social interaction is specified here by the dimension 'active - passive'. It is assumed, that also an independent learner can have a social environment of learning.

(6) Learning Climate (informal - non-formal - formal)

There is interaction in three types of social group: informal, non-formal and formal (Jarvis 1987, 68-70). The learning situation is now defined according to the position of the learner in a learning situation.

'Informal' learning situation, as well as an individualistic situation in many cases, takes place in not pre-specified social situations. 'Non-formal' refers to organized and systematic educational activities carried on outside the formal system, for instance, in a continuing education programme to provide selected types of learning to a particular group in an organised and systematic interaction between people. 'Formal' relates to any bureaucratic or official situation within an organisation in which people play different roles (e.g. those of teachers and students).

The dimension 'informal - formal' is used here to describe the climate or the atmosphere of a learning environment.

Individualistic situations are likely to become characterized as 'informal' situations in which the learner finally defines the circumstances in which the learning takes place.

'Non-formal' situation can be often described as a situation combining qualities of informal and formal situations: 'non-formal' could be placed in some occasions by 'collegial' or 'peer'.

'Formal' situations are ready-tailored situations with little or none consideration of the learner's personal needs or life experience.

C. Learning/Teaching

(7) Approach to Learning (theoretical - neutral - practical)

Approach to learning is related to the category which Jarvis called 'practice and experimentation'. There is, however, a difference between practice and experimentation (ibid., 113): "..experimentation refers to the possibility of doing something new, to creating something that has not existed before; while practice carries a connotation of repetition and even drudgery. The only element that they appear to have in common is that they are both practical."

The approach to learning regulates how much an adult learner is able to build new knowledge, skills and attitudes on his or her previous experiences. Although the practical element here has common with that of Jarvis, the content and meaning of this category is different in this study: the approach to learning is here defined by the dimension 'theoretical-practical'.

Different learning processes may give different emphasis on theoretical and practical issues. For instance, skills learning may often be very practical without any clear connection to the theoretical bases of a performance. 'Neutral' level in this category represents an approach in which theoretical and practical elements appear together: theory in practice or practice in theory.

(8) Reflectivity (reflective - medium - non-reflective)

Jarvis (ibid., 87) defines 'reflectivity': "Reflection, in this context, means a process of deep thougt, both looking backwards to the situation being pondered upon and projecting forward to the future, being a process both of recall and reasoning."

Schön's (1983) analyses of reflective practitioners and Mezirow's (1981) theory of adult learning and education give good examples of different forms and levels of reflectivity, and of how the term 'reflectivity' can be understood. Dewey (1933), Argyris (1982), Boud et al. (1978) and Engeström (1987) emphasize processes of thinking as essential part of learning activities.

It is assumed here that even in a non-reflective learning process, an individual is likely to bring at least some 'reflections' into the process, to think in terms of his or her previous experience and knowledge.

(9) Memorisation (high - medium - low)

Memorisation refers to degree of reproducing of information in a learning situation. 'High' memorisation means, that learners are expected to acquire and to remember the information with which they have been presented.

D. Outcome

(10) Type of Learning (innovative - neutral - conformist)

Several writers of adult education search for possible outcomes of learning. For instance, Argyris (1982) when talking about couple loop learning, Botkin et al. (1979) when introducing ideas of maintenance or innovative learning, and Dewey (1933), Freire (1972), Kolb (1984), Engeström (1987) and others when seeing adult learning as a problem solving process or as part of a developmental project.

A type of learning outcome is here assessed on the dimension 'innovative-conformist'. However, an innovative outcome does not always lead to an actual change. This is why another category of outcome, 'change', is considered necessary to characterize implications the learning may have in everyday practice.

(11) Change (high - medium - low)

A change can be understood as new forms of practice, knowledge and skills. The concept also refers to personal development and growth.

Most learning results in some form of change. A rather flexible dimension (high - low) is used here, because it is often difficult to assess actual impacts of learning on changes in real life situations: a change is often a result of many other things, too, and it is not necessarily easy to separate the effects of learning experiences from other simultaneous effects. The above concerns as well the use of 'learning' and 'non-learning' (Jarvis 1987, 134) to describe possible outcomes of learning processes.

(12) Evaluation (positive-neutral-negative)

Evaluation is regarded here as an overall assessment of a learning process or a situation.

An interesting question is who makes an evaluation. A learning process can be evaluated, for instance, by the learner, the teacher, an institution, and in some cases by external evaluators. The same process can become evaluated differently in all these cases.

2.4. DYNAMIC CONCEPT ANALYSIS

Adult learning will be analysed here by the Dynamic Concept Analysis, DCA (cf. Chapter 1). An **information structure** includes information of relationships between the variables of a study, and serves as the basis for integrating information in **conceptual models**.

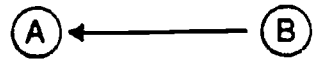
It was shown earlier (Chapter 1, 10-12), that there are altogether five different ways in which two concepts can be in relation with each other: (1) they have no relation, (2) they have a one-way relation, (3) they have a two-way relation, (4) they have no direct relation, but they are related with each other via a third concept, or (5) they are related via a longer chain of concept relations.

The five types of relations are central to understand conceptual models of this study. This is why they are repeated here.

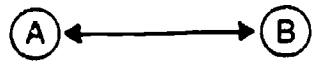
Different types of relations can be illustrated as follows:

Type 1.

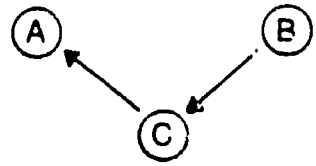
Type 2.



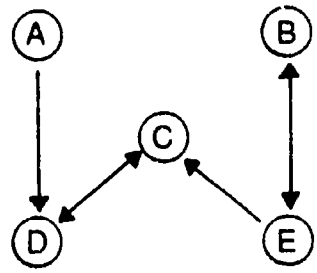
Type 3.



Type 4.



Type 5.



The **information structure** includes information of different types of relations between the variables in a study. This information can be integrated in conceptual models, in which the relations between all variables in question are shown simultaneously. A **conceptual model** is a network of concept relations as Type 5, in which different types of relations may appear in the same structure.

Four stages are central in this approach: (1) to identify the key concepts for the study, (2) to define the relationships between the concepts, (3) to build an information structure of concept relations, and (4) to use the information structure to build conceptual models, which can be described and assessed.

2.5. INFORMATION STRUCTURE OF ADULT LEARNING

An information structure is a matrix of concept relations. The relationships between the above twelve concepts and thirty six attributes of the learning processes are now defined by statements or assumptions of the concept relations.

Appendix 2.1. (pp. 91-95) gives the statements of relationships between the concepts of adult learning in the conceptual framework of this study. The statements are here subjective and open to criticism and alterations. In fact, every statement can be considered as a research hypothesis.

Defining concept relations by individual judgements, as here, is a highly value-bounded procedure, and dependable on the researcher's own knowledge, experience and values. This leads to many questions, which do not necessarily have any clear answer. This became obvious to the author of this study when analysing, for instance, the role of the learner autonomy in learning.

Definition of concept relations by empirical studies may be needed in the future to test the hypotheses given in this paper, and to make a more reliable information structure.

Matrix 2.1. is the information structure based on the information of concept relations of adult learning processes given as statements in Appendix 2.1.

How a statement is presented in a Cell of Matrix 2.1. is demonstrated in the following.

(1) The relationship Concept 3 (Motivation) has to Concept 2 (Involvement) is given as the statement (cf. 2/3 in Appendix 2.2., 96): **The higher motivation the more active role.**

In Matrix 2.1. the statement results in Cell 2/3:

			Concept 3 (Motivation) 3a	3n	3b
Concept 2 (Role)	active	2a	a		
	medium	2n		n	
	passive	2b			b

(2) Another example concerns the relationship Concept 9 (Memorisation) has to Concept 1 (Autonomy, cf. 1/9 in Appendix 2.2.): **The less memorisation the more autonomy.** In Matrix 2.1. the statement results in Cell 1/9:

			Concept 9 (Memorisation) 9a	9n	9b
Concept 1 (Autonomy)	autonomous	1a			b
	medium	1n		n	
	non-autonomous	1b	a		

(3) A trend towards the relationships as stated is expressed in the matrix:

a	n	
	n	
	n	b

or

	n	b
	n	
a	n	

(4) A non-linear relationship can be expressed, for instance, in the following form (cf. Cell 10/7):

			Concept 7 (Approach) 7a	7n	7b
Concept 10 (Outcome)	innovative	10a		n	
	medium	10n		n	
	conformist	10b	a		b

It is stated in this example, that an innovative outcome is most likely to result from an approach with a combination of theoretical and practical elements (7n), and a conformist outcome is likely to result either from a very theoretical (7a) or very practical (7b) approach.

(5) An empty cell indicates, that it is considered not possible to make a statement of a relationship. For instance, the outcomes (variables 10 and 11) do not effect on variables of the category B (learning environment), but it is regarded reasonable to state vice versa, that the learning environment has influence on the outcomes (Cells 10/5, 10/6, 11/5 and 11/6).

Matrix 2.1. Information Structure of Adult Learning

Row	CONCEPTS	Attributes	1	2	3	4	5	6	7	8	9	10	11	12
1	1.	1a autonomous	a	a	a	a	a n	a	n b	a	b			
2	AUTONOMY	1n medium	n	n	n	n	n	n	n	n	n			
3		1b non-autonomous	b	b	b	b	n b	b	a	b a				
4	2.	2a active	a n	a	a	a	a	a	n b	a	b			
5	INVOLVE-	2n medium	n	n	n	n	n	n	n	n	n			
6	MENT	2b passive	n b	b	b	b	b	b	a n	b a				
7	3.	3a high	a n	a	a	a	a	a	n b a		n b			
8	MOTIVATION	3n medium	n	n	n	n	n	n	n	n	n			
9		3b low	b	b	b	b	b	b	a n	b a n				
10	4.	4a meaningful				a			a		b			
11	CONTENT	4n neutral				n				n	n			
12	RELEVANCE	4b meaningless				b				b a				
13	5.	5a active	a	a	a	a	a	a n	n b a		b			
14	INTERACTION	5n medium	n	n	n	n	n	a	n	n	n			
15		5b passive	b	b	b	b	b	b	a	b a				
16	6.	6a informal	a	a	a	a	n	a	b a		b			
17	CLIMATE	6n non-formal	n	n	n	a n	a n	n	n	n	n			
18		6b formal	b	b	b	b	b	b	a	b a				
19	7.	7a theoretical						b	a	b a				
20	LEARNING	7n neutral						n	n	n	n			
21	APPROACH	7b practical						a	b a		b			
22	8.	8a reflective	a	a	a	a	a	a n	n b a		b			
23	REFLECTIVITY	8n medium	n	n	n	n	n	n	n	n	n			
24		8b non-reflect.	b	b	b	b	b	b	a n	b a				
25	9.	9a high						b	a	b a				
26	MEMORISATION	9n medium						n	n	n	n			
27		9b low						a	b a		a			
28	10.	10a innovative	a	a	a	a	a	n	n a		b a			
29	LEARNING	10n neutral	n	n	n	n	n	a n	n	n	n			
30	OUTCOME	10b conformist	b	b	b	b	b	b	b a	b	b a			
31	11.	11a high	a	a	a	a	a	a n	b a		b a	a	a	
32	CHANGE	11n medium	n	n	n	n	n	n	n	n	n	n	n	
33		11b low	b	b	b	b	b	b	a	b a		b	b	
34	12	12a positive	a n	a	a	a	a	a n	n b a		b a	a	a	a
35	EVALUATION	12n neutral	n	n	n	n	n	n	n	n	n	n	n	n
36		12b negative	n b	b	b	b	b	b	a	b a		b	b	b

- A cell shows the relationship between two concepts.
- A row shows the attributes with Type 2 (A<--B) relation to the attribute in question

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Matrix 2.1. serves as the basis for building conceptual models of various learning processes. As shown in the earlier paper (Chapter 1, 23), twelve concepts with their thirty six attributes can make more than half a million different attribute combinations to describe individual processes of learning.

Matrix 2.1. includes the information for building conceptual models for all these combinations of attributes.

Rows of Matrix 2.1. are in central position in building conceptual models. This will be demonstrated in the case studies.

2.6. CASE STUDIES

2.6.1. Context of the Study

The students of this study participated a course for sixteen hours (Autumn 1989) at the Department of Education, the University of Helsinki. The author of this paper had a lecture/seminar (two to three hours per week) in which theoretical questions of the Dynamic Concept Analysis (DCA) and conceptual models with various applications were studied. The participants were graduate and postgraduate students (N=16) in Education and Adult Education.

Some of the students had the course as a part of their degree course and some participated voluntarily. The course contained lecturettes and case analyses. In addition, the course included individual exercises and reading. The teacher regarded himself more as a course tutor than as an ordinary lecturer. At the beginning of the course most of the students were unfamiliar with the course content, and only a few knew in advance somebody in the group.

The case analyses of learning processes of the course members were completed at the end of the course. The course assessment was based on the individual excercises/homework.

6.2. Individual Models of Learning

The case studies were completed at the end of the course in the following sequence:

(1) The concepts and the attributes of the learning process were studied jointly in a group session.

(2) The list of concepts and attributes (Appendix 2.2., 96) was worked through step by step with the students, and each student selected one attribute under each concept to make a combination of attributes to characterize his/her learning process in the course.

(3) The author of this paper built a model of the learning process for each case by employing the information of Matrix 2.1. in his/her attribute combination (twelve attributes for each case). The twelve attributes identify the rows in Matrix 2.1. from where Type 2 (A<--B) relations can be found for each attribute. As an example, Table 2.3. gives the attribute combination in Case 1, and it also gives the other attributes in this particular combination with Type 2 relation to every attribute.

Table 2.3. Attributes and Type 2 (A<--B) Relations in Case 1

Attributes	Row/ Matrix 2.1.	Type 2 Relations from the Attributes											
		1a	2a	3n	4a	5n	6b	7a	8a	9n	10a	11n	12a
1a autonomous status	1		2a		4a	5n			8a				
2a active role	4	1a			4a				8a				
3n medium motivation	8					5n				9n			
4a meaningful content	10								8a				
5n medium interaction	14			3n						9n			
6b formal climate	18							7a					
7a theoretical	19						6b						
8a reflective	22	1a	2a		4a								
9n medium memorisation	26												
10a innovative outcome	28	1a	2a		4a				8a				
11n medium change	32			3n		5n				9n			
12a positive evaluation	34	1a	2a		4a				8a		10a		

The information in Table 2.3. is taken into Model 2.1. (p. 70). Table 2.3. and Model 2.1. show, for example, that the following attributes have a Type 2 (A<--B) relation to the attribute 1a: 2a, 4a, 5n and 8a. Model 2.1. is built by combining all the information about Type 2 relations in Case 1: a Type 2 relation may change into a Type 3 relation (A<-->B).

In fact, Model 2.1. includes all five types of relations, for instance:

Type 1 relation between 1a and 6b (1a 6b),
Type 2 relation between 5n and 1a (5n-->1a),
Type 3 relation between 1a and 2a (1a<-->2a),
Type 4 relation between 5n and 10a (5n-->1a-->10a), and
Type 5 relation between 2a and 3n (2a<-->1a<--5n<-->3n).

(4) The description of the Model (and hypothetically the learning process) was written by the author.

(5) The student was given the Model and the description for assessment. S/he was asked to make an overall assessment about the relevance of the description. In addition, s/he was asked to comment the model and the description.

Level of agreement was assessed by the following scale:

high agreement 1 2 3 4 5 6 7 low agreement

Fourteen assessments (two not available) varied from 1 to 3: three times 1, ten times 2 and once 3. The agreement with the model descriptions is high.

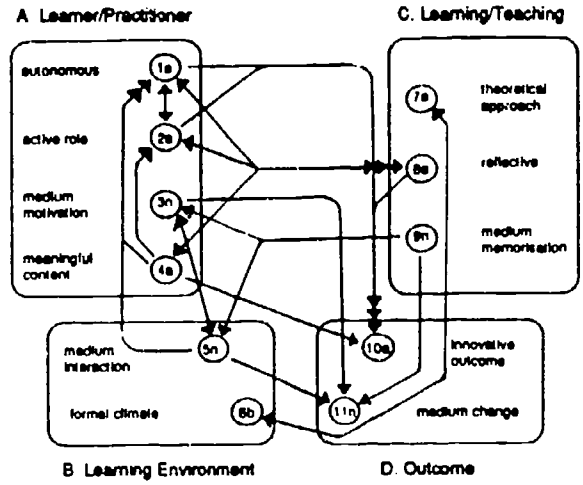
In the following, all sixteen models with the desription and the assessment are presented to demonstrate how even the same course can promote sixteen different learning processes.

Number of possible attribute combinations with twelve concept like in this study is, as mentioned earlier, more than half a million. All these combinations could result in their own conceptual model by using the information of concept relations in Matrix 2.1., Information Structure of Adult Learning.

CASE 1

Description

Model 2.1. Learning Process in Case 1



E. Evaluation: 12a positive
results from
1a autonomous status
2a active role
4a meaningful content
8a reflective approach
10a innovative outcome

A. Learner/Practitioner
The student is active and independent (1a, 2a). She considers the content relevant (4a). She is not necessarily very motivated of participating the course (3n), but is able to reflect her own ideas and experience during the course (1a, 2a and 4a with 8a). Not very active social interaction of the course has strengthened her autonomous role as the learner (5n with 1a).

B. Learning Environment
The general atmosphere is experienced by the student as formal (6a). This is primarily due to the theoretical orientation of the course (7a with 6a). The group interaction is seen as moderate (5n); this will be understood in the model partly by her own motivation and involvement in the course (3n), and partly because of the low memorisation of the course (9n, individual tasks and homework).

C. Learning/Teaching
The theoretical orientation of the course does not serve directly the student herself (cf. 7a quite isolated in the model); the student might have had some difficulties to combine her individual process (A) with the course process (B + C). Nevertheless, the course gives space for reflectivity (8a) and this is likely to fit well with the learner's autonomous and active role (1a, 2a and 4a with 8a).

D. Outcome
The course is considered by the learner as an innovative and stimulative experience; she has been able to develop individual and reflective processes of thinking (10a with 1a, 2a, 4a and 8a). However, there is only moderate change in her actual habits of thinking or doing (11n). The model suggests that this is primarily due to her own motivation, memorisation and perhaps too little group interaction in the course (3n, 5n and 9n with 11n).

E. Evaluation
The overall evaluation of the learning experience is positive (12a). The evaluation will be understood in this case especially by those characteristics which emphasize the learner's independency to think and process the course material (1a, 2a, 4a, 8a and 10a with 12a); there was space in the course for self-directed learning.

Assessment of the Information in Model 2.1. by the Student

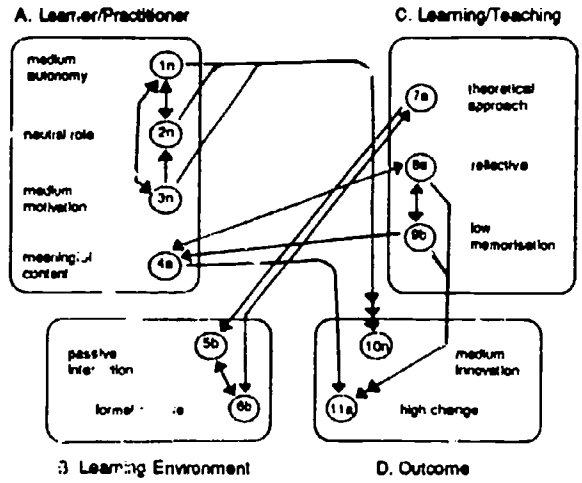
Level of agreement: agree 1 2 3 4 5 6 7 disagree

Comments: The agreement with the description is high. Afterwards she was willing to revalue two variables: 7a -> 7n and 3n -> 3a. Nevertheless, she thought that the description gives a very real picture about her learning process during the course.

CASE 2

Description

Model 2.2. Learning Process in Case 2



A. Learner/Practitioner
The learner is not personally involving herself very strongly in the learning activities; she does not have much autonomy as a student (1n) or does not have a very active role (2n), and her motivation is only moderate (3n). The model shows, that these personal characteristics are tightly linked to each other and they do not have connections to the other qualities of the course; she is likely to adopt an observer's role. Nevertheless, she has been able to process the information of the course: the content is regarded as relevant and the approach as reflective (cf. 4a with 8a and 9b) This results in some obvious changes (11a) in her habits of thinking.

B. Learning Environment
The group interaction is considered passive (5b), and the climate is formal (6b); this is mainly due to the theoretical nature of the course (7a).

C. Learning/Teaching
In spite of perhaps too theoretical approach of the course, there are possibilities for reflectivity (8a). Low memorisation (9b) helps the student to work on the meaningful content (4a). The theoretical orientation of the course is as such rather remote to the student. The content relevancy may refer here especially to the applications introduced in the course.

D. Outcome
The student's own involvement (1n, 2n, 3n) and the way the course is realized (particularly 5b, 6b, 7a) may have hindered the student to experience much innovations during the course (10n). In spite of her rather distant observer's role, she has been able to develop new thinking (11a). The model indicates that the course has helped her in processing the information (11a with 4a, 8a and 9b).

E. Evaluation
The course and the learning process are assessed by the student as moderate (12n). The student has not found very personal touch to the course (1n, 2n, 3n) and that is why her own innovations are rather infreguent (10n). This is likely to explain the dissatisfaction she might have towards the course. - To her the course is obviously too theoretical and too formal with no interaction. This could be taken into consideration in future planning of the course.

Assessment of the Information in Model 2.2. by the Student

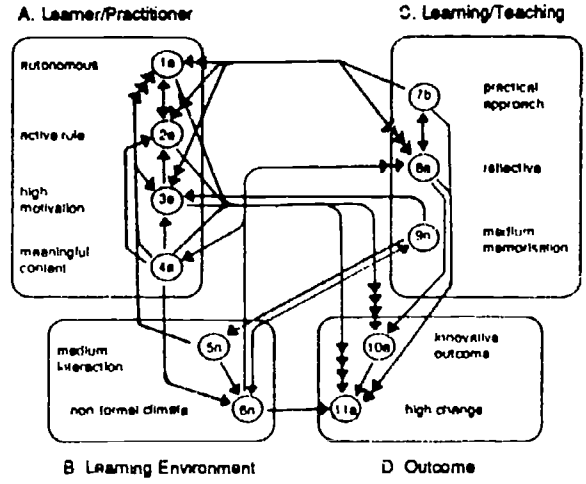
Level of agreement: high 1 2 3 4 5 6 7 low

Comments: The direction of the description is correct. Some 'neutral' variables are probably seen as too negative. However, "I did not feel any special excitement in the course."

CASE 3

Description

Model 2.3. Learning Process in Case 3



E. Evaluation: 12a positive results from
- 1a autonomous status
- 2a active role
- 3a high motivation
- 4a meaningful content
- 6n non-formal climate
- 7b practical approach
- 8a reflective approach
- 10a innovative outcome
- 11a high change

A. Learner/Practitioner
Independent, active and motivated student who considers the course content relevant (1a, 2a, 3a, 4a). The model indicates that the individual involvement of the student (A) is in the most central position in the whole process. The model also shows that practicality and reflectivity of the course are likely to strenghten this kind of student involvement (A with 7b and 8a).

B. Learning Environment
The course includes some but not much interaction between the participants (5n); this has supported the learner's autonomous status (cf. 5n with 1a). However, the model indicates that a rather non-formal and colleaguel atmosphere of the course (6n) has a more central function both in determining the learning climate, and in reflections to the outcomes (D).

C. Learning/Teaching
As stated above, practicality (7b) and reflectivity (8a) of the course support the learner's own active role (A). These together have a direct impact on the learning outcomes (10a and 11a).

D. Outcome
The student has been able to integrate the information for innovations (1a, 2a, 3a and 4a with 10a), and for changes in her thinking (11a). In addition, the reflective approach (8a) and the non-formal climate (6n) join in the model to 10a (innovative outcome). The practical approach of the course (7b) results only in 11a (high change).

E. Evaluation
The evaluation of the course and the learning experience is positive (12a). All characteristics of the model, except two (5n, medium interaction and 9n, medium memorisation), result in the positive evaluation. Group processes need to be taken more carefully into consideration when planning a future course.

Assessment of the Information in Model 2.3. by the Student

Level of agreement: high 1 2 3 4 5 6 7 low

Comments: "The description is close to my own understanding of the learning process. I am particularly interested in the content of the course." In addition, she thought that it takes time, especially in her case to develop group processes - the course could have been longer. The individual exercises (homework) are considered fruitful.

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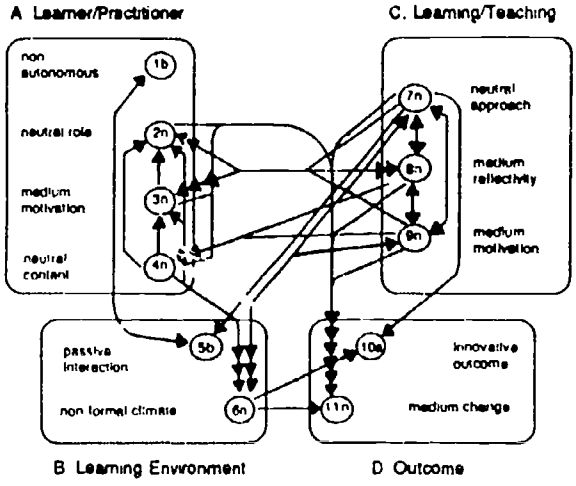
CASE 4

Description

Model 2.4. Learning Process in Case 4



E Evaluation 12n neutral
results from
2n neutral role
3n medium motivation
4n neutral content
6n non-formal climate
7n neutral approach
8n medium reflectivity
9n medium memorisation
11n medium change

A. Learner/Practitioner
The student's non-autonomous status will be understood in the model by passive interaction of the course (5b). This means that she may regard herself more as an object than a subject in learning. The model indicates that the non-formal learning climate and moderate reflectivity of the course have helped the student to have some interest of participating the course (6n and 8n with 2n and 3n).

B. Learning Environment
The student might have wished more active interaction and group processes during the course (cf. 5b). The passive interaction results in the model from her own non-autonomous status and from the way the course was conducted (5b with 1b and 7n). The general atmosphere is non-formal (6n); this seems to create a positive ground for innovations (6n with 10a), but does not lead to very obvious changes (6n with 11n).

C. Learning/Teaching
The course aims at finding balance between theory and practice (7n), and the model suggests that this is likely to result in an innovative outcome (7n with 10a). The elements of Category C (7n, 8n and 9n) are in this model closely combined with each other, and through 8n (medium reflectivity) related to the student variables in Category A. It could be assumed that the student is rather well integrated in the course.

D. Outcome
The course results in an innovative outcome (10a) and in medium change (11n). Innovation is primarily based on two aspects of the course, 7n (theory & practice approach) and 6n (non-formal atmosphere). The personal variables of the student (A) do not have a direct link to the innovative outcome. This may indicate that the course has been rather teacher centred. Nevertheless, some changes in her habits of thinking have taken place during the course (11n).

E. Evaluation
The evaluation of the course is 'neutral' (12n); not very positive or negative. The course has been to the student an ordinary teacher centred learning experience.

Assessment of Information in Model 2.4. by the Student

Level of agreement: high 1 2 3 4 5 6 7 low

Comments: (A) Gives a fair picture about the learner. (B) The description correct (C) There was a dialogue between theory and practice leading to innovations. (D) It has been positive in this course that the course leader has innovated. (E) "Teacher centredness suits to me".

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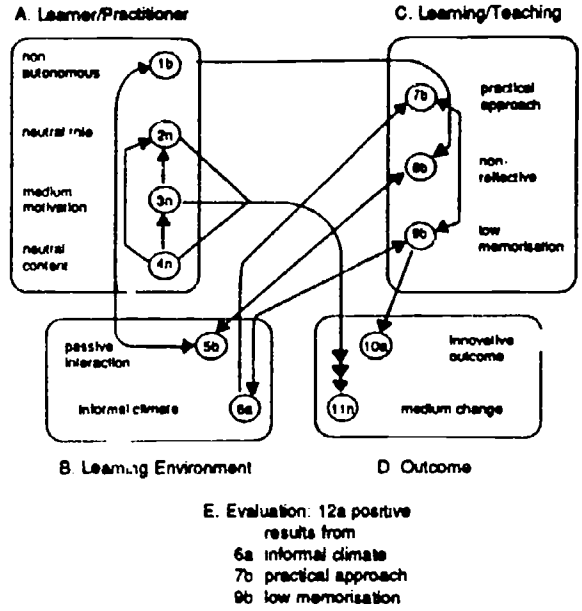
CASE 5

Description

Model 2.5. Learning Process in Case 5



A. Learner/Practitioner
The student has a non-autonomous learner status (1b), i.e. the course is likely to be considered by her as a compulsary part of a degree programme. Passive group interaction strenghtens this orientation (5b with 1b). Her own relation to the content is rather neutral (4n).

B. Learning Environment
Passive group interaction will be understood in the model by the student's little autonomy and by non-reflective teaching (1b and 5b with 8b), i.e. there are difficulties to build new information on the previous knowledge and experience of the student. Low level of memorisation helps to create an informal atmosphere of the course (9b with 6a).

C. Learning/Teaching
The course is experienced by the student as practical rather than as theoretical (7b). This notion is based in the model primarily on the informal atmosphere of the course and on low memorisation (6a and 9b with 7b). Non-autonomous status of the student and passive group interaction are likely to increase non-reflectivity (1b and 5b with 8b).

D. Outcome
The learning outcome is innovative (10a). The model indicates that this is due to little emphasis on memorisation during the course (9b with 10a). In the model 9b (low memorisation) is tightly linked with 7b (practical approach). Therefore, it could be assumed that the practical demonstrations without much memorisation have helped the student to have innovative experiences. However, the actual changes in her thinking are not very high (11n) because ... her rather neutral personal involvement (2n, 3n and 4n with 11n).

E. Evaluation
Positive evaluation (12a) will be understood now by four aspects of the learning experience: 6a (informal atmosphere), 7b (practical approach), 9b (low memorisation) and 10a (innovative outcome). The course has been in many ways an unsatisfactory experience to the student (cf. 1b, 5b, 8b). Therefore it is interesting that the overall evaluation is very positive. It looks likely that the student has based the evaluation only on the positive aspects of the course omitting the negative ones.

Assessment of the Information in Model 2.5. by the Student

Level of agreement: high 1 2 3 4 5 6 7 low

Comments: (A) The student agrees with the information and explains the attribute 1b (non-autonomous): the reasons outside this course. (B) Difficulties to work with people she did not know in advance. (C) Interesting things but not very close to her own orientation. (D) Innovative thoughts. (E) A different learning experience.

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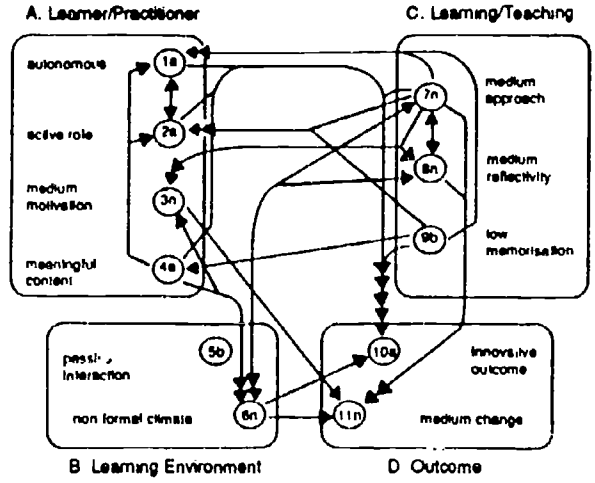
CASE 6

Description

Model 2.6. Learning Process in Case 6



E. Evaluation 12a positive
results from
1a autonomous status
2a active role
4a meaningful content
6n non-formal climate
7n medium approach
9b low memorisation
10a innovative outcome

A. Learner/Practitioner
The student is independent and active (1a, 2a) when working on the meaningful content (4a). The informal course climate and low memorisation are likely to keep her interested in the subject matter even in the circumstances when her own motivation is not necessarily very high (4a with 6n and 9b). The moderate motivation is achieved by combining theoretical and practical contents of the course, and by involving the student in practical exercises (7n and 8n with 3n). In addition, the theory/practice dialogue with reflectivity is likely to activate the student (7n and 8n with 2a).

B. Learning Environment
The interaction in the course is totally passive: 5b is an isolated variable in the model without having any link to the other variables of the individual learning model. However, the general atmosphere of the course is permissive (6n non-formal), and this gives space for individual processes (3n, 4a, 7n and 8n with 6n).

C. Learning/Teaching
The model shows that the three elements of Category C are in a rather central position to regulate the learning process, and they have direct influences on the learning outcomes (D). The theory/practice dialogue with some reflectivity (7n and 8n) support the learner's active role (2a). Low memorisation (9b) may increase the student's autonomy, and it helps to concentrate to the relevant contents (9b with 1a and 4a). In addition, 7n and 8n also help to create a non-formal climate (6n) of the course.

D. Outcome
The student has experienced much innovations (10a) during the course. The model indicates that the innovative outcome results from the student's own orientation as a learner (1a, 2a, 4a), and as well as from the ways the course was realized (7n, 9b) in a non-formal climate (6n). Nevertheless, the actual changes are moderate (11n) part., due to the student's medium motivation (3n), and partly to some other aspects related to the course (7n, 8n, 6n).

E. Evaluation
The overall evaluation of the learning experience is very positive (12a). Only four variables (3n, 5b, 8n and 11n) do not join the positive evaluation. Increasing the group interaction could result even in a better integration.

Assessment of the Information in Model 2.6. by the Student

Level of agreement: high 1 2 3 4 5 6 7 low

Comments: "The model tells quite precisely about the nature of my learning process." - Afterwards she was willing to reassess the influence of the course: 11n (medium change) -> 11a (high change)

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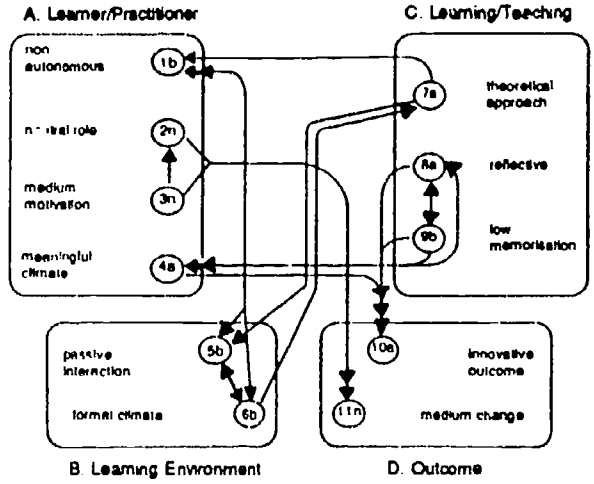
CASE 7

Description

Model 2.7. Learning Process in Case 7



E. Evaluation: 12n neutral
results from
2n neutral role
3n medium motivation
11n medium change

A. Learner/Practitioner
The student is a less independent, non-autonomous learner (1b). This learner status is encouraged by the passive group interaction, the formal course climate, and the theoretical approach of the course (5b, 6b and 7a with 1b). The motivation is not very high (3n), but she has some interest in the relevant content with reflectivity and low memorisation (8a and 9b with 4a).

B. Learning Environment
The learner's status (1b non-autonomous) and the theoretical nature of the course (7a) strenghten passivity and formality (5b and 6b) in the course.

C. Learning/Teaching
The theoretical approach of the course is likely to make the student quite alienated (7a with 1b, 5b and 6b). The model indicates that the reflective exercises (8a) with low memorisation (9b) have more to do with the actual learning process when increasing the relevancy of the course content (8a and 9b with 4a).

D. Outcome
The innovative outcome (10a) results from the relevant content, the reflective approach and low memorisation (4a, 8a and 9b). The model indicates that the student does not much involve herself as a person in innovative experiences (cf. variables in A with 10a), but rather follows the course programme. The student's modest involvement and motivation explain in the model why actual changes remain moderate (2n and 3n with 11n).

E. Evaluation
The 'neutral' evaluation (12n) results from 2n (medium involvement), 3n (medium motivation) and 11n (medium change). The evaluation will be understood here primarily as an evaluation of the student's own role behaviour during the course. In spite of some obvious shortcomings of the course (e.g. 5b, 6b), the student has been able to benefit from the course (10a and 11n). Increase of group interaction could make the course more successful to the student. In her case, the role of the theoretical approach (7a) in the course should be reconsidered.

Assessment of the Information in Model 2.7. by the Student

Level of agreement: high 1 2 3 4 5 6 7 low

Comments: (A) No special motivation to participate the course. (B) It took time to learn the conceptual language of the course. (C) Perhaps too research oriented. 'Reflectivity' might have been understood differently by the student: a general activity level. (D) No revolution in thinking: "The student just does not happen to be research oriented." (E) The evaluation is ok.

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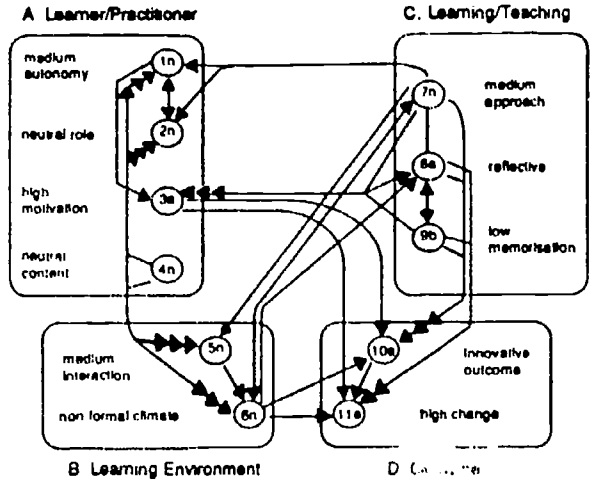
CASE 8

Description

Model 2.8. Learning Process in Case 8



E Evaluation 1:a pos
results from
1n medi
3a high mo
6n non-form
7n medium
8a reflective approach
9b low memorisation
10a innovative outcome
11a high change

A. Learner/Practitioner
The motivation is high (3a). High motivation will be understood in the model primarily by the qualities of the teaching and learning process as experienced by her: theoretical-practical approach (7n), reflective teaching & learning approach (8a) and low memorisation (9b). The student does not regard herself very independent or active (1n, 2n), she is likely to regard herself as a group member or as a participant among others (cf. relations from 5n and 6n to 1n and 2n). Inspite of high motivation, the course content remains quite neutral to her (4n).

B. Learning Environment
The course includes some interaction between the participants (5n), and the communication takes place in a rather free, non-formal atmosphere (6n). The model indicates that she has a tendency to channel her own activities into group processes (cf. 2n student role with 5n and 6n). Altogether, the learning climate has a central position in her learning model.

C. Learning/Teaching
There is a dialogue between theory and practice (7n), having connections to the learner's previous experience (8a reflective), and to low memorisation (9b). As mentioned above, all these three aspects maintain the student's high motivation (3a). The model shows that high motivation in return feeds reflectivity in learning (3a with 8a), i.e. she is willing to process information, not only to receive it.

D. Outcome
The course results in innovative outcomes (10a) and in changes in her thinking and general orientation (11a). The model indicates that innovations are achieved by the students high motivation (3a), non-formal learning climate (6n), and by the qualities of teaching-learning process (7n, 8a and 9b). Much the same factors are explaining how the student has achieved many changes in her thinking habits (11a) in this learning experience.

E. Evaluation
The positive evaluation results from most of the attributes in the model. The student has been able to make a comprehensive overall evaluation which covers most qualities of her learning experience.

Assessment of the Information in Model 2.8. by the Student

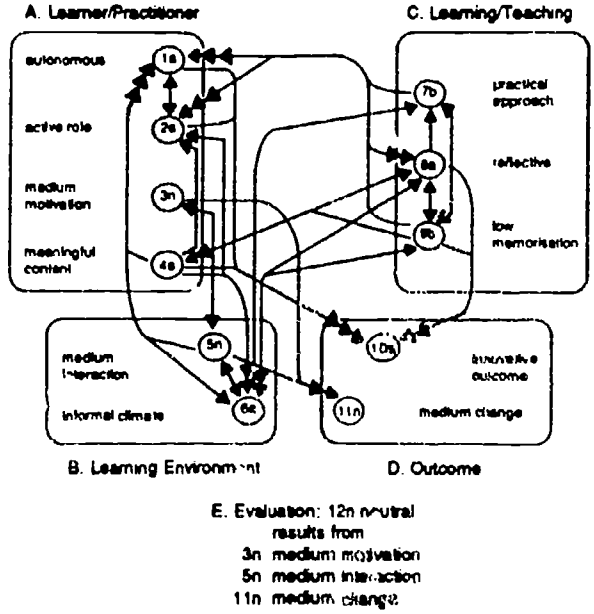
Level of agreement: high 1 2 3 4 5 6 7 low

Comments: The decription and the conclusions are very near to the picture she had about her learning process: "There is no need to complete the interpretation of the model."

CASE 9

Description

Model 2.9. Learning Process in Case 9



A. Learner/Practitioner
The student is autonomous and active (1a and 2a). She considers the course content meaningful (4a). The three aspects of teaching and learning in C strenghten the learner's independency and self-directiveness (7b, 8a and 9b with 1a and 2a). The course climate (B) helps her to have an autonomous learner status (5n and 6a with 1a). The motivation is not necessarily very high (3n) The model shows that the learner's own personal qualities and orientations (A) have a powerful role in this learning strategy.

B. Learning Environment
There is some interaction between the participants of the course (5n), and the general atmosphere is informal (6a). The environment (especially 6a) seems to influence on many aspects in Categories A and B, but this has rather little to do directly with the actual outcomes of learning (D) as shown in the model.

C. Learning/Teaching
The general approach of the course is practical (7b), reflective (8a) with low memorisation (9b). The informal course climate (6a) is related to all three variables of C. The student is the subject of learning (cf. 1a and 2a with 8a): she is likely to reflect her own knowledge and experience in the learning process taking into consideration the course content (4a), too. This independency is achieved in the permissive, informal atmosphere of the course.

D Outcome
She has experienced the course as innovative (10a). The model indicates that this is primarily due to her personal active involvement (1a, 2a, 4a) and to the reflectivity and little need for memorisation (8a, 9b). Her motivation (3n) and not very active group interaction (5n) are the two factors which explain why actual changes are in this case at the medium level (11n; some new thinking, but not an obvious change).

E. Evaluation
Problems in motivation (3n), rather little possibilities for group interaction (5n), and medium change (11n) are the main reasons to the average evaluation. At the student's point of view, these aspects of the course need to be taken into consideration when developing the course.

Assessment of the Information in Model 2.9. by the Student

Level of agreement: high 1 <u>2</u> 3 4 5 6 7 low

Comments: (A) She is now willing to change 3n -> 3a (high motivation). (B) No comment. (C) Low memorisation (9b) does not mean that the course was easy. (D) A real change presupposes something more. (E) To her 12n (neutral evaluation) means "above average".

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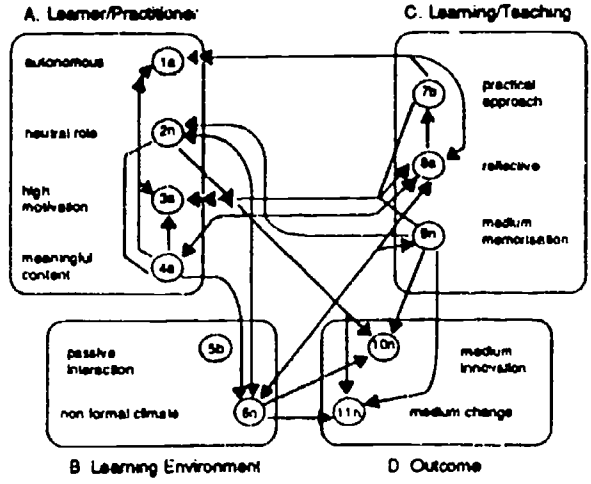
CASE 10

Description

Model 2.10. Learning Process in Case 10



E. Evaluation: 12a positive results from
1a autonomous status
3a high motivation
4a meaningful content
6n non-formal climate
7b practical approach
8a reflective approach

A. Learner/Practitioner
The student is an independent learner with high motivation and keen interest in the course content (1a with 3a and 4a). The practical and reflective nature of the course gives strength to the autonomy of the learner (7b and 8a with 1a). Much the same qualities keep motivation high during the course (1a, 4a, 7b, 8a and 9n with 3a). The student had not a very active role (2n).

B. Learning Environment
There is practically no interaction between the course participants (5b). In fact, the communication with the group is totally apart from the learning process as seen in the model. This might strenghten the notion that the course has been to her a highly individual experience. On the whole, the non-formal general climate (6n) has a more central function; it probably gives the student freedom enough for individual processes (cf. 6n with 4a and 8a), but may at the same time passivate her (6n with 2n) especially when the group interaction is at the minimum.

C. Learning/Teaching
The course is practical (7b), reflective(8a) and not demanding much memorisation (9n). The autonomy of the student, high motivation, the relevant content, and a less formal course climate are likely to increase reflectivity (1a, 3a, 4a and 6n with 8a).

D. Outcome
The course produces some innovative ideas (10n) and a moderate change (11n). There are three variables in the model which have a relation to 10n and 11n: 2n (medium involvement), 6n (nonformal course climate), and 9n (medium memorisation). The course seems to give space and freedom for personal development, but the student is not very active in using this opportunity (cf. 2n).

E. Evaluation
Although the outcomes of the learning process are quite moderate, the learning experience as such is evaluated by the student very positively (12a). The positive evaluation results from the personal attributes of the student (1a, 3a, 4a), and from the course climate (6n) together with 7b and 8a (practical and reflective approaches). These qualities of learning are likely to be valued by the student.

Assessment of the Information in Model 2.10. by the Student

Level of agreement: high 1 <u>2</u> 3 4 5 6 7 low

Comments: The description of the learning process is mostly correct. She had earlier given 2n (neutral role) to describe her role behaviour. Now she considers herself active (2a) as an individual student (working hard), but her role in the group was passive. Better interaction might increase her involvement in the course.

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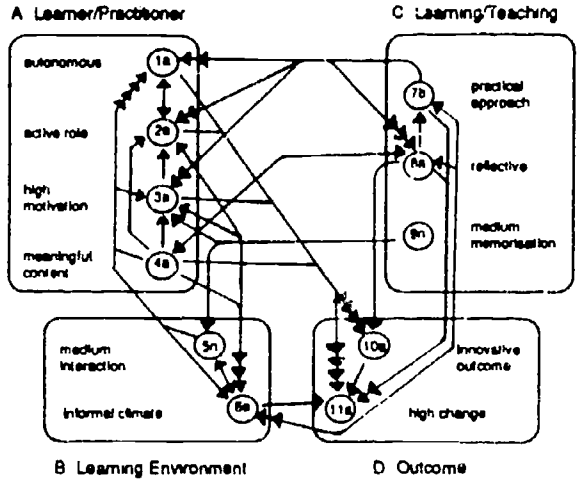
CASE 11

Description

Model 2.11. Learning Process in Case 11



E. Evaluation. 12a positive results from
- 1a autonomous status
- 2a active role
- 3a high motivation
- 4a meaningful content
- 6a informal climate
- 7b practical approach
- 8a reflective approach
- 10a innovative outcome
- 11a high change

A. Learner/Practitioner
The student is personally strongly involved in the course. He is an active and autonomous learner with high motivation (1a, 2a and 3a). The content is relevant to him (4a). The model indicates that he uses the course effectively in his own personal development (cf. the centrality of Category A).

B. Learning Environment
He considers the group interaction as moderate (5n). The model shows, however, that the informal climate (6a) has a more central function especially in activating him and to keep motivation high (6a with 1a, 2a, 3a and 4a) and in giving space for reflectivity (6a with 8a).

C. Learning Teaching
The course is regarded by the student as practical and reflective with some memorisation (7b, 8a and 9n). The practical approach will be understood here in relation to the informal course climate and the reflective approach (6a and 8a with 7b). Reflectivity (8a) is the most dominant feature in Category C. 9n (memorisation) has a rather little power in the whole learning model.

D. Outcome
The innovative outcome (10a) results in the model mostly from the student's own qualities as a learner (Category A: 1a, 2a, 3a, 4a). The reflectivity (8a) joins these personal aspects to explain the innovatory learning experience. Besides the above aspects, 'high' change (11a) results from the practical approach of the course (7b) and from the informal climate of the course (6a).

E. Evaluation
Almost all variables of the learning model result in the positive evaluation of the course (12a). There are only two variables which are not included in the evaluation: 5n (medium interaction) and 9n (medium memorisation). These variables may be considered either secondary in his own personal process or they show two areas for further development of the course, for instance, to develop more carefully the group interaction as a part of the course.

Assessment of the Information in Model 2.11. by the Student

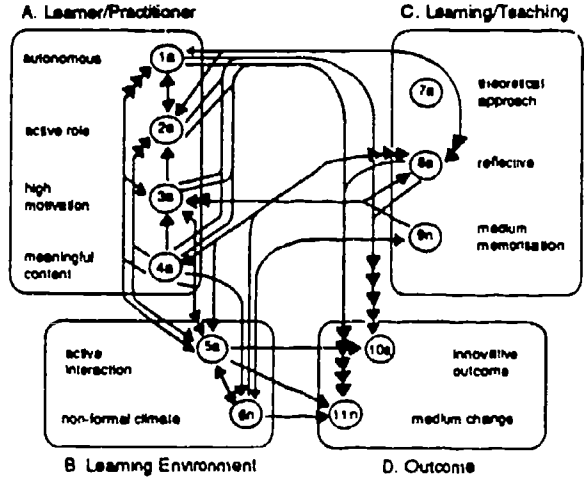
Level of agreement: high 1 <u>2</u> 3 4 5 6 7 low

Comments: "I recognise myself and my process from the description of the learning process. Through my life I have always been doing something; no empty days." - The student makes a comment on two variables in the model: 5n (medium interaction) is connected to the student's own less active role in the group, and 9n (medium memorisation) refers here more to the student's own ways to use memory than to the memorisation needed in the course.

CASE 12

Description

Model 2.12. Learning Process in Case 12



E. Evaluation: 12a positive results from
1a autonomous status
2a active role
3a high motivation
4a meaningful content
5a active interaction
6n non-formal climate
8a reflective approach
10a innovative outcome

A. Learner/Practitioner
The student is autonomous and active (1a and 2a). Her motivation is high (3a), and she considers the course content meaningful (4a). The active interaction in the course (5a) and reflective experiences during the course (8a) help the student to become involved in the learning process. (5a and 8a with variables in Category A).

B. Learning Environment
The group interaction is active (5a; this is an interesting point because almost all course participants assessed the interaction either passive or moderate). In fact, the model indicates that the learner's own orientation (1a, 2a, 3a, 4a) with the reflectivity (8a) defines the qualities of 5a. This could be interpretated so that the student brings her own active orientation into the group or has active cooperation with the group members outside the classroom. The non-formal climate (6n) has a less powerful position in the model.

C. Learning/Teaching
The course is very theoretical to her (7a). However, 7a is an isolated variable in the model. This may indicate that the student does not pay much attention to the theoretical aspects of the course or the course has not succeeded properly in delivering theoretical perspectives. The reflective learning (8a) has a central position in the model. This may mean that the student has concentrated in her studies rather on demonstrations and applications of the 'theory' than on theoretical basis of the course. Memorisation (9n) does not play an important role in the model.

D. Outcome
The personal qualities of the learner (1a, 2a, 3a and 4a) with active interaction (5a) and the reflectivity of the course (8a) result in the innovative outcome (10a). Nevertheless, the actual change is quite moderate (11n).

E. Evaluation
The evaluation of the learning experience is highly positive (12a); majority of the attributes in the model result in the positive evaluation. In spite of the theoretical approach, which remains remote to the student, she has been able to promote a successful individual learning process.

Assessment of the Information in Model 2.12. by the Student

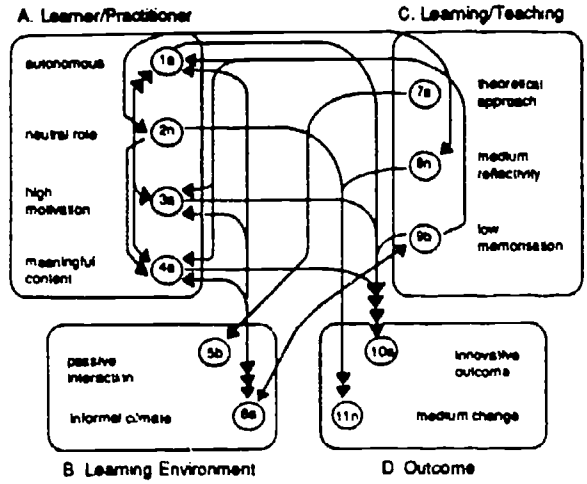
Level of agreement: high 1 2 3 4 5 6 7 low

Comments: The student was surprised about how well the model describes her learning process. However, she would like to add 7a (theoretical approach) to the list of characteristics in the positive evaluation (12a). She also pointed out that there are many things outside the conceptual framework of the model which may have influence on the learning process in a classroom.

CASE 13

Description

Model 2.13. Learning Process in Case 13



E. Evaluation. 12a positive results from
1a autonomous status
3a high motivation
4a meaningful content
6a informal climate
9b low memorisation
10a innovative outcome

A. Learner/Practitioner
The student is an autonomous learner (1a). High motivation (3a) and the relevant course content (4a) confirm her independency. However, she is not very active (2n); the course is perhaps not enough reflective to her (8n with 2n). The informal course climate has the most powerful influence on the variables of Category A: 6a is likely to increase the independency of an learner (1a), and motivation (3a). The attribute 9b (low memorisation) has a similar influence.

B. Learning Environment
The course climate is experienced by the student as free and informal (6a). The student brings herself into this social climate (6a with 1a, 3a and 4a). 9n (low memorisation) makes it easier to be less formal. However, the actual interaction in the group is passive (5b); this is primarily due to the theoretical orientation of the course (7a).

C. Learning/Teaching
The qualities of the course, i.e. the theoretical approach (7a), medium reflectivity (8n) and low memorisation (9b), are not directly combined to each other in the model. This could be a problem when considering it from the teaching perspective, but this disintegration is not necessarily a problem of learning (cf. the outcomes).

D. Outcome
The innovative outcome (10a) is mostly a result of the learner's own individual process (1a, 3a and 4a with 10a) in which there has not been preasure to spend energy too much on memorisation (9b with 10a). The medium change (11n) results in the model from 2n (medium involvement of the student) and from 8n (medium reflectivity of the course).

E. Evaluation
The positive evaluation (12a) results from the personal qualities of the learner (1a, 3a, 4a), the informal course climate (6a) and from low memorisation (9b), and from innovative outcomes (10a). - For development of the course the role of theoretical approach (7a) should be reconsidered. The learning process of this student is highly individual, and the course serves an environment for personal experiences.

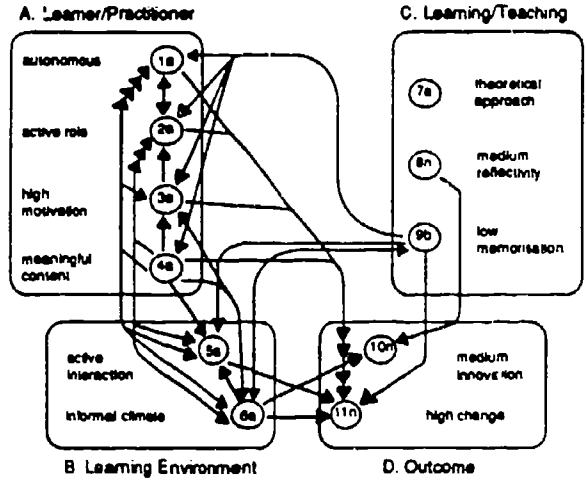
Assessment of the Information in Model 2.13. by the Student is not available.

Comment: The student participated the course only occasionally.

CASE 14

Description

Model 2.14. Learning Process in Case 14



E. Evaluation: 12a positive results from
1a autonomous status
2a active role
3a high motivation
4a meaningful content
5a active interaction
6a informal climate
9b low memorisation
11a high change

A. Learner/Practitioner
The student is independent and active (1a and 2a). Her motivation is high (3a), and she considers the course content relevant and meaningful (4a). The model shows that the personal qualities are in a very central position. The learning process is in this case highly individual (cf. the attributes of A have very little to do with the attributes of C). She seems to be able to use the social context of the course (5a, 6a with attributes of A) for her own development. Low memorisation (9b) gives space for individual processes in A.

B. Learning Environment
The group interaction is active (5a), and the general climate of the course is free and informal (6a). It is typical in this case that the learning climate is assessed by the student primarily through her personal attributes of Category A (1a, 2a, 3a and 4a). In other words, the learning climate refers to her own behaviour in the group, not so much to the collective behaviour of the group.

C. Learning/Teaching
The course is very theoretical (7a) with medium reflectivity (8n) and low memorisation (9b). The model shows that teaching has very little to do with learning: the student does not bring herself as a learner into the learning process offered by the teacher (there is no link from A to C). At the same time the three attributes of Category C are totally apart from each other in the model. This may indicate that there is not integration enough between different orientations of the course (cf. 7a, 8n and 9b).

D. Outcome
Medium level of innovation (10n) has been achieved by the help of two factors: 6a (informal climate) and 8n (medium reflectivity). The learning process has, however, been a strong process of individual change (11a) in which all the student variables (1a, 2a, 3a, 4a) and the environmental variables (5a, 6a) are employed. 9b (low memorisation) makes it possible to concentrate on her own processes.

E. Evaluation
The student has assessed the learning process as very positive (12a). There are only three variables which are left out of this assessment: 7a (theoretical approach), 8n (medium reflectivity) and 10n (medium innovation) do not have a direct influence on evaluation. The course has served the student as a forum to work on her own interests.

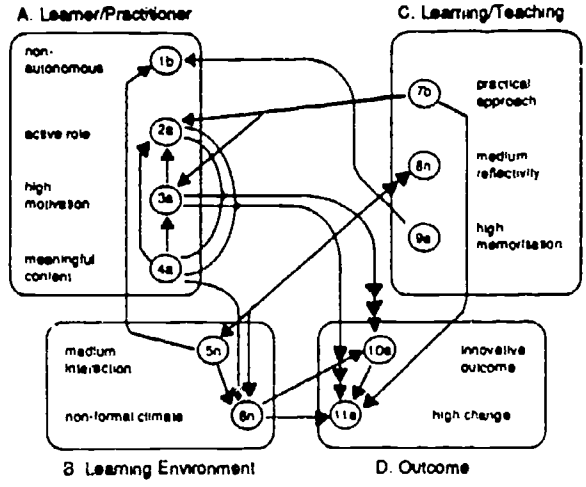
Assessment of the Information in Model 2.14. by the Student

Level of agreement: high 1 2 3 4 5 6 7 low
Comments: Description of the student (A), the learning climate (B), and the evaluation (E) are quite right. In C she was rather surprised of why the variables 7b, 8n and 9a are not related to each other. (D) "The change process was very individual indeed."

CASE 15

Description

Model 2.15. Learning Process in Case 15



E Evaluation: 12a positive results from
2a active role
3a high motivation
4a meaningful content
6n non-formal climate
7b practical approach
10a innovative outcome
11a high change

A. Learner/Practitioner
The learner's status is non-autonomous (1b), but she has an active role (2a). The non-autonomous status will be explained in the model by high memorisation (9a) of the course and by rather little chance for group interaction (5n). On the other hand, high motivation, the relevant content, and the practical approach activate the student (2a with 3a, 4a and 7b). High motivation is achieved by the practical orientation of the course and by the relevant content (3a with 4a and 7b).

B. Learning Environment
There is moderately group interaction in the course (5n), and the general climate is non-formal or colleaguel (6n). Meaningful content (4a), medium interaction (5n) and medium reflectivity (8n) are the qualities in the model which have direct relations to 6n, i.e. they partly define in this case the meaning of the attribute 6n. Finally, the general atmosphere has influence on the outcomes of learning (6n with 10a and 11a) as seen in the model.

C. Learning/Teaching
The three qualities of the Category C are totally apart from each other, and they do not find a relation via a third attribute either. In fact, there is a long chain of relations which finally finds a relation between 7b (practical approach) and 8n (medium reflectivity): 7b -> 2a <--> 4a <--> 6n <--> 8n. The model indicates that it is the attribute 6n (non-formal climate) which finally brings reflectivity into practical exercises. Another interesting finding in the model is that there is no direct link from Category A to Category C; it is likely that she has a distance to this kind of strategy.

D. Outcome
The learner herself (2a, 3a, 4a) and the non-formal course climate (6n) are the keys into the innovative outcomes (10a) which in turn results in a 'high' change (11a). The model shows that the innovations and the change involve almost the same attributes. The practical approach (7b) joins only to 11a.

E. Evaluation
The learning process has been successful (12a). There are only four aspects of the course which are not included in the evaluation: 1b (non-autonomous), 5n (medium interaction), 8n (medium reflectivity) and 9a (high memorisation). These could as well be regarded as the factors to pay more attention in developing the course.

Assessment of the Information in Model 2.15. by the Student

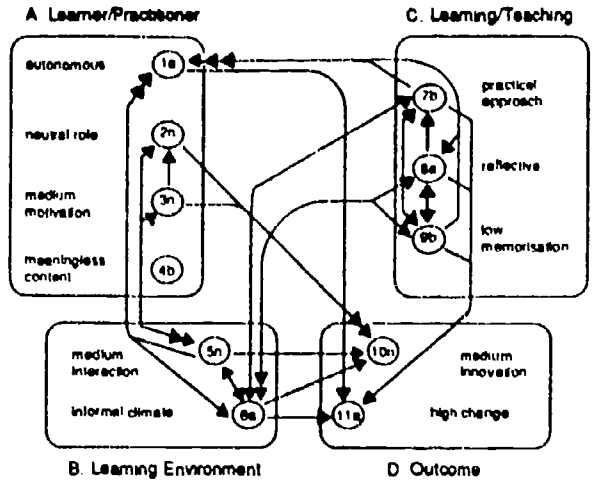
Level of agreement: high 1 2 3 4 5 6 7 low

Comments: The description gives mostly a right picture. In C the attribute 9a refers now to how much she remembers about the content. The concept 'reflectivity' was not clear to her.

CASE 16

Description

Model 2.16. Learning Process in Case 16



E. Evaluation: 12n neutral
results from
2n neutral role
3n medium motivation
5n medium interaction
10n medium innovation

A. Learner/Practitioner
The student is independent (1a). All attributes in Category B (5n and 6a) and in Category C (7b, 8a and 9b) are strenghtening the autonomy of the learner. However, she is not very active (2n), her motivation is moderate (3n), and she considers the content irrelevant or meaningless to her (4b). Her role activity (2n) is partly explained in the model by her not essentially high motivation (3n) and by perhaps too little interaction between the participants (5n). The medium interaction keeps the student's motivation alive (5n with 3n). She has not found a personal touch to the course content; 4b is an isolated variable in the model.

B. Learning Environment
The course climate is free and informal (6a), and there is some interaction between the participants (5n). Her own behaviour as a group member is not active, and she is only moderately motivated to communicate with others (2n and 3n with 5n). On the other hand, the informal climate of the course (6a) has in the model a more central position. The following attributes specify the meaning of 'informal' in this case: 1a (autonomous learner), 5n (medium interaction), 7b (practical) 8a (reflective approach), and 9b (low memorisation).

C. Learning/Teaching
The course is practical (7b), reflective (8a), and not demanding much memorisation (9b). All these qualities are well integrated in the model. This may indicate that the student has been able to build a quite integrated picture about the course. The informal climate of the course (6a) is likely to make it easier to implement the proc ss in Category C (6a with 7b, 8a and 9b). However, the student does not bring her personal qualities into the process; there is no link from A to C. She rather observes than takes part.

D. Outcome
There are some innovatory experiences in the course (10n). The model indicates that she has not been very active in seeking innovations (2n and 3n with 10n). The learning climate as such encourages only to moderate innovations (5n and 6a with 10n). Nevertheless, the course had a strong influence on her thinking (11a). This is primarily due to the attributes in Category C (teaching & learning) and partly due to the informal climate of the course (6a).The course has been a 'didactic' experience, and changed her thinking about teaching (and learning).

E. Evaluation
The overall evaluation of the course is at the medium level (12n). It is interesting that the evaluation does not include, for instance, those positive qualities which result in 11a (high change). The evaluation is now based on assessment of her own qualities as a learner and as a group member.

Assessment by the Student is not available.

2.6. DISCUSSION

Adult learning is a complex process in which the learner's individual qualities, the life experience and personal history, and the life situation with social realities make unique combinations and patterns.

When admitting that learning is a highly individual process there is a need to find ways to study learning processes so that the individuality could be taken into consideration. Models of learning produced in this paper give individual pictures of the processes in the general framework of adult learning.

The paper introduces an approach to build models of adult learning processes. The Dynamic Concept Analyses, DCA, is developed by the author to analyse complex phenomena in a dynamic and holistic way.

In this study, as in studies in general, it is central that the research concepts are relevant and covering well enough the phenomenon in question. Twelve concepts with their attributes were considered central in this paper when seeking understanding of adult learning processes. Most of these concepts have been used in earlier studies of adult learning as shown above.

However, there can be some aspects in an individual learning process which do not become sufficiently covered by these concepts; this became obvious also in some cases in this study (e.g. Case 12). This is why it is necessary to assess the concepts and models of learning in actual cases which may give more specific information needed for understanding a particular process. The sixteen case studies encourage the use of conceptual models in analysing individual learning processes.

The case studies confirm the view that a conceptual model may give relevant and detailed information about the circumstances in which learning takes place. The assessments by the learners themselves are very positive. This may be partly due to that the students themselves gave the attributes to characterize their learning; this carantees that the models include rather valid attributes to describe individual cases. In addition, a model gives a structure for learning, and the student had perhaps the first opportunity to consider his/her learning in a holistic way. It could be stated that any structure is better than no structure. Never-

theless, the description of a model makes it easier to assess this information.

The definition of concept relations is the crucial phase of this approach. The concept relations can be derived from different sources: by using research findings, by individual or team judgements, or by combining judgements and research findings. Individual judgements and statements, as in this study, are always open to criticism. However, the statements of concept relations given in this paper for building the information structure and the conceptual models seemed to give quite relevant information.

The information structure presented in this paper is, however, rather a starting point for further analyses than a final research outcome. The DCA method is flexible enough to accept new concepts and new definitions of concept relations. The information structure can be rebuilt and corrected when it appears necessary.

The information structure (Matrix 2.1.) of this study can be regarded as a framework or an implicit 'theory' of adult learning. Nevertheless, this theory cannot be verbally expressed so that all possible concept relations included in the information structure could become taken into consideration at the same time. It can be stated that this is the problem with all theories: only a partial theory (here: a model for a particular attribute combination of adult learning) can be expressed comprehensively.

General models of learning refer to the models with most usual or most frequent combinations of attributes, i.e. the most typical cases.

The case studies indicate that it is not possible to describe a learning process by one general model only. Individual models, although built on general information, are likely to give more specific and real pictures of a reality.

The twelve research concepts or categories with their thirty six attributes or specifications can make about half a million different combinations, which could be individually described by conceptual models as shown in the paper. Definitions of concept relations for building a model can be aided by a suitable computer programme.

An advantage of using individual models, compared with general models, is that individual models make more precise hypotheses of an individual case, and this makes it easier to assess relevance of the information.

This paper is primarily a demonstration of possible use of conceptual models in searching greater understanding of learning processes. Further research is needed to find more valid concepts and more reliable information of conceptual relations.

Conceptual models could be used, for instance, to find structures or patterns of ongoing processes, and in planning and evaluation of learning processes.

ACKNOWLEDGEMENTS

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APPENDIX 2.1. Statements of Relationships between the Concepts of Adult Learning

A statement indicates that there is a direct linear relation from another concept to the concept in question

- in brackets are the variables which are considered not to have a linear relation to the variable in question
- * indicates a trend towards a relation as stated
- ** the cell in the Information Structure (Matrix 2.1, 67)

1. Autonomy (autonomous - medium - non-autonomous)

cell**
1/2 The more active role the more autonomy
1/3 The higher motivation the more autonomy
1/4 The more meaningful content the more autonomy
1/5* The more active interaction the more autonomy
1/6 The more informal situation the more autonomy
1/7- (Approach)
1/8 The more reflectivity the more autonomy
1/9 The less memorisation the more autonomy
1/10- (Outcome)
1/11- (Change)
1/12- (Evaluation)

2. Involvement (active - medium - passive)

cell
2/1* The more autonomy the more active role
2/3 The higher motivation the more active role
2/4 The more meaningful content the more active role
2/5 The more active group interaction the more active role
2/6 The more informal situation the more active role
2/7* The more practical approach the more active role
2/8 The more reflective process the more active role
2/9 The less memorisation the more active role
2/10- (Outcome)
2/11- (Change)
2/12- (Evaluation)

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3. Motivation (high - medium - low)

cell
3/1* The more autonomy the higher motivation
3/2- (Learner Role)
3/4 The more meaningful content the higher motivation
3/5 The more active interaction the higher motivation
3/6 The less formal situation the higher motivation
3/7* The more practical approach the higher motivation
3/8 The more reflective process the highur motivation
3/9* The less memorisation the higher motivation
3/10- (Outcome)
3/11- (Change)
3/12- (Evaluation)

4. Content Relevance (meaningful - neutral - meaningless)

cell
4/1- (Autonomy)
4/2- (Involvement)
4/3- (Motivation)
4/5- (Interaction)
4/6- (Climate)
4/7- (Approach)
4/8 The more reflective process the more meaningful content
4/9 The less memorisation the more meaningful content
4/10- (Outcome)
4/11- (Change)
4/12- (Evaluation)

5. Interaction (active - medium - passive)

cell
5/1 The more autonomy the more active interaction
5/2 The more active learner role the more active interaction
5/3 The higher motivation the more active interaction
5/4 The more meaningful content the more active interaction
5/6 A nonlinear relationship/Climate
5/7* The more practical approach the more active interaction
5/8 The more reflectivity the more interaction
5/9 The less memorisation the more active interaction
5/10- (Outcome)
5/11- (Change)
5/12- (Evaluation)

6. Learning Climate (informal - non-formal - formal)

cell
6/1 The more autonomy the more informal situation
6/2 The more active learner role the more informal situation
6/3 The higher motivation the more informal situation
6/4 A nonlinear relationship/Content Relevance
6/5 A nonlinear relationship/Interaction
6/7 The more practical approach the more informal situation
6/8 A nonlinear relationship/Reflectivity
6/9 The less memorisation the more informal situation
6/10- (Outcome)
6/11- (Change)
6/12- (Evaluation)

7. Learning Approach (theoretical - neutral - practical)

cell
7/1- (Autonomy)
7/2- (Involvement)
7/3- (Motivation)
7/4- (Content Relevance)
7/5- (Interaction)
7/6 The more formal approach the more theoretical
7/8 The less reflectivity the more theoretical
7/9 The more memorisation the more theoretical
7/10- (Outcome)
7/11- (Change)
7/12- (Evaluation)

8. Reflectivity (reflective - medium - non-reflective)

cell
8/1 The more autonomy the more reflective learning process
8/2 The more active learner role the more reflectivity
8/3 The higher motivation the more reflectivity
8/4 The more meaningful content the more reflectivity
8/5 The more active interaction the more reflectivity
8/6 A nonlinear relationship/Climate
8/7* The more practical approach the more reflectivity
8/9 The less memorisation the more reflectivity
8/10- (Outcome)
8/11- (Change)
8/12- (Evaluation)

9. Memorisation (high - medium - low)

cell
9/1- (Autonomy)
9/2- (Involvement)
9/3- (Motivation)
9/4- (Content Relevance)
9/5- (Interaction)
9/6 The more formal situation the more memorisation
9/7 The more theoretical approach the more memorisation
9/8 The less reflectivity the more memorisation
9/10- (Outcome)
9/11- (Change)
9/12- (Evaluation)

10. Learning Outcome (innovative - neutral - conformist)

cell
10/1 The more autonomy the more innovative outcome
10/2 The more active learner role the more innovative outcome
10/3 The higher motivation the more innovative outcome
10/4 The more meaningful content the more innovative outcome
10/5 The more active interaction the more innovative outcome
10/6 A nonlinear relationship/Climate
10/7 A nonlinear relationship/Approach
10/8 The more reflectivity the more innovative outcome
10/9 The less memorisation the more innovative outcome
10/11- (Change)
10/12- (Evaluation)

11. Change (high - medium - low)

cell
11/1 The more autonomy the more change
11/2 The more active learner role the more change
11/3 The higher motivation the more change
11/4 The more meaningful content the more change
11/5 The more active interaction the more change
11/6 A nonlinear relationship/Climate
11/7 The more practical approach the more change
11/8 The more reflectivity the more change
11/9 The less memorisation the more change
11/10 The more innovative outcome the more change
11/12- (Evaluation)

12. Evaluation (positive - neutral - negative)

cell

12/1* The more autonomy the more positive evaluation
12/2 The more active learner the more positive evaluation
12/3 The higher motivation the more positive evaluation
12/4 The more meaningful content the more positive evaluation
12/5 The more active interaction the more positive evaluation
12/6 A nonlinear relationship/Climate
12/7 A nonlinear relationship/Approach
12/8 The more reflectivity the more positive evaluation
12/9 The less memorisation the more positive evaluation
12/10 The more innovative outcome the more positive evaluation
12/11 The more change the more positive evaluation

APPENDIX 2.2. Attributes of Learning as Selected by the Students (N=16)

Concepts	Attributes	(n)
1. Autonomy	1a autonomous	10
	1n medium	2
	1b non-autonomous	4
2. Involvement	2a active	8
	2n medium	8
	2b passive	-
3. Motivation	3a high	8
	3n medium	8
	3b low	-
4. Content Relevance	4a meaningful	12
	4n neutral	3
	4b meaningless	1
5. Interaction	5a active	2
	5n medium	7
	5b passive	7
6. Climate	6a informal	6
	6n non-formal	7
	6b formal	3
7. Learning Approach	7a theoretical	6
	7n neutral	3
	7b practical	7
8. Reflectivity	8a reflective	10
	8n medium	5
	8b non-reflective	1
9. Memorisation	9a high	1
	9n medium	6
	9b low	9
10. Learning Outcome	10a innovative	12
	10n neutral	4
	10b conformist	-
11. Change	11a high	7
	11n medium	9
	11b low	-
12. Evaluation	12a positive	11
	12n neutral	5
	12b negative	-

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CHAPTER 3.

INSTITUTIONAL MODELS OF HIGHER EDUCATION

Seppo Kontiainen and Malcolm Tight

Abstract

Dynamic concept analysis is a technique which can be used to model and analyse the relationships between concepts. In this paper it is applied to an examination of British institutions of higher education. Eight concepts which underpin the theory and practice of higher education are identified. Five ideal-typical institutional types are defined in terms of these concepts, and are then modelled using dynamic concept analysis. The models produced are assessed both for their consistency and for what they suggest about institutional cultures in higher education. The application of the methodology to policy analysis is also considered.

3.1. INTRODUCTION

When we talk about higher education, we tend to do so in a way which implies that it is a uniform and univerally understood entity. In practice, of course, this is far from being the case; even when the discussion is confined to a single country or system. There are wide variations within higher education - in the institutions involved, in the kinds of courses provided, in the teaching and learning methods used, and in the students and other clients served.

A number of authors have undertaken comparative examinations of British institutions of higher education. Some have applied multivariate analysis techniques - such as cluster, discriminant and factor analysis - to classify institutional data sets. Their analyses have largely confirmed existing ideas about institutional types; notably the fourfold division of the universities into ancient, civic, campus and technological (King 1970, Dolton and Makepeace 1982). These techniques have also been used to question the validity of certain policy distinctions, such as that made between the university and public sectors of higher education (Tight 1988a).

The present study employs a rather different approach, dynamic concept analysis, which has been developed by one of the authors (Chapter 1.) This approach uses qualitative information - in this case, the other author's understanding of the main concepts that structure British higher education - to construct a series of institutional models. Dynamic concept analysis has the considerable advantage of not being tied to precise, quantitative data. It also allows considerable flexibility in the subsequent manipulation of the information used, so that the implications of a variety of possible changes (e.g. in attitudes, perceptions or policies) can be readily modelled and assessed.

The remainder of this paper is in five parts. First, the concepts which form the basis for the analysis are identified. The methodology of dynamic concept analysis is summarised, and the information structure of conceptual relations upon which it operates is set out. Five representative institutional types - Oxbridge, Urban Polytechnic, Teacher Training College, Campus University, Distance University - are then described and modelled in terms of the concepts identified. The models produced are assessed for their apparent accuracy, and for what they suggest about

institutional cultures within British higher education. Finally, the use of the method in the analysis of policy changes is considered.

3.2. CONCEPTS

In a number of recent studies, one of the present authors has sought to identify the values, purposes, assumptions or concepts which underpin the theory and practice of higher education in the United Kingdom (Tight 1987, 1989, 1990). These studies have built in part upon existing work by other authors (e.g. Barnett 1990, Bowen et al 1978, Trow 1989). Five main purposes of higher education were identified, which were labelled alliteratively as skills development, selection, socialisation, scholarship and service. A sixth purpose, common to most institutions and systems, was then added: namely self-perpetuation or survival (see Tight 1989, 86-88).

For the purposes of the present analysis, two further concepts have been included: autonomy and orientation. The eight concepts identified will now be described in more detail.

(1) Orientation

Higher education institutions may be primarily orientated towards research, or towards teaching, or they may take a more balanced approach towards these functions. The notion that teaching and research could or should be carried out by different institutions has a long history (e.g. Newman 1852). It has recently been revived by the government, and is currently being developed at a departmental level through research selectivity exercises.

(2) Skills

One widely accepted function of higher education is to develop skills amongst its clients. These skills may be general and transferable (e.g. problem-solving, organisational and teamwork skills), or they may be specific to particular subjects or disciplines. Such skills are intended to be

of long-term use to those participating in higher education, to their employers and to society as a whole.

(3) Service

This concept refers to the extent to which institutions of higher education are outward-looking, seeking to serve local, national and even international communities. Service would typically involve an institution in applied or collaborative teaching and research with employers, community organisations, government departments and other bodies. This function is better developed in some other parts of the world - such as the United States (Trow 1969), the Soviet Union and many Third World nations - than it currently is in the United Kingdom.

(4) Socialisation

In addition to developing their skills, higher education may also aim to prepare individuals for their future roles and responsibilities within society. This may be achieved by, for example, inculcating and reinforcing appropriate aspirations or behaviour patterns, and by enabling participants to build up networks of personal contacts.

(5) Selection

Institutions of higher education also have a responsibility for identifying, examining and accrediting individuals with higher level abilities or skills. Both the selection and socialisation functions of higher education have been extensively studied by sociologists (e.g. Bourdieu and Passeron 1977, Halsey, Heath and Ridge 1980). As in the case of socialisation, the involvement of higher education institutions in selection serves at least in part, and perhaps mainly, to endorse existing patterns: patterns based on individuals' social background and prior education.

(6) Survival

As already noted, self-perpetuation - the desire to maintain existing structures or traditions of working, with only the minimal adaptation necessary to respond to changing circumstances - is a characteristic shared by most organisations. Though they are frequently stigmatised as 'ivory towers', it is doubtful whether institutions of higher education suffer from inertia to a greater extent than most other institutions.

(7) Autonomy

Institutions of higher education vary in the freedom they have to determine their own policies and practices, without being subject to undue external control or interference. The concept of institutional autonomy is closely linked to, but by no means synonymous with, the academic freedom enjoyed by individual members of their staff (Tight 1988b).

(8) Scholarship

The final concept considered here relates to the transmission of academic values within and beyond institutions over time. The processes involved include study, discussion, synthesis and publication, as well as the training of future academics. Scholarship may be practiced in institutions which focus on teaching, just as much as in those which concentrate on research.

These concepts are, of course, inter-related (otherwise there would be little point to this analysis), and they may overlap to some extent. Taken together, it is believed that they provide a reasonably comprehensive framework within which the nature of modern British higher education institutions may be considered.

3.3. DYNAMIC CONCEPT ANALYSIS

The concepts identified will now be analysed using the technique of dynamic concept analysis (Chapter 1). This technique begins by identifying the relationships between the concepts or variables used. There are five different ways by which two concepts can be related to each other (Chapter 1, 10-12):

1) they have no relation;
2) they have a one-way relation;
3) they have a two-way relation;
4) they have no direct relation, but are related via a third concept;
5) they are related via a longer chain of concept relations.

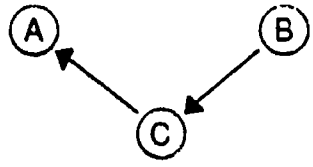
These different types of relationship are illustrated diagrammatically:

Type 1.

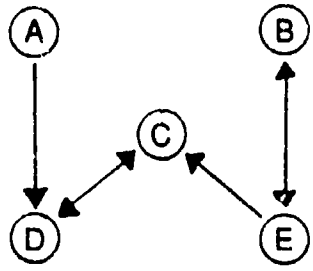
Type 2.

Type 3.

Type 4.



Type 5.



3.4. INFORMATION STRUCTURE OF HIGHER EDUCATION INSTITUTIONS

Dynamic concept analysis proceeds by building up an information structure containing details of all the concept relations identified. Matrix 1.3. shows the information structure used for the analysis of higher education institutions in this study. For each concept, three possible attributes - two extreme positions, and a neutral stance between them - have been identified. In all but one case (orientation), the three attributes have been labelled 'central', 'neutral' and 'non-central'. The cells of the matrix contain the concept relations defined by the authors: these are also given in the form of verbal statements in the appendix.

Matrix 1.3. Information Structure of Higher Education Institutions

Row	CONCEPTS	Attributes	1 a	1 n	1 b	2 a	2 n	2 b	3 a	3 n	3 b	4 a	4 n	4 b	5 a	5 n	5 b	6 a	6 n	6 b	7 a	7 n	7 b	8 a	8 n	8 b
1		1a research	a					b		n	b		n	b	a						a			a		
2	1.ORIENTATION	1n neutral		n			n			n			n			n						n			n	
3		1b teaching			a	a			a	n		a	n				b						b			b
4		2a central			b	a			a											b			b		n	b
5	2.SKILLS	2n neutral		n			n			n									n			n			n	
6		2b non-central	a					a			b							a			a			a	n	
7		3a central			b	a			a			a	n				b			b			b			b
8	3.SERVICE	3n neutral		n			n			n			n			n			n			n			n	
9		3b non-central	a					b			a		n	b	a			a			a			a		
10	4.	4a central		n	b				a	n		a			a	n		a								
11	SOCIALISATION	4n neutral		n						n			n			n			n							
12		4b non-central	a	n						n	b			a		n	b			b						
13		5a high	a							n	b	a	n		a			a	n		a			a	n	
14	5.SELECTION	5n medium		n						n			n			n			n			n			n	
15		5b low			b				a	n			n	b			a		n	b			b		n	b
16		6a central						b			b	a			a	n		a						a	n	
17	6.SURVIVAL	6n neutral					n			n			n			n			n						n	
18		6b non-central				a			a					b		n	b			b					n	b
19		7a autonomous	a					b			b				a						a			a		
20	7.AUTONOMY	7n neutral		n			n			n						n						n			n	
21		7b non-autonomous			b	a			a								b						b			b
22	8.	8a central	a				n	b			b				a	n		a	n		a			a		
23	SCHOLARSHIP	8n neutral		n			n			n						n			n			n			n	
24		8b non-central			b	a	n		a							n	b		n	b			b			b

- A cell shows the relationship between two concepts.
- A row shows the attributes with Type 2 (A<--B) relation to the attribute in question.

The relationship between two concepts may, of course, be either linear or non-linear (Chapter 1, 31). The information structure given in Matrix 3.1. includes only linear relationships. For example, cell 1/5 indicates a positive correlation between the two concepts, while cell 1/2 indicates a negative correlation. Cell 3/4 shows a trend towards a positive correlation, and cell 1/3 a trend towards a negative correlation. An empty cell indicates that it is not thought possible to state a relationship.

The information contained in Matrix 3.1. can now be integrated into a series of conceptual models, in which the relations between all concepts are analysed simultaneously. A conceptual model combines information on concept relations for a particular combination of attributes. Its construction may subtly alter the relationships between given variables: for example, a one-way relation (A<--B) may change into a two-way relation (A<-->B) when the information on all concept relations is combined. The number of concepts used obviously determines the number of possible attribute combinations. With eight concepts, as in this study, 6561 combinations - or varieties of higher education institution - are possible (ibid, p. 23). All of these combinations can be depicted by conceptual models built up using the information given in Matrix 3.1.

Clearly, it is critical to the analysis which follows that the concepts used in this study are central to an understanding of British institutions of higher education, and that the relations defined between these concepts are reasonable. The concepts and relationships used in this study are based on the judgements of the authors. Matrix 3.1. should be regarded, therefore, as a hypothetical or personal structure of concept relations, rather than as one based on empirical data. Other people involved in higher education would doubtless produce rather different conceptual structures, although in many cases the differences might not be that significant.

The validity and usefulness of the information contained in Matrix 3.1. will now be assessed by constructing five ideal-typical institutional models.

3.5. CASE STUDIES

3.5.1. Five Institutional Models

The five ideal-typical types of higher education institution selected for analysis are:

(1) Oxbridge;
(2) Urban Polytechnic;
(3) Teacher Training College;
(4) Campus University;
(5) Distance University.

Other types could, of course, be added. The five chosen here are meant to be illustrative only, and should not be interpreted as directly representative of any particular institution.

For each institutional type appropriate concept attributes were selected from the range given (see Table 3.1.), and a conceptual model was then built up on the basis of the information structure illustrated in Matrix 3.1. The models may be presented in the form of diagrams, so as to provide comprehensive conceptual pictures of particular kinds of institution. These can then be assessed against expectations, and against other information about institutional types. This process will now be briefly described for each of the five institutional types chosen for analysis.

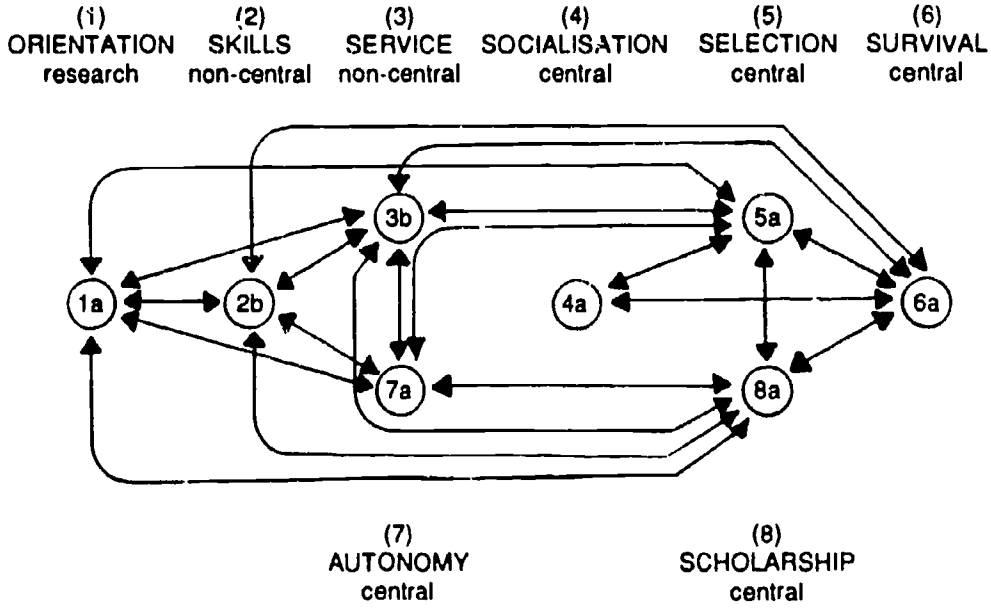
Table 3.1. Institutional Types and their Concept Attributes

Concept	Oxbridge	Urban Polytechnic	Teacher Training College	Campus University	Distance University
Orientation	Research	Teaching	Teaching	Neutral	Teaching
Skills	Non-central	Central	Central	Neutral	Neutral
Service	Non-central	Central	Neutral	Non-central	Central
Socialisation	Central	Neutral	Central	Central	Non-central
Selection	Central	Neutral	Neutral	Central	Non-central
Survival	Central	Neutral	Non-central	Central	Neutral
Autonomy	Central	Non-central	Neutral	Central	Neutral
Scholarship	Central	Non-central	Non-central	Central	Neutral

(1) Oxbridge

The Oxbridge type of higher education institution has been characterised as having a research orientation; placing an emphasis on socialisation, selection, survival, autonomy and scholarship; with no stress placed on skills or service. When these attributes are related to each other, using the information structure given in Matrix 3.1. Model 3.1. is produced.

Model 3.1. Oxbridge



This model indicates that the research orientation of this institutional type is supported by the emphasis placed on the selection function, and by the attention paid to scholarship: i.e. to the transmission of academic values. The institution's autonomy to determine its own policies and practices enables it to stress research, and to pay little attention to skills development or the wider service function. Indeed, the lack of stress placed on these two functions appears to be mutually reinforcing.

The model also suggests that the socialisation role does not hold a very central position: it is directly related to only the selection and survival functions. Within this institutional type, socialisation may be considered as being essentially a side product of education.

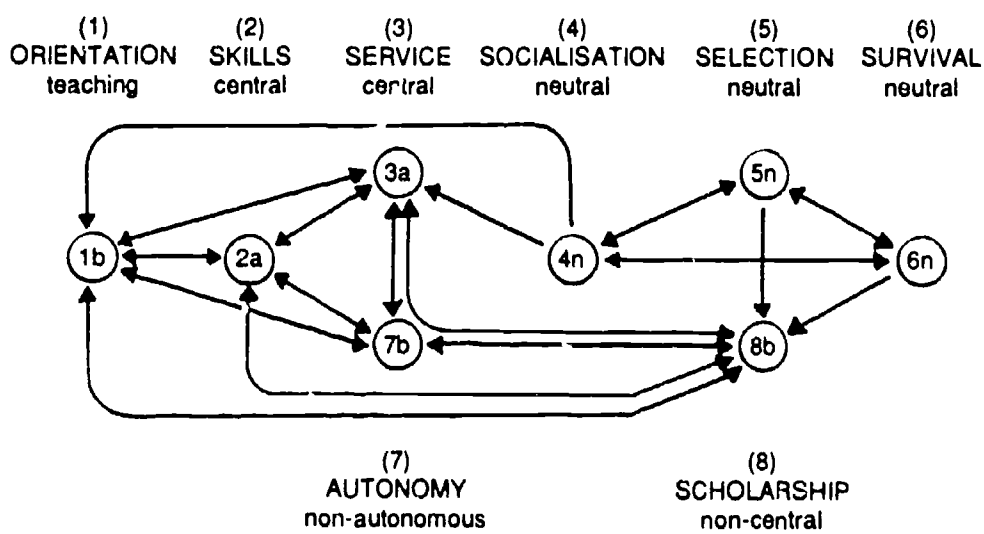
Though the model does not link the survival function directly to either orientation or autonomy, it shows that the latter two functions are important aspects of the institution. This may imply that a research orientation and institutional autonomy do not, in themselves, guarantee the maintenance of this institutional type and its traditions. These qualities may be rather less significant in this respect than other factors, such as selection and scholarship.

Scholarship is accorded a key position in the model, closely connected to the research orientation of the institution, to its autonomy, and to the selection and survival functions. Conversely, the lack of emphasis placed upon skills and service appears to enable the institution to concentrate more upon scholarship (as well as upon research).

(2) Urban Polytechnic

The Urban Polytechnic institutional type differs in every attribute from the Oxbridge type just discussed (see Table 3.1.). It is characterised as placing strong emphasis on skills and service, with an orientation towards teaching, and with no stress placed on autonomy or scholarship. The stance taken on the socialisation, selection and survival functions is neutral. The model produced from these attributes and their relations is illustrated in Model 3.2.

Model 3.2. Urban Polytechnic



The model indicates that this institutional type's teaching orientation is supported by the emphasis placed upon skills development and service to the surrounding community. The lack of institutional autonomy suggests that the institution has been given its teaching role by some outside or directing authority. Indeed, this role might be seen as the key quality which legitimates this institutional type's position as an institution of higher education.

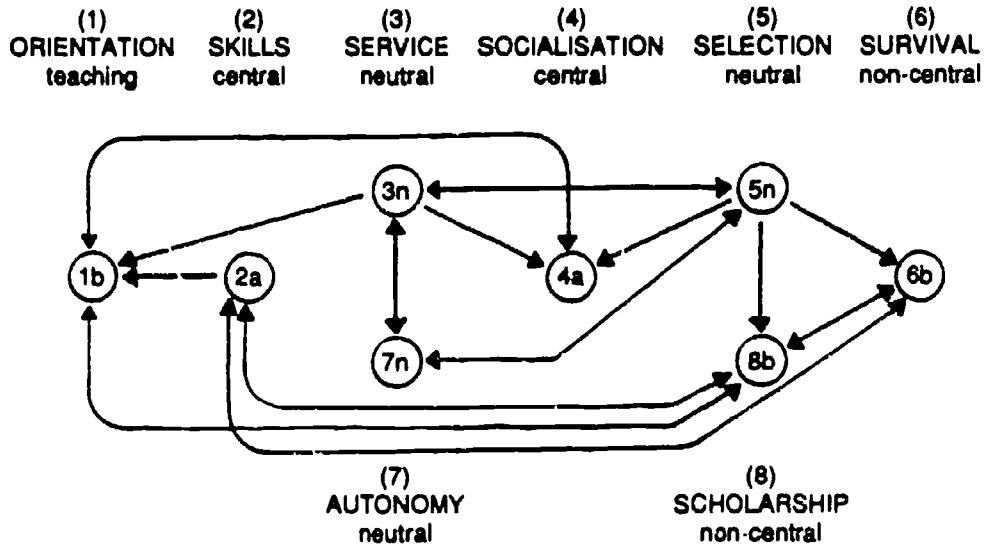
The socialisation function is, again, not very focal within the model; though it is linked with the neutral position taken on selection and survival. It is the scholarship function, which is non-central for this institutional type, that occupies the key position in this model. With the exception of socialisation, all of the other attributes identified are directly connected to (non-)scholarship. The lack of emphasis placed upon scholarship may, therefore, be considered as being a major characteristic of this institutional type.

(3) Teacher Training College

The third institutional type identified for this analysis, the teacher training college, also emphasizes skills development and the teaching function. To these is added a concern with the socialisation of its students (cf. Oxbridge, and the stress placed by both institutional types on residence). As with the Urban Polytechnic, the survival of the institution and its scholarship role are not stressed. The stance taken on service, selection and autonomy is deemed to be neutral.

The model of this institutional type (see Model 3.3.) associates its teaching orientation with the emphasis placed on skills development and socialisation, with the lack of stress on scholarship, and with the neutral position adopted towards service. The institution is portrayed as semi-autonomous, preparing students for the teaching profession, with little or no research orientation.

Model 3.3. Teacher Training College

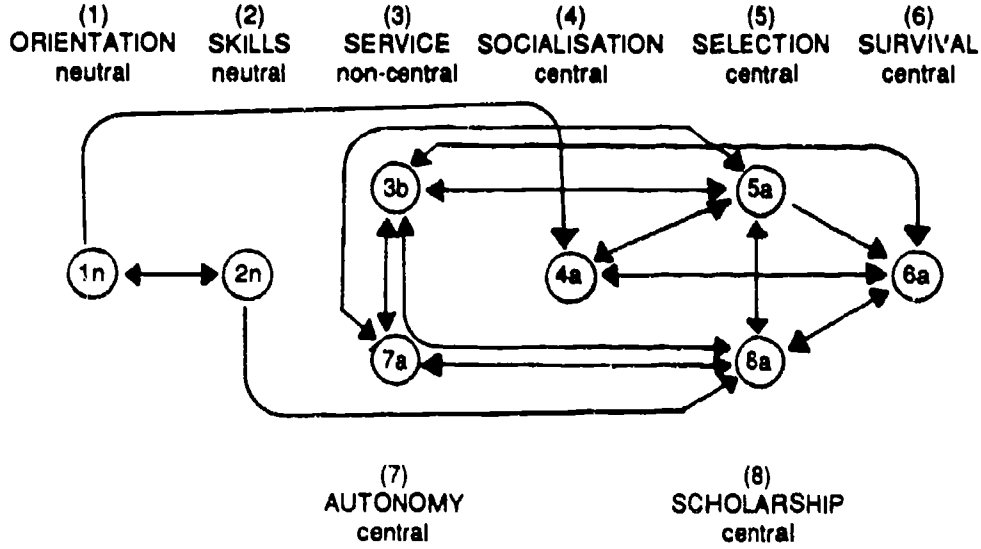


Unlike the other four institutional types considered, survival has been defined as a non-central concern, so as to reflect the closure, amalgamation or re-structuring which has affected many teacher training colleges in the recent past. This attribute is linked by the model to the stress on skills development, to the neutral approach adopted towards the selection function, and to the non-central role of scholarship.

(4) Campus University

Six out of the eight concept attributes identified for this institutional type are identical with those chosen in the case of Oxbridge. Socialisation, selection, survival, scholarship and autonomy are again seen as central to the institutional identity, with service once more non-central. The Campus University is, however, portrayed as having a neutral position on skills development, and a balanced (or neutral) orientation with regard to teaching and research. The model which results from this combination (see Model 3.4.) is very different from that produced for the Oxbridge type.

Model 3.4. Campus University



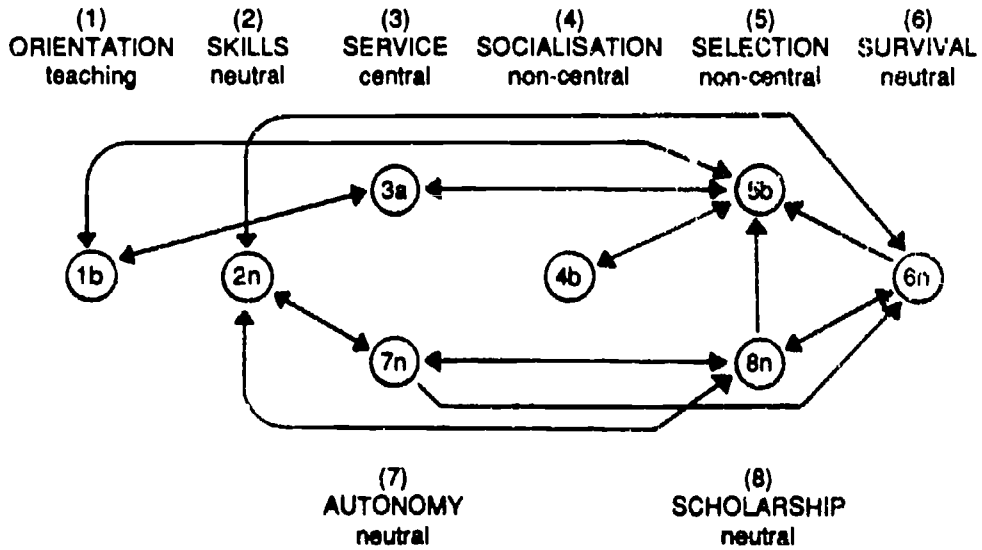
Interestingly, the balanced teaching/research orientation is located in a marginal position within the model, suggesting that it has little real impact upon the institutional culture. The only two-way link with orientation is with the skills development function, which also occupies a weak position within the model. The link between skills and scholarship suggests that the former might be interpreted here primarily in terms of academic skills. The non-central stance taken towards the service function is associated with the institution's stress on autonomy, scholarship, selection and survival.

The selection function is placed in a focal position within the model, associated not only with the non-central stance on service, but also with the central roles of socialisation, survival, autonomy and scholarship. Scholarship also has a key position within the model. The emphasis on this function appears to be strengthened by the neutral position of skills development, the lack of emphasis on service, and the stress placed on selection, autonomy and survival.

(5) Distance University

The final institutional type analysed here is in some ways the most unusual of the five. The Distance University is seen as having a strong teaching and service orientation (cf. the Urban Polytechnic). Both the socialisation and selection functions are portrayed as non-central, largely because of the lack of face-to-face contact between students and staff. The institution's stance on the four other functions has been taken as neutral. The resulting attribute combinations produce a model (see Model 3.5.) which appears rather sparse when compared to the others just analysed.

Model 3.5. Distance University



Indeed, Model 3.5. can readily be split up into a number of sub-models. The selection function (defined as a non-central attribute) takes the most focal role. In one sub-model, it links up with the teaching orientation and the service function to form a set of mutually reinforcing attributes. Another sub-model links (non-)selection with (non-)socialisation, emphasizing the relatively impersonal nature of the institution's dealings with its students or clients. A third sub-model connects the other (neutral) attributes together. Thus survival connects with skills development, selection, scholarship and autonomy.

3.5.2. Discussion

In considering the accuracy and usefulness of the institutional models which have just been described, we should bear in mind that these are ideal-typical models. They are meant to summarise the key features of representative institutional types, not to portray existing individual institutions. In some cases, an element of caricature is inevitably involved; in others, features which are no longer current may be embodied in the model. An assessment of the models should rest, therefore, not so much on their objective validity, but on the extent to which they illuminate and add to the subjective conceptions on which they are based.

The five institutional types selected for analysis have been confirmed as distinct types. The models illustrated in Models 3.1. to 3.5. are very different from each other.

The Oxbridge model appears to be internally highly consistant, with most of the attributes closely inter-connected. The emphasis placed upon scholarship and selection, and the lack of emphasis placed on service, seem to have particular significance. The socialisation function, on the other hand, appears to be of only marginal importance.

The Urban Polytechnic model focuses on an opposed set of attributes. Here, the lack of importance accorded to scholarship, and the stress placed upon service and teaching, appear to be key attributes. Conversely, the selection, socialisation and survival functions (for each of which a neutral stance was specified) seem to be relatively unimportant.

In the case of the Teacher Training College model, the key attributes seem to be the stress placed upon the teaching function, the lack of emphasis accorded to scholarship (cf. the Urban Polytechnic), and the neutral stance taken towards selection and service. Autonomy appears to be unimportant.

For the Campus University, the key factors identified by the model are the emphasis placed upon the scholarship, selection and survival functions, and the lack of importance accorded to service. Both orientation and the skills function, for each of which a neutral position was defined, appear as relatively marginal within the model.

Finally, in the Distance University model, the least well inter-connected of the five, the chief attributes which stand out are the lack of emphasis placed upon selection, and the neutral position taken on survival and scholarship. The stress given to service and teaching, and the lack of emphasis accorded to socialisation, show up as relatively marginal considerations.

These findings are broadly consistent with the authors' understanding of the nature and diversity of institutions of higher education in the United Kingdom. Some possible anomalies are apparent, but these can be readily explained. For example, the marginal position of the teaching and service functions within the Distance University model may seem rather peculiar. However, it can be accounted for by the close inter-action between these functions and the (non-central) selection function, which appears as the key attribute within the model. The non-focal position of the socialisation function within the Oxbridge model may, similarly, seem to be at variance with expectations; but this can be explained by its linkage to the key selection and survival functions.

As well as confirming our existing understanding, the models produced suggest a number of insights into institutional cultures within the British higher education system. If we compare the five models in terms of their internal consistency, then the Oxbridge model, which has the most inter-connections between attributes (71% of the maximum number possible), appears to be the most ordered, with the Distance University model the least so (only 43%). This might be taken to suggest that the former is much closer than the latter to our common understanding - such as it is - of what constitutes an institution of higher education. Given the very different histories of these two institutional types, this is hardly surprising. The next most ordered model, the Urban Polytechnic (with 61% of the maximum possible inter-connections), also has a well-developed history and identity.

It is also interesting to look at the relative importance of the concepts used within the five models as a group. Overall, the scholarship and selection functions stand out as the most important, with average inter-connection rates of 71% and 69% respectively. Both of these functions are well-connected in each of the five models examined. By contrast, the socialisation (37%) and skills (43%) functions appear, with the odd exception, to be generally unimportant in the internal structure of the models. This may indicate something about the relative significance of the

eight functions identified for our understanding of British higher education; or it might suggest that some of the concepts are, to some extent, redundant.

Thus, the lack of importance accorded to the skills function within most of the models - in the one case, Oxbridge, where it appears as a significant feature, it is defined as a non-central attribute - could be interpreted as being in line with many of the criticisms currently levelled at higher education by government and employers. Conversely, the significance of the scholarship function within all of the models, even where it has been defined as a non-central attribute, might be seen as a reflection of a continuing and traditional emphasis within our institutions of higher education.

3.6. FURTHER APPLICATIONS

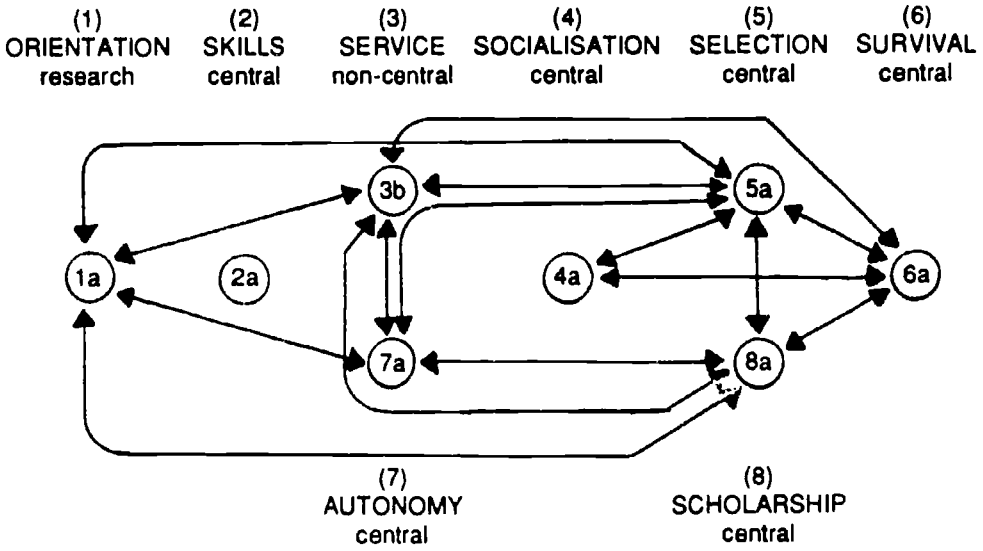
The methodology used in this paper - dynamic concept analysis - can be applied further in a variety of ways. Clearly, many more institutional models could be developed. Alternatively, the concepts and attributes used to create the existing models could be varied to reflect different circumstances. These might include, for example:

- alternative understandings of the concepts underlying higher education;
- different perceptions of the attributes of given institutional types;
- changes in the nature of institutions over time;
- variations in the nature of institutions in different countries and systems;
- the effects of changes in higher education policy.

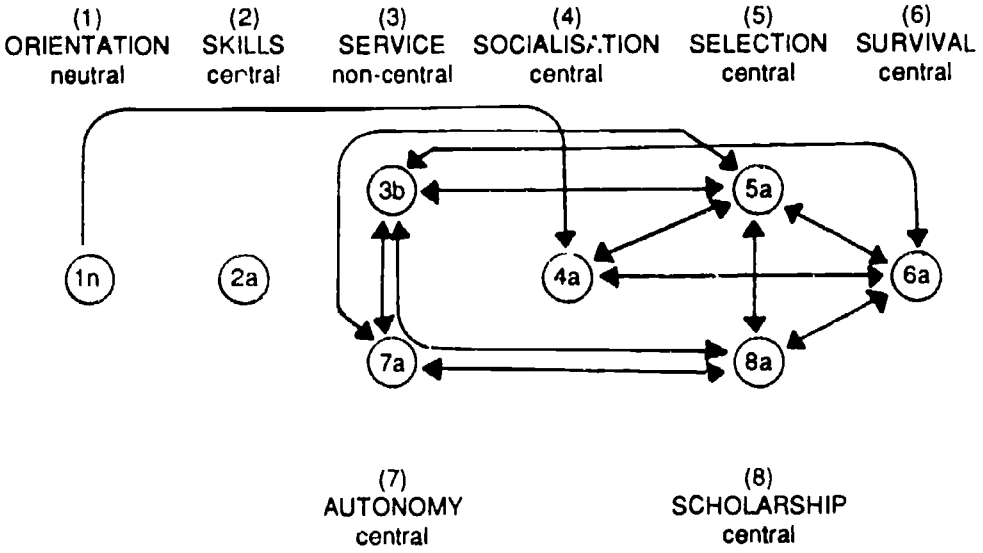
In each case, a comparative analysis of the models produced would be potentially illuminating.

We have limited space to explore these possibilities in this paper, and will restrict ourselves to examining one example. We have chosen to look at the consequences for our institutional models if, in each case, the skills function was defined - perhaps as a consequence of changing government policy - as a central attribute. It is, of course, already defined as such in two of the models - Urban Polytechnic and Teacher Training College - so it is only necessary to produce new models for the other three cases. These new models are shown in Models 3.1.1., 3.4.1. and 3.5.1.

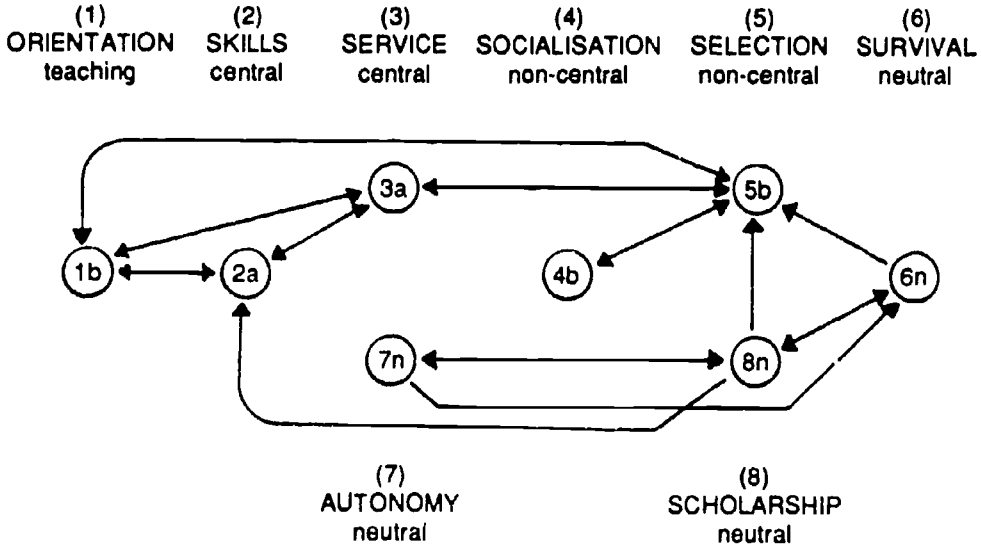
Model 3.1.1. Oxbridge (with skills central)



Model 3.4.1. Campus University (with skills central)



Model 3.5.1. Distance University (with skills central)



The results of the re-modelling exercise are extremely interesting. In the case of the Oxbridge institutional type (Model 3.1.1.; cf. Model 3.4.1.), the re-definition of the skills function results in its complete isolation within the model. However, the inter-relationships between the other seven functions remain exactly as before. Evidently, placing stress on skills development does not sit at all well with the other attributes defined for this institutional type. This suggests two things: first, that the original definition of this attribute was accurate and, second, that an external re-definition is unlikely, of itself, to lead to much change in this particular institutional culture.

A similar effect can be seen in the case of the Campus University (Model 3.4.1.; cf. Model 3.4.). The skills function is again totally isolated by its re-definition, although here it was originally in a marginal position within the model. The emphasis placed upon the scholarship, selection and survival functions remains, together with the lack of stress placed on service. The overall structure of the model is in fact little changed; it is certainly not de-stabilised in the same way as the Oxbridge example. Again, it has to be anticipated that a more thoroughgoing overhaul of the institutional culture would be necessary if this single change was to have a significant effect.

In the third example, Distance University, the changes effected in the structure of the model are more subtle (Model 3.5.1.; cf. Model 3.5.). The three sub-models based around the focal point of the (non-central) selection function remain, but the content of two of them has changed. The skills function is no longer closely inter-connected with the three neutral attributes of autonomy, scholarship and survival. It has, instead, become closely linked to the emphasis placed upon teaching and service. It seems apparent that this attribute change fits much better within the institutional culture suggested by this model than it does in either of the other examples.

3.7. CONCLUSIONS

Two main conclusions may be drawn from this study. First, the methodology of dynamic concept analysis has been demonstrated to be extremely useful in this context; both in enabling the creation and comparison of ideal-typical models of British institutions of higher education, and in allowing some consideration of the possible effects of changes in higher education policy or structures. Second, the concepts and institutional types chosen for analysis have been shown to have validity and internal consistency, though they remain based on a subjective understanding of the system.

A range of possible directions for further research have been suggested. More work now needs to be done in exploring these for what they suggest about the methodology used, about our differing conceptual understanding, and about the development of higher education in this and other countries.

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APPENDIX 3.1. Statements of Concept Relationships in the Higher Education Institutes

A statement indicates that there is a Type 2 (A<--B) relation from another concept to the concept in question.

* indicates a trend towards a relation as stated
** the cell in the Information Structure (Matrix 1, p. 105)

1. Orientation (research - neutral - teaching)

cell**
1/2 The less stress on skills, the greater the orientation towards research (and less towards teaching)
1/3* A lower emphasis on service tends to be associated with a greater stress on research
1/4 A lower emphasis on socialisation tends to be associated with a greater stress on research
1/5 The greater the stress on selection, the greater the orientation towards research
1/6 No relationship
1/7 The more autonomy, the greater the orientation towards research
1/8 The more stress on scholarship, the greater the orientation towards research

2. Skills (central - neutral - non-central)

cell
2/1 The greater the orientation towards teaching, the more emphasis placed on skills
2/3 The more stress placed on service, the more stress placed on skills
2/4 No relationship
2/5 No relationship
2/6 The less emphasis on survival, the more stress on skills
2/7 The less autonomous the institution, the more stress placed on skills
2/8* A lower stress on scholarship tends to be associated with a greater stress on skills

3. Service (central - neutral - non-central)

cell
3/1 The greater the orientation towards teaching, the more emphasis placed on service
3/2 The more stress on skills, the more on service
3/4* A greater stress on socialisation tends to be associated with a greater stress on service
3/5 The less stress on selection, the more on service
3/6 The less stress on survival, the more on service
3/7 The less autonomy, the greater stress placed on service
3/8 The less emphasis on scholarship, the greater the stress placed on service

4. Socialisation (central - neutral - non-central)

cell
4/1* A greater orientation towards teaching tends to be associated with an emphasis on socialisation
4/2 No relationship
4/3 A greater stress on service tends to be associated with a stress on socialisation
4/5 A greater stress on selection tends to be associated with a stress on socialisation
4/6 The more stress on survival, the more on socialisation
4/7 No relationship
4/8 No relationship

5. Selection (central - neutral - non-central)

cell
5/1 The greater the orientation towards research, the more stress placed on selection
5/2 No relationship
5/3* A lower stress on service tends to be associated with a stress on selection
5/4* A greater stress on socialisation tends to be associated with a stress on selection
5/6* A greater stress on survival tends to be associated with a stress on selection
5/7 The more autonomous the institution, the more stress on selection
5/8* A greater stress on scholarship tends to be associated with a stress on selection

6. Survival (central - neutral - non-central)

cell
6/1 No relationship
6/2 The less stress on skills, the more on survival
6/3 The less stress on service, the more on survival
6/4 The more stress on socialisation, the more on survival
6/5* A greater stress on selection tends to be associated with a stress on survival
6/7 No relationship
6/8* A greater stress on scholarship tends to be associated with a stress on survival

7. Autonomy (central - neutral - non-central)

cell
7/1 The greater the orientation towards research, the more autonomous the institution
7/2 The less stress on skills, the more autonomous the institution
7/3 The less stress on service, the more autonomous the institution
7/4 No relationship
7/5 The more stress on selection, the more autonomous the institution
7/6 No relationship
7/8 The more stress on scholarship, the more autonomous the institution

8. Scholarship (central - neutral - non-central)

cell	
8/1	The greater the orientation towards research, the more stress placed on scholarship
8/2*	A lower stress on skills tends to be associated with an emphasis on scholarship
8/3	The less stress on service, the more emphasis on scholarship
8/4	No relationship
8/5*	A greater stress on selection tends to be associated with an emphasis on scholarship
8/6*	A greater stress on survival tends to be associated with an emphasis on scholarship
8/7	The more autonomous the institution, the more emphasis on scholarship

CHAPTER 4.

INDIVIDUAL MODELS OF MORAL JUDGEMENT

Seppo Kontiainen and Klaus Helkama

Abstract

An attempt was made to look at Kohlberg's stages of moral reasoning in terms of the Dynamic Concept Analysis. Nine concepts thought relevant and central to moral decision making were chosen and their interrelationships defined on the basis of a conceptual analysis as well as of empirical findings from social psychological literature. Five cases, each representing a 'typical' attribute pattern of a respondent from one of the five Kohlberg's stages in response to the famous Heinz dilemma, were described by the second author. The first author, not familiar with the context of the decision situation and with Kohlberg's stage theory, made an interpretation of a conceptual model for each case. These interpretations were, in turn, assessed by the second author according to their fit with (his intuition of) theoretical structure of each stage. The results of this thought experiment were discussed in terms of their consistencies with and divergencies from the theoretical properties of the stages and in terms of the capacity of the DCA to generate new hypotheses to complement Kohlberg's stage definitions.

4.1. INTRODUCTION

The aim of this paper is to examine moral decision making by combining some basic ideas put forward in Kohlberg's (e.g. 1984) cognitive-developmental approach to moral judgement with the framework of the Dynamic Concept Analysis developed by Kontiainen (cf. Chapter 1).

We shall use the famous dilemma of Heinz (Kohlberg 1963) to illustrate the basic concepts of this analysis. The Heinz dilemma goes as follows:

> *In Europe, a woman was near death from a special kind of cancer. There was one drug that the doctors thought might save her. It was a form of radium that a druggist in the same town had regently discovered. The drug was expensive to make, but the druggist was charging ten times what the drug cost him to make. He paid $200 for the radium and charged $2,000 for a small dose of the drug. The sick woman's husband, Heinz, went to everyone he knew to borrow the money, but he could only get together about $1,000 which is half of what it cost. He told the druggist that his wife was dying, and asked him to sell it cheaper or let him pay later. But the druggist said, "No, I discovered the drug and I'm going to make money from it." Heinz got desperate and broke into the man's store to steal the drug for his wife. Should the husband have done that? (Kohlberg 1963, 18-19).*

Our focus will be on the cognitive representation of a moral decision situation. The concepts define the way a person facing a moral choice views the situation - what are the factors (s)he takes into consideration or ignores and also how (s)he weighs the importance of various factors. In other words, we are taking the viewpoint of an actor as opposed to that of an observer, and will examine his or her way of relating the different features of the situation to one another in making a decision about the right action.

4.2. CONCEPTS

Moral judgements are studied in this paper in a conceptual framework of nine different concepts considered central in order to understand the circumstances in which an individual decision making takes place.

The following conceptual categories are employed here:

(1) Morality
(2) Legality
(3) Responsibility
(4) Guilt
(5) Outcome
(6) Motive
(7) Power
(8) Influence
(9) Freedom

The general meaning of the concepts is given below: however, it is worth remembering that there is variation under each concept when considering individual cases.

(1) Morality is thought to be a property of an action. 'Moral' stands for a morally right action, 'immoral' for a morally wrong one. For instance, stealing to save life of another person in the Heinz dilemma is regarded by some people as a moral action but by some others as an immoral action.

(2) Legality refers to the quality of an action as being legally permitted or forbidden. Stealing as such is an illegal action, refraining from stealing is legal.

(3) Responsibility designates the individual vs. collective responsibility for a state of affairs that has come about or is expected to occur as a foreseen consequence of an action. It involves in a way the ownership of an action. If I kill somebody deliberately, I am individually responsible for his death, whereas if I kill in selfdefence, the victim is partly responsible, and accordingly, the resposibility is collective. In this context, responsibility means primarily moral responsibility, not legal. Killing in a war is most often considered as a collective action.

In the Heinz dilemma, if Heinz does steal the medicine, he may or may not be regarded as individually responsible for the death of his wife (Helkama 1981). The distinction adopted here implies that if Heinz is not regarded as responsible, then someone else, e.g. the druggist is responsible, and the responsibility is collective. This (technical) way of using the concept of individual - collective responsibility is admittedly not exactly in line with the ordinary usage of these terms.

(4) **Guilt** is taken to refer to the anticipated feelings of the agent after the act. In comtemplating the stealing of the medicine (or the prospect of his wife's death), Heinz may anticipate intense, mild or no guilt feelings related to the act of steeling or to the act of letting his wife die. For the operational definition of intense vs. weak guilt feelings, see e.g. Hoffman (1975).

(5) **Outcome** is used here in a very broad sense. By it we mean a pragmatic non-moral net evaluation of the sum total of the outcomes of the action as seen by the agent. The outcome is said to be positive if the action is a success or if the intended or non-intended consequences of the action are positive for the agent. Similarly, if the action is regarded by the agent as a failure, the outcome is negative.

The outcome of the act of stealing in the case of Heinz may be regarded (by some people) as positive, if the medicine turns out to be an effective cure and Heinz is not caught, and negative if Heinz is caught by the police and given a prison sentence.

(6) **Motive** refers to the perceived intention of the agent. The motive behind stealing in the case of Heinz may be seen as acceptable if stealing is motivated by a desire to help, but as non-acceptable if the act is seen as selfishly motivated.

(7) **Power** is defined as the degree of potential influence of an actor on the basis of his or her social position. It refers to the number of states of affairs (s)he can influence by his or her choices. Heinz, in our example, has little power while the druggist has a great deal of power.

(8) **Influence** refers to the actual perceived impact of the act. A person may have power but not see its use as possible in a given situation. Conversely, a person with little power may perform an act having a lot of influence. Heinz' stealing the medicine may be seen (by some people) as

a means of drawing attention to the deficiencies of the medical care system of his society and as a social protest action.

(9) Freedom is interpretated in this context to be conceptually independent of both power and influence. It designnates the number of alternatives an agent has when making a decision (Harvey & Smith 1977).

4.3. DYNAMIC CONCEPT ANALYSIS

Moral judgements will be analysed here by the Dynamic Concept Analysis, DCA (Chapter 1). An **information structure** includes information of relationships between the variables of a study, and serves as basis to integrate information in **conceptual models**.

It was shown in the methodological paper (Chapter 1, 10-12), that there are altogether five different ways of how two concepts can be in relation with each other: (1) they have no relation, (2) they have a one-way relation, (3) they have a two-way relation, (4) they have no direct relation, but they are related with each other via a third concept, or (5) they are related via a longer chain of concept relations.

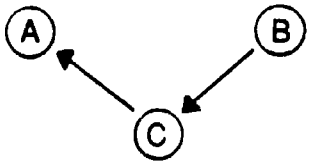
Different types of relations can be illustrated by variables A and B as follows:

Type 1. (A) (B)

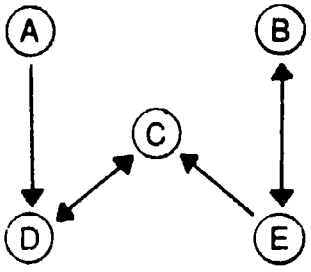
Type 2. (A) ← (B)

Type 3. (A) ↔ (B)

Type 4.



Type 5.



The information structure includes information of different types of relations between the variables in a study. This information can be integrated in conceptual models, in which the relations between all variables in question are shown simultaneously. A conceptual model is a network of concept relations like Type 5, in which different types of relations may appear in the same structure.

4.4. INFORMATION STRUCTURE OF MORAL JUDGEMENTS

The information structure is a matrix of concept relations in which relations of all concepts included in a study are gathered for analyses of a behaviour. Dynamic Concept Analysis (DCA) is a strategy of using information available in an information structure to build conceptual models to depict a phenomenon in general or in individual cases in the conceptual context of a study.

The information of concept relations can be drawn into an information structure from various sources (Chapter 1, 28). Relations can be defined, for instance, by empirical data or by hypotheses of concept relations. This study is based on hypotheses of relations made by the authors, but

authors, but findings of some earlier studies are also taken into consideration in definitions of concept relations as seen below.

For analyses by DCA, the above nine concepts of moral judgements are specified by three attributes to indicate variations in each conceptual category:

Concepts	**Attributes**		
1. Morality	1a moral	1n neutral	1b immoral
2. Legality	2a legal	2n neutral	2b illegal
3. Responsibility	3a individual	3n neutral	3b collective
4. Guilt	4a high	4n neutral	4b low
5. Outcome	5a positive	5n neutral	5b negative
6. Motive	6a acceptable	6n neutral	6b non-acceptable
7. Power	7a high	7n medium	7b low
8. Influence	8a strong	8n medium	8b weak
9. Freedom	9a high	9n medium	9b low

A relationship between two concepts can be linear or non-linear. This study is based on assumptions of linear relations.

Matrix 4.1. is the information structure of relations between nine concepts of moral judgements. Each **cell** in the matrix gives a statement of how another concept is related to the particular concept in question. For instance, Cell 1/3 gives a statement of how Concept 3 (Responsibility) is related to Concept 1 (Morality): 'the more individual responsibility the more morality'.

Matrix 4.1. Information Structure of Moral Judgements

Row	CONCEPTS	Attributes	1 a	1 n	1 b	2 a	2 n	2 b	3 a	3 n	3 b	4 a	4 n	4 b	5 a	5 n	5 b	6 a	6 n	6 b	7 a	7 n	7 b	8 a	8 n	8 b	9 a	9 n	9 b
1	1.MORALITY	1a moral	a						a					b	a			a	n								a		
2		1n neutral		n						n			n			n			n									n	
3		1b immoral			a						b	a					b		nb										b
4	2.LEGALITY	2a legal	a	n		a							n	b	a	n						n	b						
5		2n neutral		n			n						n			n						n							
6		2b illegal		n	b			a				a	n			n	b				a	n							
7	3.RESPONSI-BILITY	3a individual	a					b	a			a			a			a			a			a			a		
8		3n neutral		n			n			n			n			n			n			n			n			n	
9		3b collective			b	a					b			b			b			b			b			b			b
10	4.GUILT	4a high			b			b	a			a					b			b									
11		4n neutral		n			n			n			n			n			n										
12		4b low	a			a					b			b	a			a											
13	5.OUTCOME	5a positive	a			a	n							b	a														
14		5n neutral		n			n						n			n													
15		5b negative			b		n	b				a					b												
16	6.MOTIVE	6a acceptable	a			a	n							b	a	n		a											
17		6n neutral		n			n						n			n			n										
18		6b non-accept			b		n	b				a				n	b			b									
19	7.POWER	7a high							a						a			a			a			a			a		
20		7n medium								n						n			n			n			n			n	
21		7b low									b						b			b			b			b			b
22	8.INFLUENCE	8a strong																			a			a			a	n	
23		8n medium																				n			n			n	
24		8b weak																					b			b		n	b
25	9.FREEDOM	9a high	a			a			a					b	a			a			a						a		
26		9n medium		n			n			n			n			n			n			n						n	
27		9b low			b			b			b	a					b			b			b						b

- A cell shows the relationship between two concepts.
- A row shows the attributes with Type 2 (A<--B) relation to the attribute in question.

This indicates a positive linear relationship from Concept 3 to Concept 1, and it is expressed in the Matrix 4.1. in Cell 1/3 by

a		
	n	
		b

A negative linear relationship can be found in Matrix 4.1., e.g. in Cell 1/4 which includes a statement of the relation Concept 4 (Guilt) has to Concept 1 (Morality) 'The less guilt the more morality'.

This statement gives the following format to Cell 1/4 in Matrix 4.1.:

		b
	n	
a		

A trend towards a linear relationship is expressed in the Matrix 4.1. either by

a	n	
	n	
	n	b

or

	n	b
	n	
a	n	

An **empty cell** indicates, that it has not been considered sensible to make a statement of linear relationship or there can be a nonlinear relationship which is not possible to take into consideration in this study.

Correlations between the concepts in a study can be used when specifying the information for a cell in the information structure. However, it it worth noting that the information structure is not a correlation matrix. Empty cells, for instance, cause asymmetry in the matrix.

Kohlberg's cognitive theory assumes that moral judgements develop stage by stage and simultaneously with stage development, the centrality, meaning and interrelationships of moral concepts change. So one possible strategy in constructing the information structure would be to devise an information structure for each stage separately. Another strategy is to assume that there is enough commonanlity in the meanings of moral concepts across the different developmental stages to justify a single information structure to cover all stages. For the sake of simplicity and comparability across stages, the latter strategy is adopted here.

The information structure (Matrix 4.1.) is the basis for analyses of moral judgements in altogether about twenty thousand attribute combinations (cf. Chapter 1, 23). For further development, the statements of concept relations are open to criticism and assessment. In fact, Matrix 4.1. is a hypothetical information structure which could serve as a framework for a wider research programme.

In the following, Matrix 4.1. is introduced cell by cell in order to understand the nature of information included. The statements of the relationships are to be seen as hypotheses made by the authors. Nevertheless, earlier research findings, if available, are used to justify a statement, and to increase reliability of the information.

4.5. CONCEPT RELATIONS

In the following the information included in each cell of the information structure in Matrix 4.1. is discussed in connection to findings in some previous studies if available. As told earlier, statements of relations between concepts of this study are defined by the authors. Therefore the information structure here is a kind of expert system based on the authors' experience and knowledge of moral judgements in human behaviour.

The information of each cell in Matrix 4.1. is now expressed in the form of a statement of the concept relation. In fact, each statement can be considered as a research hypothesis for further studies, and the given information structure rather as a starting point than as the final structure.

The information in Matrix 4.1. is now introduced and discussed cell by cell under each concept. For instance, **cell** 1/2 gives the attributes of Concept 2 (Legality) most likely to join the attributes of Concept 1 (Morality), i.e. to have a Type 2 (A<--B) relation to the attributes of Concept 1.

(1) Morality (moral - neutral - immoral)

Cell 1/2. Legality has no direct link to morality of an act (an empty cell). We assume that the legality of an act does not influence its moral nature in any systematic way. Legal acts may sometimes be immoral and illegal acts (such as Heinz stealing to save the life of his wife or acts of civil disobedience) may be thought to be moral under some circumstaces.

Cell 1/3. The more individual responsibility the more moral the act. It is assumed that there is a positive link between individual responsibility and the moral rightness of an act. For an act to be moral (to me) I need to be responsible for it. Shifting responsibility away from myself is likely to make the act less moral.

Cell 1/4. The less feelings of guilt the more moral the act. With regard to guilt, it seems natural to postulate an inverse relationship to morality. If little or no guilt feelings are associated with the foreseen consequences of an act, then it is likely to be seen as a right one, and vice versa.

Cell 1/5. The more positive outcome the more moral the act. We are assuming that in general, acts with positive outcomes are experienced as morally right and acts with negative outcomes as wrong. See, e.g. Heider's (1958) balance theory.

Cell 1/6. The more acceptable motive the more moral the act. The motive of an agent is one of the central criteria in defining the moral nature of an act, even though there is a great deal of developmental variation in the centrality of motives as a criterion (Piaget 1932, Helkama 1981).

Cells 1/7-8. Power and influence are not assumed to be systematically linked to the morality of an act (empty cells).

Cell 1/9. The more freedom the more moral the act. Freedom may increase the probability of moral action at least in the sense that it increases the consistency of a person's values and his or her action. See the experimental evidence provided by Kofta (1984). The impact of freedom may possibly be mediated through increased individual resposibility, but it is also possible that freedom exerts a direct influence on morality.

(2) Legality (legal - neutral - illegal)

Cell 2/1. The higher morality the more legal the act. The assumption made here is that moral acts tend to be legal and immoral ones illegal, but the associaition is not very strong.

Cell 2/3. No direct link is postulated between individual vs. collective responsibility to legality (an empty cell).

Cell 2/4. The less feelings of guilt the more legal the act. If you feel little or no guilt in contemplating an act, then the act is more likely to be legal than illegal.

Cell 2/5. The more positive outcome the more legal the act. Similarly, a weak association is posited between acts with good outcomes to legality.

Cell 2/6. (An empty cell). Motives are not assumed to be central in defining the legality of an act. A legal act may be performed from good as well as bad motives, and the same is true for illegal acts.

Cell 2/7. The less power the more legal the act. Low power is thought to result in legal acts more frequently than high power. In other words, the assumption is that power corrupts.

Cell 2/8-9. No direct link is postulated from influence and freedom to legality (empty cells).

(3) Responsibility (individual - neutral - collective)

Cell 3/1. The higher morality the more individual responsibility. Symmetrically with 1/3, it is assumed that morally right acts go with individual responsibility.

Cell 3/2. The more illegal the act the more individual responsibility. The occurrence of an illegal act starts the search for a culprit, while nothing comparable takes place in the case of a legal act, i.e. we tend to look for someone to answer individually for an illegal act.

Cell 3/4. The more feelings of guilt the more individual responsibility. Conceptually, it makes sense to claim that high guilt leads to individual responsibility and low guilt to collective responsibility.

Cell 3/5. The more positive the outcome, the higher individual responsibility. At least in Western culture, a person is likely to attribute success to him- or herself. The evidence to blame others for one's failure is weaker, though (see, e.g. Miller & Ross 1975).

Cell 3/6. The more acceptable motives the more individual responsibility. We assume that acceptable motives are associated to individual responsibility and that there is a tendency to see one's unacceptable motives as provoked by other people's actions.

Cell 3/7. The more power the more individual responsibility. This follows from the definition of responsibility, which involves the notion that degree of power and degree of responsibility are correlated.

Cell 3/8. The stronger perceived impact, influence, of an act the more individual responsibility.

Cell 3/9. The more freedom to act the more individual responsibility.

(4) Guilt (high - medium - low)

Cell 4/1. The more immoral act the more feelings of guilt. Moral acts do not cause guilt feelings but immoral ones do.

Cell 4/2. The same is assumed to be true of the legality of an act: *the more illegal act the more feelings of guilt.*

Cell 4/3. The more individual responsibility for an (evil) action, the more intense is the guilt.

Cell 4/5. The more negative outcomes the more feelings of guilt.

Cell 4/6. The more non-acceptable motives the more feelings of guilt. As the unacceptability of the motive increases, so does the intensity of guilt.

Cells 4/7-9. No direct link from *power, influence and freedom* to guilt postulated (empty cells).

(5) Outcome (positive - neutral - negative)

Cell 5/1. The more moral act the more positive outcome. On the basis of Heider's balancy theory, moral acts are thought to have positive outcomes, in general.

Cell 5/2. Similarly, it may be claimed that legal acts tend to have positive outcomes and illegal ones negative outcomes. *The more legal act the more positive outcome.*

Cell 5/3. No direct link postulated from responsibility to outcome (an empty cell).

Cell 5/4. The weaker feelings of guilt the more positive outcome.

Cells 5/6-9. No direct link hypothesized (empty cells).

(6) Motive (acceptable - neutral - non-acceptable)

Cell 6/1. The more moral act the more acceptable motive. Moral acts are performed out of acceptable motives; this is one of the basic conceptual presuppositions of morality since Kant.

Cell 6/2. The more legal act the more acceptable motive. Legal acts are often, but not always, carried out for good motives.

Cell 6/3. The relationship between responsibility and motives is dependent on the nature of an act, and accordingly, no direct link exist between the two (an empty cell).

Cell 6/4. The lower the guilt the more acceptable motive.

Cell 6/5. The more positive outcome the more acceptable motive. Positive outcomes are expected to be linked to acceptable motives.

Cell 6/7-9. No direct link assumed from power, influence and freedom to motives (empty cells).

(7) Power (high - medium - low)

Cell 7/1-2. No direct link postulated from the morality and the legality of an action to the power (empty cells).

Cell 7/3. The more individual responsibility the more power. Conceptually it seems natural to assume that individual responsibility goes with high power.

Cell 7/4. No relationship assumed from guilt to power (an empty cell).

Cell 7/5. The more positive outcome the more power. If positive outcome is taken to refer to success, then it is plausible to assume it to be linked with power; this is based on the theory of correspondent inference (Jones & Davis 1965).

Cell 7/6. The more acceptable the motive, the more power a person has. This claim is supported by findings which show that displaying acceptable motives, such as group-orientation (as opposed to self-interest) enchan-

ces the status and power of a group member (Wilke & van Knippenberg 1988; Ridgeway 1978).

Cell 7/8-9. In spite of their conceptual distinctness, influnce and freedom may be assumed to be empirically related to power:

7/8. The stronger perceived impact (influence) of an act the more power.

7/9. The more alternatives to act (freedom) the more power.

(8) Influence (strong - medium - low)

Cells 8/1-6. No direct link to influence postulated (empty cells).

Cell 8/7. The more power the stronger influence, i.e. perceived impact of the act.

Cell 8/9. The more freedom the stronger influence. While the direct link from influence to freedom may be non-existent (see below 9/8), it seems reasonable to assume a weak relation from freedom to influence.

(9) Freedom (high - medium - low)

Cell 9/1. The more moral act the more freedom. Since moral acts must be freely chosen, we postulate a conceptual connexion between morality and freedom.

Cell 9/2. The more legal act the more freedom. Legal acts may be thought to increase freedom of action.

Cell 9/3. Individual responsibility and freedom are stated to be conceptually correlative: *the more individual responsibility the more freedom.* This is based on the notion that there is no freedom without resposibility, and vice versa.

Cell 9/4. The lower guilt the higher freedom. Guilt may be seen as an obstacle to free action.

Cell 9/5. The more positive outcome the more freedom.

Cell 9/6. The more acceptable motives the more freedom.

Cell 9/7. The more power the more freedom.

Cell 9/8. The influence or impact of an action is not seen relating in any systematic way to freedom (an empty cell).

4.6. CASES OF MORAL JUDGEMENT

This study employs the above nine concepts to describe moral judgements in individual decision making. There are altogether 27 different attributes to characterize qualitative variations of these concepts. It was shown earlier when introducing the DCA method (Chapter 1, 23) that attributes of nine concepts can exist in about twenty thousand different attribute combinations, and that each attribute can potentially exist in more than six thousand different attribute combinations: e.g. in this study, attribute 1a 'moral' can appear in more than six thousand different combinations with other attributes. The meaning of 'moral' behaviour becomes defined by its relations with the other attributes in each combination. All these combinations can be individually described by conceptual models, which can be built by information in Matrix 4.1.

The five case studies are completed in the following sequence:

(1) Author **B** gave the **attribute combination** for the case.
(2) Author **A** identified **Type 2 (A**[illegible] relations from Matrix 4.1. for each attribute.
(3) Author **A** built a **conceptual model** by information of Type 2 relations between the attributes for the case.
(4) Author **A** made a **description of the case** by the information in the conceptual model.
(5) Author **B** made an **assessment** of the case description and of the information in the model by using additional information about the case available to him.

The five cases were, in fact, chosen by B to represent a kind of a typical composite response to the Heinz interview at each stage of moral reason-

ing. At this phase of the study A was neither aware of this nor familiar with Kohlberg's theory. So A's descriptions were blind in a double sense.

Case 1.

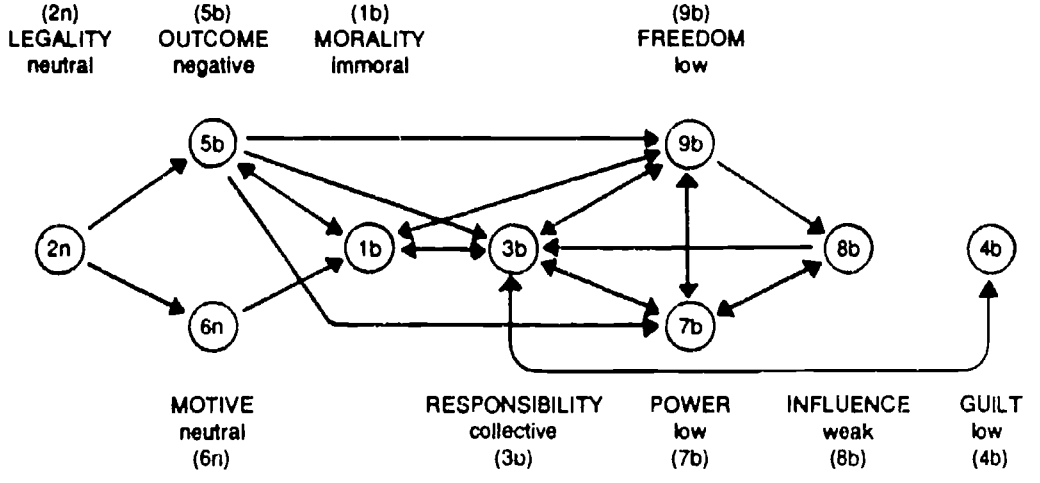
Table 4.1. shows the attributes which were chosen to describe the moral judgement in Case 1. Type 2 relations to the attribute in question can be identified on the corresponding row in Matrix 4.1.

Table 4.1. Attributes and Type 2 (A<--B) Relations in Case 1

Attributes	Row/ Matrix 4.1.	Type 2 Relations from the Attributes 1b	2n	3b	4b	5b	6n	7b	8b	9b
1b immoral	3			3b		5b	6n			9b
2n neutral legality	5									
3b collective resp.	9	1b			4b	5b		7b	8b	9b
4b low guilt	12			3b						
5b negative outcome	15	1b	2n							
6n neutral motive	17		2n							
7b low power	21			3b		5b			8b	9b
8b weak influence	24							7b		9b
9b low freedom	27	1b		3b		5b		7b		

Above information about Type 2 relations to each attribute in Case 1 is combined in Model 4.1.

Model 4.1. Moral Judgement in Case 1



The following concepts have a central position in Model 4.1.:

Responsibility:	3b collective
Morality:	1b immoral
Power:	7b low
Freedom:	9b low
Outcome:	5b negative

Legality (2n), Guilt (4b) and Motive (6n) play a rather pripherical role in Case 1.

Description of Model 4.1.

Model 4.1. shows the relationships between the attributes charactrerizing the moral judgement in Case 1. The model indicates that there is some ambivalency about legality of the act (2n) and about acceptability of motives (6n) or the person does not pay much attention to motives behind the action. S/he does not necessarily have a clear picture about the probable negative conseguences (2n with 5b) which result in an immoral act (1b).

The collective responsibility (3b) has a most central position in the model; this may mean that s/he is not personally much involved in the affair. Alhtough the act is immoral with negative outcomes he does not feel guilt (4b), and considers his own position as rather secondary (7b, 8b, 9b) in the whole process. He is likely to adopt a passive outsider's role: things just happen.

Assessment of the information given by interpretation of Model 4.1.

The central position in the model (in terms of its connections with other concepts) is taken by collective responsibility. This may be interpreted as being consistent with the characterization of this way of reasoning as the heteronomous stage of morality - individuals do not see themselves as responsible, but the morality of the act is mainly seen in terms of punishment (negative outcome) as the model indicates.

Kohlberg's idea that legality and motives are not taken into account at all at this stage does not realize in the model, because in the definition of

the attributes for Case 1 these concepts were not left out. However, this should have taken into consideration when specifying attributes for this case.

In these circumstances it may not be quite correct to speak of ambivalency with regard to legality and motives when the model was supposed to describe Stage 1 of moral development in Kohlberg's terms; the prototypical response to the Heinz dilemma at Stage 1 is to say that stealing is wrong (1b) because you get caught and punished (5b). Thus, the interpretation that the person does not have a clear picture of the negative consequences would not seem to be quite appropriate when it is strictly assessed against the previous descriptions of Stage 1.

Case 2.

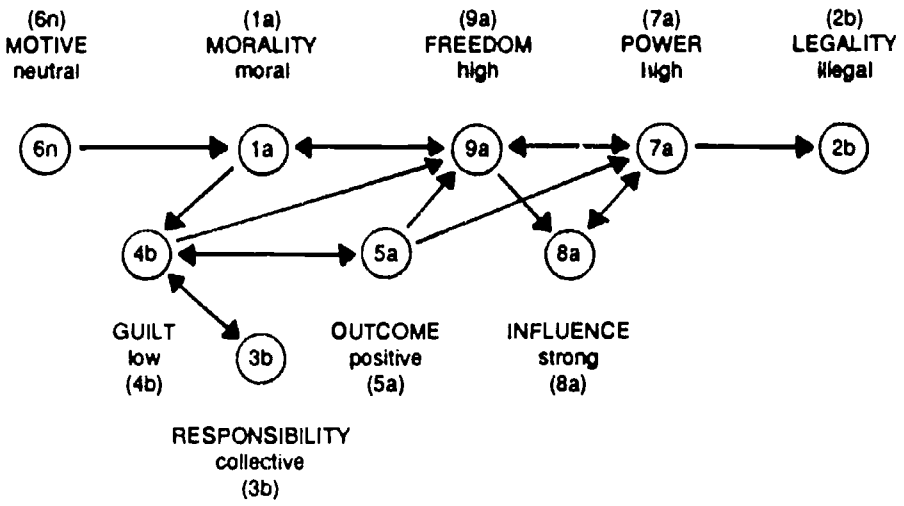
Table 4.2. shows the attributes which were chosen to describe the moral judgement in Case 2. Type 2 relations to the attribute in question can be identified on the corresponding row in Matrix 4.1.

Tablo 4.2. Attributes and Type 2 (A<--B) Relations in Case 2

Attributes	Row/ Matrix 4.1.	Type 2 Relations from the Attributes								
		1a	2b	3b	4b	5a	6n	7a	8a	9a
1a moral	1				4b	5a	6n			9a
2b illegal	6							7a		
3b collective resp.	9				4b					
4b low guilt	12	1a		3b		5a				
5a positive outcome	13	1a			4b					
6n neutral motive	17									
7a high power	19					5a			8a	9a
8a strong influence	22							7a		9a
9a high freedom	25	1a			4b	5a		7a		

Above information about Type 2 **(A<--B)** relations to each attribute in Case 2 is combined in Model 4.2.

Model 4.2. Moral Judgement in Case 2



The following concepts have a central position in Model 4.2.:

Morality:	1a moral
Freedom:	9a high
Power:	7a high
Outcome:	5a positive
Guilt:	4b low
(Influence:	8a strong)

Motive (6n), Responsibility (3b) and Legality (2b) play a less important role in Case 2.

Description of Model 4.2.

Model 4.2. makes a hypothesis about how Case 2 is likely to result in an illegal action (2b). S/he considers the matter morally acceptable (1a), and feels at the same time collective responsibility, i.e. is concerned of other people (3b). These together make her/him free to act without guilt (4b with 9a) even in the illegal action. The outcome is positive (5a), and this is likely to confirm his/her personal involvement in the action (reflections from 5a to 1a, 4b, 9a and 7a). The influence (perceived impact of the act)

is strong (8a); this is primarily due to his/her activities and strategies in the action (9a and 7a with 8a).

It looks likely that he is ready to take personal risks when believing that the action is morally justifiable.

Assessment

What B had in mind here was a respondent who, in the case of Heinz, sees stealing as right because of the positive outcome (saving a life). Motives are not considered in judging the morality of the act, nor is the illegality of the act. Motives and legality do, indeed, have a marginal position in the model. A great deal of freedom is attributed to the agent, and freedom appears as a central concept in the model. This makes sense, since right at this stage is defined in terms of one's own welfare and little weight is placed on consequences to others or to legal considerations.

Case 3.

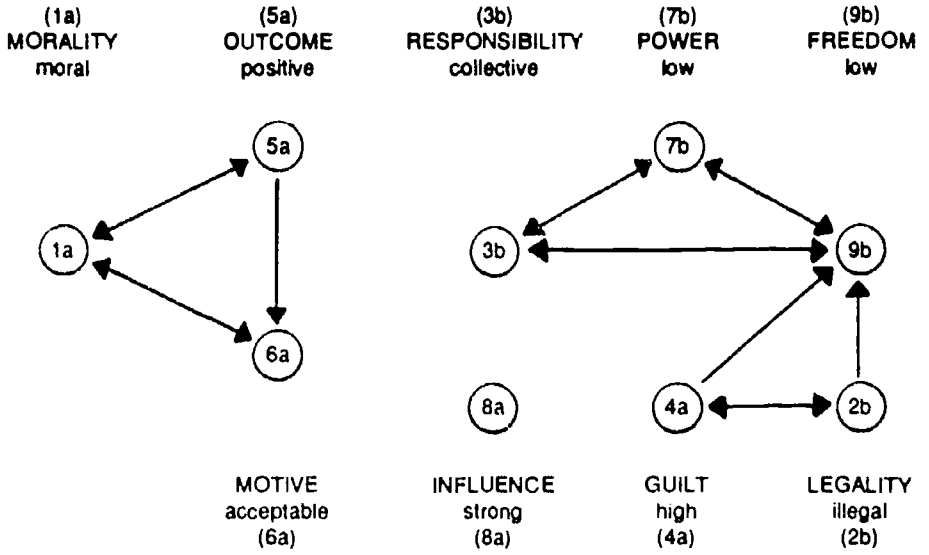
Table 4.3. shows the attributes which were chosen to describe the moral judgement in Case 3. Type 2 relations to the attribute in question can be identified on the corresponding row in Matrix 4.1.

Table 4.3. Attributes and Type 2 (A<--B) Relations in Case 3

Attributes	Row / Matrix 4.1.	Type 2 Relations from the Attributes								
		1a	2b	3b	4a	5a	6a	7b	8a	9b
1a moral	1					5a	6a			
2b illegal	6				4a					
3b collective resp.	9							7b		9b
4a high guilt	10		2b							
5a positive outcome	13	1a								
6a acceptable motive	16	1a				5a				
7b low power	21			3b						9b
8a strong influence	22									
9b low freedom	27		2b	3b	4a			7b		

Above information about Type 2 relations to each attribute in Case 3 is combined in Model 4.3.

Model 4.3. Moral Judgement in Case 3



Central concepts in Model 4.3.:

Freedom: 9b low
Responsibility: 3b collective
Power: 7b low

8a strong influence (the perceived impact of the act) is an isolated attribute in Model 4.3.

Description of Model 4.3.

The structure of the moral judgement in Model 4.3. appears in a 'broken model' (1a, 5a and 6a; 2b, 3b, 4a, 7b and 9b; 8a) This may indicate that the individual does not necessarily have a clear picture about the consequences of the action, or s/he has acted rather spontaneously according to what s/he has seen as morally acceptable without assessing possible consequences.

The outcome as such is positive (5a) and morally justifiable (5a with 1a), and this likely to encourage him/her to become personally involved in the matter (5a with 6a).

Another side of the coin is that the illegal act (2b) causes strong feelings of guilt (2b with 4a): he might have taken too much personal responsibility in the matter which is primarily on the group's responsibility (3b). This is likely to limit the scope of freedom in the action (3b and 7b with 9b), and the perceived strong impact of the act (8a) is rather non-predictable to him/her (8a in isolation in the model). This may indicate that s/he has not been able to forecast the consequences.

Originally morally acceptable action with positive outcomes results in his/her personal difficulties to cope with feelings of guilt which are closely related to the illegality of the act.

Assessment

This case describes a respondent who thinks that stealing from good motives (to save a life) is right for Heinz. This respondent also admits that the act is illegal, which causes intensive feelings of guilt. These feelings, in turn, lead him or her to experience little freedom. This respondent is not able to reconcile good motives and legal considerations in any way, which is typical of Stage 3. Thus the total isolation of the morality-outcome-motive triangle from the rest of the concepts should be a common characteristic of Stage 3 reasoning as shown also in the model.

Case 4.

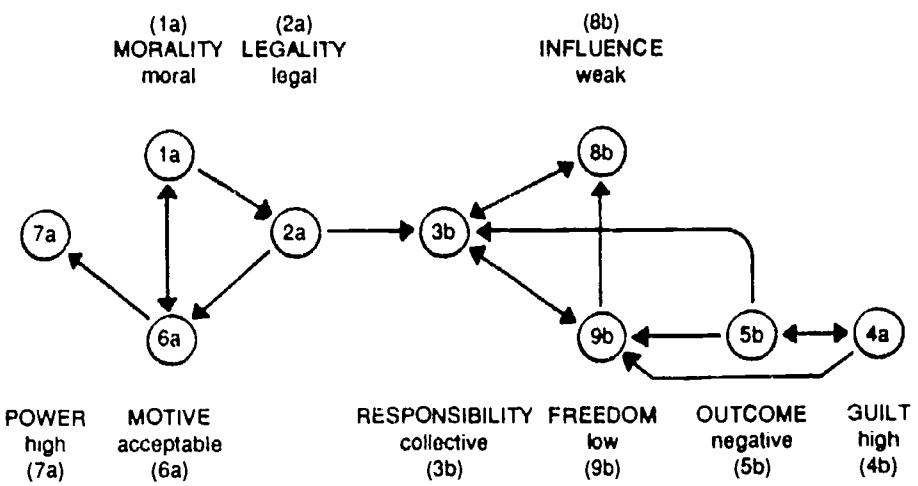
Table 4.4. shows the attributes which were chosen to describe the moral judgement in Case 4. Type 2 relations to the attribute in question can be identified on the corresponding row in Matrix 4.1.

Table 4.4. Attributes and Type 2 (A<--B) Relations in Case 4

Attributes	Row/ Matrix 4.1.	Type 2 Relations from the Attributes 1a	2a	3b	4a	5b	6a	7a	8b	9b
1a moral	1						6a			
2a legal	4	1a								
3b collective resp.	9		2a			5b			8b	9b
4a high guilt	10					5b				
5b negative outcome	15				4a					
6a acceptable motive	16	1a	2a							
7a high power	19						6a			
8b weak influence	24									9b
9b low freedom	27			3b	4a	5b				

Above information about Type 2 relations to each attribute in Case 4 is combined in Model 4.4.

Model 4.4. Moral Judgement in Case 4



Central concepts in Model 4.4.:

Responsibility:	3b collective
Freedom:	9b low
Less central:	7a high power

Description of Model 4.4.

Model 4.4. indicates that although the degree of potential influence or power is high (7a), it is a kind of side product of the whole act. More consideration is given to morally and legally justified motives (1a, 2a and 6a). This makes him to work as a group member (cf. link from 2a to 3b) with relatively little influence and freedom (3b with 8b and 9b). However, this activity results in failure (5b) with strong personal feelings of guilt (4a).

The model shows that the collective responsibility (3b) is in the most central position. This may mean that the act could be seen primarily on the group's responsibility.

Involvement in the matter and the failure is likely to cause problems to cope with feelings of guilt when not succeeding to achieve morally and legally justified aims.

Assessment

This case was meant to represent a person with a strong law and order orientation to the Heinz dilemma. This respondent thinks that the moral act is not to steal but to follow law. Obedience to law is, of course, an acceptable motive. The negative outcome (death of the wife) causes intensive guilt feelings, and as a consequence, he attributes to Heinz little freedom and little responsibility for the outcomes. The legality of the act makes it unnecessary to address the issue of personal responsibility. In sum, this interpretation has a different emphasis than the description above has, most likely owing to the generality of the concepts.

Case 5.

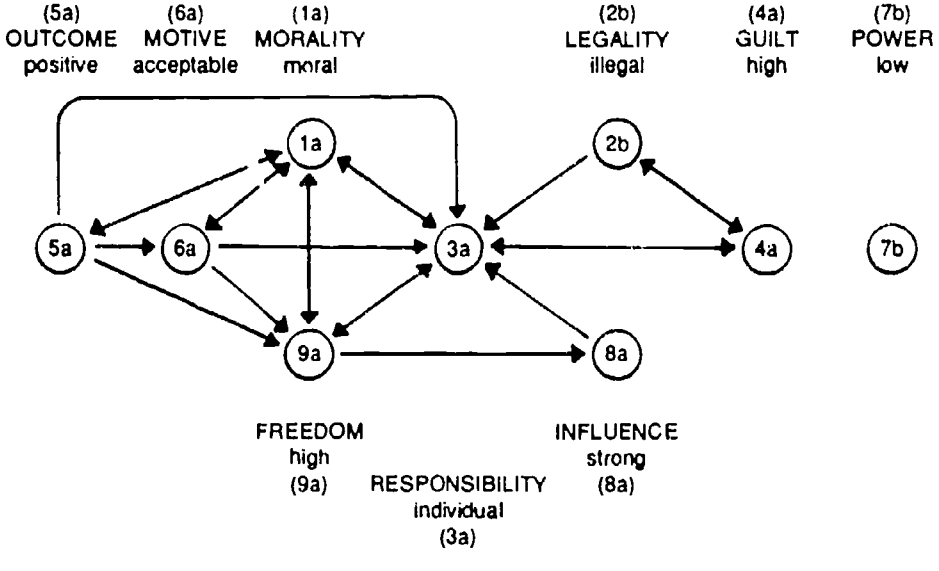
Table 4.5. shows the attributes which were chosen to describe the moral judgement in Case 5. Type 2 relations to the attribute in question can be identified on the corresponding row in Matrix 4.1.

Table 4.5. Attributes and Type 2 (A<--B) Relations in Case 5

Attributes	Row/ Matrix 4.1.	Type 2 Relations from the Attributes 1a	2b	3a	4a	5a	6a	7b	8a	9a
1a moral	1			3a		5a	6a			9a
2b illegal	6				4a					
3a individual resp.	7	1a	2b		4a	5a	6a		8a	9a
4a high guilt	10		2b	3a						
5a positive outcome	13	1a								
6a acceptable motive	16	1a				5a				
7b low power	21									
8a strong influence	22									9a
9a high freedom	25	1a		3a		5a	6a			

Above information about Type 2 (A<--B) relations to each attribute in Case 5 is combined in Model 4.5.

Model 4.5. Moral Judgement in Case 5



Central concepts in Model 4.5.

Responsibility:	3a individual
Morality:	1a moral
Freedom:	9a high
Motive:	6a acceptable
Outcome:	5a positive
Guilt:	4a high
An isolated attribute:	7b low power

Description of Model 4.5.

Model 4.5. shows that all other aspects (except 7b) of this judgemental process have a direct influence on the attribute 3a (individual reponsibility). This may indicate that the action is taken by the individual as a highly personal matter. Positive outcome (5a) legitimates the morality of the action and confirms the individual's motivation (6a) and freedom (9a).

The illegality of the act (2b) makes him/her feel guilt about what has happened, especially when the percieved impacts (influence) are strong (8a). Nevertheless, the model indicates that these feelings do not have a very dominant role in the whole. More essential in this case is to work for positive and morally justifiable aims.

Assessment

The target person is a Stage 5 respondent who thinks that Heinz should steal the medicine, attributes a lot of freedom to Heinz and views the problem mainly through the concept of individual responsibility. Apart from the idea that the positive outcome legitimates the morality of the action, the above describtion appears quite congruent with the interpretation B had in mind.

4.7. DISCUSSION

The aim of this study was to carry out a sort of thought experiment regarding the applicability of the Dynamic Concept Analysis to moral decision making as defined by Kohlberg's stages. When speaking about moral decision making, our main focus was on the centrality of different concepts as criteria of judging the morality or immorality of an act and their interrelationships. Considerations related to the temporal or logical sequence of the possible steps in the decision making process fell outside the scope of the present analysis (for them, see e.g. Rest 1983). We also tried explicitly to take the point of view of the actor as opposed to that of an observer.

The choice of the relevant concepts is one the crucial points in this kind of model building. The concepts we selected could be considered rather relevant for studying individual moral judgements. While the concepts are fairly broad and thus ambiguous, most of them seemed to work reasonably well. However, it seems likely that, for instance, the concept 'outcome' is too broad and open to too many diverging interpretations especially now when the cases in this study are theoretical by nature. This emphasizes the need to know the real context in which a moral judgement takes place when specifying the content of a concept. A problem in case studies of this paper is that the descriptions were done blindly without any connection to actual circumstances. Therefore, it will be interesting in the future to analyse real cases; this will make it easier to assess relevancy of concepts and relevancy of the information structure as well.

The model descriptions of this study were completed by taking into consideration the structure of a model and relationships between the attributes in a case. The assessment of descriptions was based on the information of previous studies of different stages of moral development. When assessing the model information the criteria was to assess how well the given information fits with the previous understanding and knowledge of the stages. Another way to assess the model information could be to ask whether the models bring any new information about the stages of moral development.

It may be noted, for instance, that the model for case 3 was able to capture the split between motivational-psychological and legal-societal considerations, which could be argued to be a central feature of Stage 3.

In addition, a comparison of cases 3, 4 and 5 in terms of their structural properties suggests that the increasing intergration and progressive equilibration of successive stages is fairly well illustrated by these models. Case 1 did not represent as clearly Kohlberg's Stage 1.

One of the advantages of this approach is the possibility of finding such connections between the concepts that are not explicitly spelled out by the stage descriptions. These connections might serve as a starting point for hypotheses in further, more detailed studies of moral thinking, which would use more systematic techniques for gathering and analysing data than the mere intuition which was employed in this thought experiment.

One of the central features of conceptual models is that a concept or an attribute has a different meaning depending on which are the other attributes to characterize a particular case. This became obvious, for instance, with Concept 1 (Morality)) when all five models are compared: the meaning and function of morality in an action varies depending on the attribute combination in which it appears in the model. In principle, this is close to one of the basic ideas of Kohlberg's approach i.e. concepts change their meanings in the course of stage development.

In addition, all the concepts used in these case studies are not necessarily included in a moral judgement. The dynamic concept analysis makes it possible, if needed, to work on any combination of attributes in the information structure; a concept can be left out if considered necessary.

Besides the definition of central concepts for the analyses of moral judgement, it is essential to recognize how the relationships between the concepts are defined for the information structure. In this demonstration only linear relationships were taken into consideration. More empirical studies are needed to make a more valid information structure. Relevancy of the subjective statements of concept relations given in this study (pp. xxx) is open for assessment, and redefinitions of statements could result in a more reliable information structure. Nevertheless, making statements was an interesting phase of the study, and as such a conceptual analysis which made the authors to think carefully how we see the concepts in relation to each other; it became evident that there is not much relevant research available to guide these definitions.

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CHAPTER 5.

UNDERSTANDING DIFFERENT OUTCOMES IN DECISION MAKING

Seppo Kontiainen, John Roscoe and Peter Herriot

Abstract

The use of Dynamic Concept Analysis (DCA), developed by Kontiainen (Chapter 1), is demonstrated in studies of different outcomes in decision making processes, in which various predictors need to be taken into consideration at the same time. DCA is a method for integrating information in complex situations, and it enables the identification of relationships between different variables in conceptual models. The models produced by DCA give holistic pictures of how different aspects are likely to become interrelated in various decision making processes.

Decisions are studied in the conceptual context of another research project (Roscoe, Chalmers & Herriot, 1989), which analyses decisions by clinical professional teams (doctors, nurses, clinical psychologists and social workers) on whether a mentally ill offender should be transferred from a special hospital to a local one. Three different decisions are studied here: a transfer (1) accepted, (2) conditional or (3) rejected.

The main aim is to demonstrate how conceptual analyses and models might be of use when trying to understand a particular decision. It is shown how a team may produce very different decisions even with the same information about a patient. Three conceptual models of actual cases are analysed to assess the relevance of this approach. The models proved to give relevant pictures about these decision making processes.

5.1. INTRODUCTION

Tuggle and Barron (1983) gave the following definition of 'decision-making':

> *"Decision-making is concerned with a set of action alternatives for a given situation, with consequences of those alternatives, and with valuation of the consequences, alternatives etc. The conundrum is to select an alternative (not to find a path). There is no concept of a 'correct' decision (except bureaucratically, i.e., organizational policies are adhered to). What constitutes an 'optimal' decision is largely subjective, whereas in problem-solving what constitutes a correct or an optimal solution is largely objective."*

However, this definition employs a model of decision making which is essentially rational. It construes the process as one generating alternative courses of action, anticipating the probability of various outcomes, and evaluating them.

Descriptive research rather than prescriptive theory demonstrates that these processes are not always followed. For example, people often 'satisfice' rather than optimise (Simon, 1976); that is, they choose the first alternative that comes along that is satisfactory. Or they may give undue weight to outcomes which are novel and distinguish clearly one alternative course of action from another (Tversky, 1970). Or, particularly in organisational settings, they fail to consider the possibility of contradictory evidence or other alternatives - the phenomenon of 'group think' (Janis, 1982).

Thus there is a great deal of evidence that classical subjective decision theory does not always account successfully for decision-making in real life situations. Are there other models which can do justice to the way in which decision-makers use evidence without assuming the comparison of alternatives by means of subjective probabilities and values?

One such method is Dynamic Concept Analysis (DCA) (Chapter 1) which is used in the study to illustrate different decisions by conceptual models. DCA has been developed for analyses of complex situations in which various properties should be taken into consideration at the same time in order to make holistic pictures about a reality.

It will be shown how different decisions can be made using the same information. In addition, three actual cases are described by the information in the model, and assessed against information about how the decisions were achieved in practice.

5.2. DYNAMIC CONCEPT ANALYSIS

The ten predictor variables with different decision outcomes will be analysed here by the Dynamic Concept Analysis (Chapter 1). An **information structure** includes information of relationships between the variables studied, and serves as the basis for integrating this information in **conceptual models** which describe the structure of concept relations in general and in all individual cases in a study.

It was shown earlier (Chapter 1, 10-12) that there are altogether five different ways in which two concepts can be in relation with each other: (1) they have no direct relation, (2) they have a one-way relation, (3) they have a two-way relation, (4) they have no direct relation, but they are related with each other via a third concept, or (5) they are related via a longer chain of concept relations.

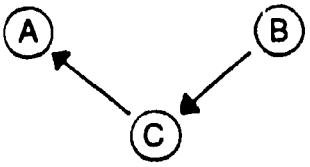
Different types of relations can be illustrated as follows:

Type 1. (A) (B)

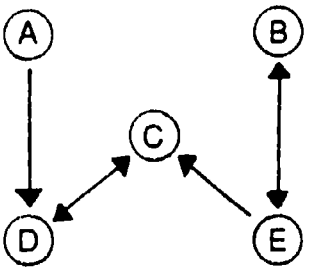
Type 2. (A) ←——— (B)

Type 3. (A) ←——→ (B)

Type 4.



Type 5.



Information of the relational types between all variables or concepts included in a study is given in the information structure. This information is integrated in conceptual models which finally show the role and function a variable has in a given context. A conceptual model is a network of concept relations as in Type 5, where different types of relations may appear in the same structure.

In this study, the first task is to specify the concepts to be used in the analyses, and then to build an information structure of concept relations. Finally, conceptual models are constructed to describe different decision--making processes in attempts to transfer a patient into a local hospital.

5.3. CONTEXT OF THE STUDY

The conceptual context of this study is derived from study on 'The Context of Professional Decisions' (Roscoe, 1988). This is described in another paper (Roscoe, Chalmers & Herriot, 1989, 5):

"Within the UK there are a few hospitals for the criminally insane. People who usually have been convicted of a criminal offence, but who are judged to be suffering from mental disorder are sent there. They may be detained, if subject to legal restrictions on their discharge, until the Home Office, a Department of the UK Government, agrees to their release. Before the Home Office is asked for permission to release them, a consultant forensic psychiatrist at the hospital for the criminally insane who is responsible for their treatment has to assess them. They have to be assessed as sufficiently well to be treated in an ordinary psychiatric hospital.

This psychiatrist then has to approach a consultant psychiatrist at a local hospital in the patient's home area to persuade him or her to admit the patient to their hospital.

The psychiatrist from the local hospital may reject the request without examining the patient, often on the grounds that the local hospital has insufficient resources to cope.

However, he may lead a team to the hospital for the criminally insane in order to assess the patient for suitability for transfer. This team is likely to consist of other professionals: nurses, social workers, and perhaps an occupational therapist. Alternatively, the psychiatrist may conduct the assessment alone. The decision investigated in this research is whether or not to accept a patient into a local hospital."

The original study (Roscoe, 1988) included 441 decisions with 309 patients. The present study uses the conceptual framework and categories of the original study of decision making without going into detailed findings.

5.4. VARIABLES

The original report (Roscoe 1988, 94) gives ten areas of interest which were considered as central in decision making processes concerning a possible transfer of a patient from a special hospital to a local one:

1. Patient biographical data
2. Behavioural problems of the patient
3. Psychotic symptoms of the patient
4. Social functioning of the patient
5. Contents of the transfer letter
6. Social process of the assessment team
7. Composition of the assessment team
8. Type of institution
9. Resources available to the institution
10. Patient prototype

(1) Patient's biographical data refers to age, gender, etnicity, and length of stay in the hospital.

(2) Behavioural problems mean the nature and severity of the worst and most frequent problems of the patient.

(3) Psychotic symptoms refer, for example, to the degree of insight into own illness, nature of delusions, and to the extent to which the psychosis is controlled.

(4) Social functioning means, for instance, the extent of patient's social isolation when admitted to the hospital, capacity for autonomy, and need for training in social skills.

(5) The letter from the consultant psychiatrist to his or her colleague at the local hospital: including e.g. positive and negative features of the patient.

(6) Social process refers to the extent, quality, and degree of formality of communication between the professionals involved in the transfer attempt.

(7) The composition of the team from the local hospital sent to assess the patient: the grades of medical, nursing, and paramedical staff, and whether the assessment was carried out as a team or individually.

(8) Organisational structure refers to the categorisation of the local hospitals into professional bureaucracies, machine bureaucracies or mixed cases. (Mintzberg 1979).

(9) Organisational resources of the local hospital.

(10) Patient proto-type refers to the diagnostic category of the patient.

5.5. INFORMATION STRUCTURE OF DECISION MAKING

The conceptual context of decision making is now specified by the following characteristics or attributes in each variable. Attributes **a** and **b** give the two poles of the dimension, and attribute **n** indicates medium or neutral level of the dimension.

Context Variables	Attributes		
	a	**n**	**b**
1. Biographical Data	positive	neutral	negative
2. Behaviour Problems	high	medium	low
3. Psychotic Symptoms	high	medium	low
4. Social Functioning	social	neutral	non-social
5. Patient Proto-Type	positive	neutral	negative
6. Letter	positive	neutral	negative
7. Social Process	open	neutral	restrictive
8. Team Composition	democratic	neutral	autocratic
9. Resources	good	medium	poor
10. Organisation	professional	neutral	bureaucratic
11. Decision on Transfer	accepted	conditional	rejected

Relationships between conceptual categories can be defined in various ways. For instance, by using research results (e.g. correlation co-efficients) to indicate linear relationships of concept relations or by making individual judgements of these relationships.

In this study, it was decided to use individual judgements to define relations between the concepts. The judgements were made in cooperation with a member of the team of the original study. Therefore, the information structure here can be regarded primarily as an individual and

subjective structure. Nevertheless, it is likely that research findings are taken at least indirectly into account by the team member. This may reduce the degree of subjectivity.

The relationship between two concepts can be linear or non-linear. (Chapter 1, 10-12). This study is based primarily on hypotheses of linear relationships between variables. These assumptions are given in Appendix 5.1.

The information structure built by individual judgements was regarded as sufficient in this study, where the primary interest is to demonstrate and test the use of DCA in analyses of decision making processes.

The relevance of the information structure will be assessed, when conceptual models are used to describe actual decision making processes concerning real patients.

The information structure, i.e. the matrix of concept relations in decision making, is given in Matrix 5.1.

A statement in Appendix 5.1. indicates a linear relationship between the two variables, and this results in a cell in Matrix 5.1. either in the form:

a		
	n	
		b

or

		b
	n	
a		

The former indicates a positive correlation, and the latter a negative correlation between the two variables.

A trend towards the relationship as stated in the Appendix 5.1. is expressed in a cell:

a	n	
	n	
	n	b

or

	n	b
	n	
a	n	

These relationships indicate a trend towards positive or negative correlation between the two variables.

An empty cell in the matrix indicates that it is not possible to make a statement of a relationship. For instance, it is not reasonable to state in Cell 1/6: the more positive the letter, the more positive a patient's biographical data, because the letter is unlikely to have this kind of influence. However, it can be stated in Cell 6/1: the more positive a patient's biographical data, the more positive the letter, because a consulting psychiatrist is likely to take the patient's biography into account in the letter. This causes asymmetry in the matrix.

Rows in Matrix 5.1. have a central role in building conceptual models for different combinations of attributes. A row gives the attributes which have a Type 2 relation to the attribute in question. In some cases two attributes of the same concept may have Type 2 relation to the attribute, and this causes non-linearity in a cell (e.g. Cell 11/9).

Different combinations of attributes result in more or less different conceptual models. The model is built by information of Type 2 relations, but when all these relations are taken into the model, the final model for a particular combination of attributes may appear to include other Types (1, 3, 4, 5) as well.

Matrix 5.1. Information structure for analyses of decision making

Row	CONCEPTS	Attributes	1	2	3	4	5	6	7	8	9	10	11
			a n b	a n b	a n b	a n b	a n b	a n b	a n b	a n b	a n b	a n b	a n b
1	1.BIOGRAPHICAL DATA	1a positive	a	b		a n							
2		1n neutral	n	n		n							
3		1b negative	a a			n b							
4	2.BEHAVIOUR PROBLEMS	2a high	b a		a	b							
5		2n medium	n n		n	n							
6		2b low	a a		b a								
7	3.PSYCHOTIC SYMPTOMS	3a high			a								
8		3n medium			n								
9		3b low			a								
10	4. SOCIAL FUNCTIONING	4a social	a n	b	b a								
11		4n neutral	n	n	n	n							
12		4b non-social	n b a		a	b							
13	5.PROTO-TYPE	5a positive	a	b		a	a						
14		5n neutral	n	n		n	n						
15		5b negative	b a			b	b						
16	6.LETTER	6a positive	a	b	b	a	a	a					
17		6n neutral	n	n	n	n	n	n					
18		6b negative	b a		a	b	b	b					
19	7. SOCIAL PROCESS	7a open							a	a n		a	
20		7n neutral							n	n		n	
21		7b restricted							b	n b		b	
22	8. TEAM COMPOSITION	8a democratic							a	a	a	a n	
23		8n neutral							n	n	n	n	
24		8b autocratic							b	b	b	n b	
25	9.RESOURCES	9a good					a	a	a	a	a	a	
26		9n medium					n	n	n	n	n	n	
27		9b poor					b	b	b	b	b	b	
28	10. ORGANISATION	10a professional							a n	a	a	a	
29		10n neutral								n	n	n	
30		10b bureaucratic							n b	b	b	b	
31	11.DECISION	11a accepted	a	b	b	a	a	a	a	a n	a	a	a
32		11n conditional	n	n	n	a n	a n	a n	n	n b	n		n
33		11b rejected	b a		a	b	b	b	b	n b	b	b	b

- A cell shows the relationship between two concepts.
- A row shows the attributes with type L (A<--B) relation to the attribute in question.

This study includes ten conceptual categories and altogether thirty characteristics or attributes. The number of possible combinations of attributes in this case is about sixty thousand (Chapter 1, 23). All these combinations with different decision outcomes (transfer accepted, conditional, rejected) could be individually described by conceptual models using the information in Matrix 5.1.

In the following account, the use of Matrix 5.1. in building conceptual models will be demonstrated in two analyses: to show how the same information could result in different decisions, and to describe three actual decision processes.

5.6. DIFFERENT DECISIONS WITH THE SAME INFORMATION

In the following theoretical example, predictor variables (attributes) were selected to describe a decision making process of attempted transfer in Case 1.

Table 5.1. Attribute Combination in Case 1.

Context Variables	Attributes a	n	b
1. Biographical Data	positive	neutral	negative
2. Behaviour Problems	high	medium	low
3. Psychotic Symptoms	high	medium	low
4. Social Functioning	social	neutral	non-social
5. Patient Proto-Type	positive	neutral	negative
6. Letter	positive	neutral	negative
7. Social Process	open	neutral	restrictive
8. Team Composition	democratic	neutral	autocratic
9. Resources	good	medium	poor
10. Organisation	professional	neutral	bureaucratic

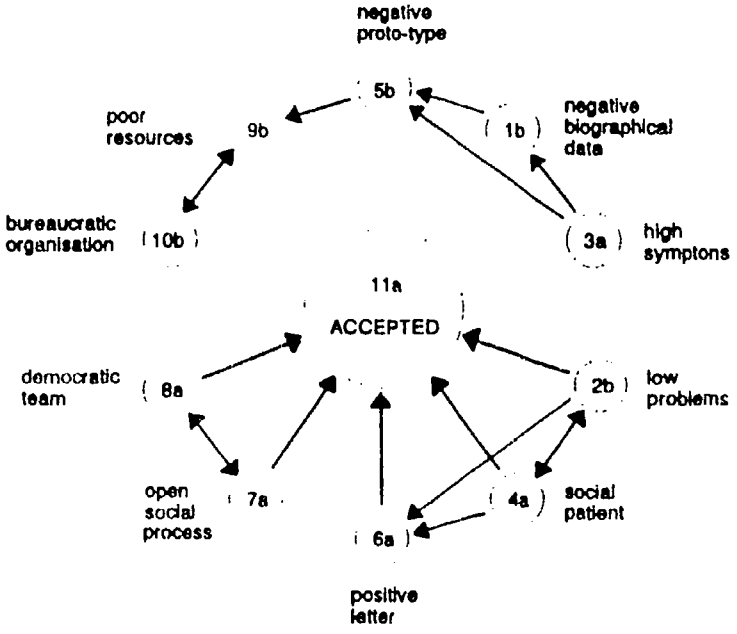
When using the information of concept relations available in the information structure (Matrix 5.1.), it is possible to identify the types of relations between the attributes of this case. In Matrix 5.1.1. '+' points out the attributes of the other predictor variables in the attribute combination of Case 1, which have Type 2 relation to the attribute in question: this can be found from the row of this particular attribute in Matrix 5.1. '–' means that an attribute does not have a Type 2 relation to this attribute: a relation between these two may be found on other rows, and this will appear in the overall conceptual model.

Matrix 5.1.1. Type 2 (A<--B) Relations (+) in the Attribute Combination/ Case 1

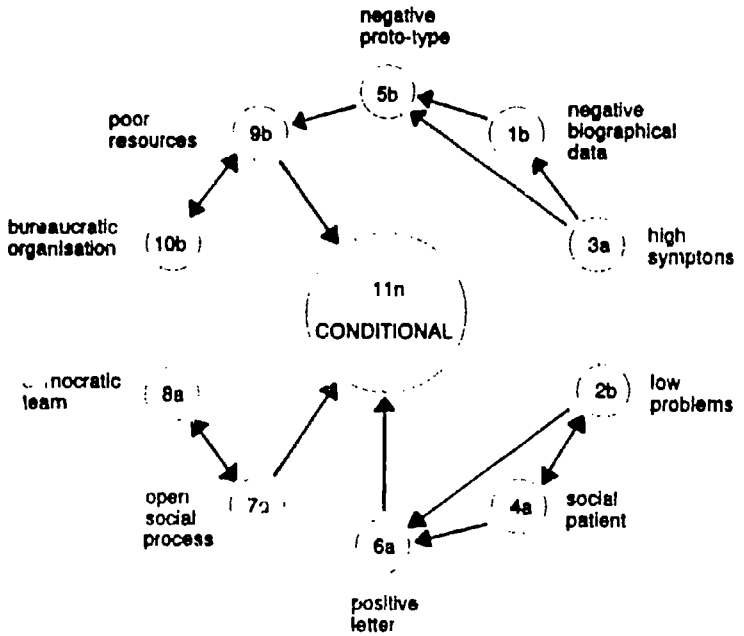
		Attributes	1b	2b	3a	4a	5b	6a	7a	8a	9b	10b
1.	Biographical Data	1b negative		–	–	–	–	–	–	–	–	–
2.	Problems	2b low	–		–	+	–	–	–	–	–	–
3.	Symptoms	3a high	–	–		–	–	–	–	–	–	–
4.	Social Functioning	4a social	–	+	–		–	–	–	–	–	–
5.	Proto-Type	5b negative	+	–	–	–		–	–	–	–	–
6.	Letter	6a positive	–	+	–	+	–		–	–	–	–
7.	Social Process	7a open	–	–	–	–	–	+		–	–	–
8.	Team Composition	8a democratic	–	–	–	–	–	–	+		–	–
9.	Resources	9b poor	–	–	–	–	+	–	–	–		+
10.	Organisation	10b bureaucratic	–	–	–	–	–	–	–	–	+	
11.	DECISION	11a accepted	–	+	–	+	–	+	+	+	–	–
		11n conditional	–	–	–	–	–	+	+	–	+	–
		11b rejected	+	–	+	–	+	–	–	–	+	+

A Type 2 relation (+) gives an arrow to the attribute in the model. The above information of relations in Matrix 5.1.1. is derived from Matrix 5.1. (rows 3, 6, 7, 10, 15, 16, 19, 22, 27, 30, and 31, 32, 33).

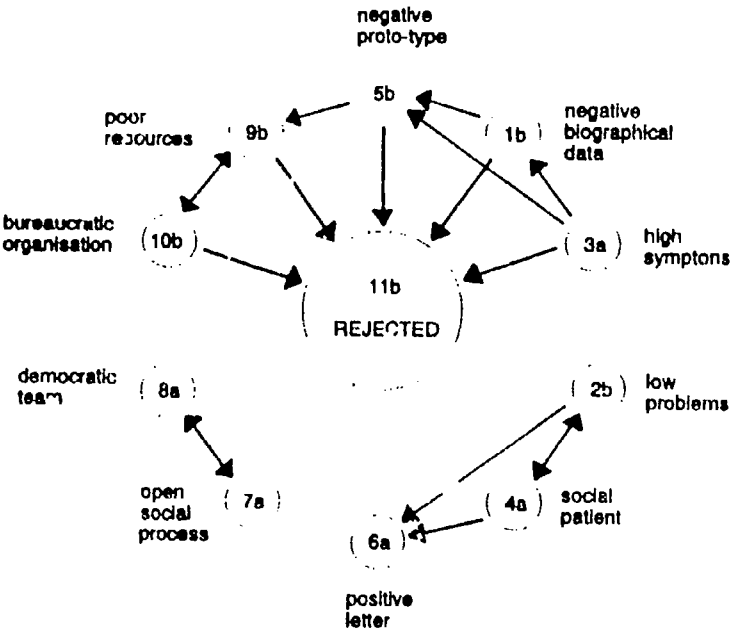
Model 5.1.1. Case 1 with Accepted Transfer



Model 5.1.2. Case 1 with Conditional Transfer



Model 5.1.3. Case 1 with Rejected Transfer



Models 5.1.1., 5.1.2. and 5.1.3. describe the decision making process with the three possible outcomes in Case 1.

All ten attributes and their internal relationships are identical in these models. There are, however, considerable differences between the models.

Model 5.1.1. illustrates a decision when the transfer of a patient is accepted. The model suggests that this process will be understood as giving emphasis on positive aspects of the patient. The team is likely to work cooperatively (7a and 8a) in an open and democratic atmosphere. The positive letter (6a) from the consulting psychiatrist plays a central role in the process. Negative biographical data (1b) results in negative proto-type (5b), which in turn weakens patients chances of transfer (9b) in a bureaucratic organisation (10b). It seems likely that in this case, when many negative aspects have to be overcome, the transfer is based primarily on trusting personal relationships between the people who are involved in the decision making (6a, 7a, 8a).

In Model 5.1.2. the decision is conditional. Poor organisational resources (9b) hinder an immediate transfer which were supported by the positive letter (6a) and the team (7a, open social process). Patient variables do not directly impact on this decision, and it seems likely that the local hospital has real difficulties in placing the patient.

In Model 5.1.3. with rejected transfer, the decision is primarily bureaucratic (10b). The case has been mainly assessed from the organisational point of view: the local hospital does not see any resources (9b) to place this kind of patient (1b, 3a, 5b). The social process (7a) and team composition (8a) have little or no effect on the decision, and the letter (6a) from the consulting psychiatrist plays a trivial role.

5.7. THREE ACTUAL CASES

As mentioned earlier, the thirty attributes of this study can appear in about sixty thousand different combinations with the three outcomes (transfer accepted, conditional or rejected). A conceptual model can be built to depict the relationships between the attributes in each combination. Information of these relationships is available in Matrix 5.1.

A model gives a hypothetical picture of an actual case.

Three decision making processes concerning actual patients are now analysed to assess the relevance of conceptual models in describing individual cases.

The case studies have been carried out in the following phases:

(1) A combination of attributes to characterize a case is given by a member of the original study.
(2) The information structure (Matrix 5.1.) is used to identify relationships between the attributes in the combination.
(3) A conceptual model is built to show the relationships between the attributes in this particular combination.
(4) The case is then described by one of the present authors using only the information available in the conceptual model.
(5) The relevance of this information is assessed by the research team member, who has access to more detailed information about the patient and about the actual circumstances in which the decision took place.

The attributes in the models are given in the same order to make it easier to have visual comparisons between the models.

Case 5.2.1. A Rejected Transfer (Harry)

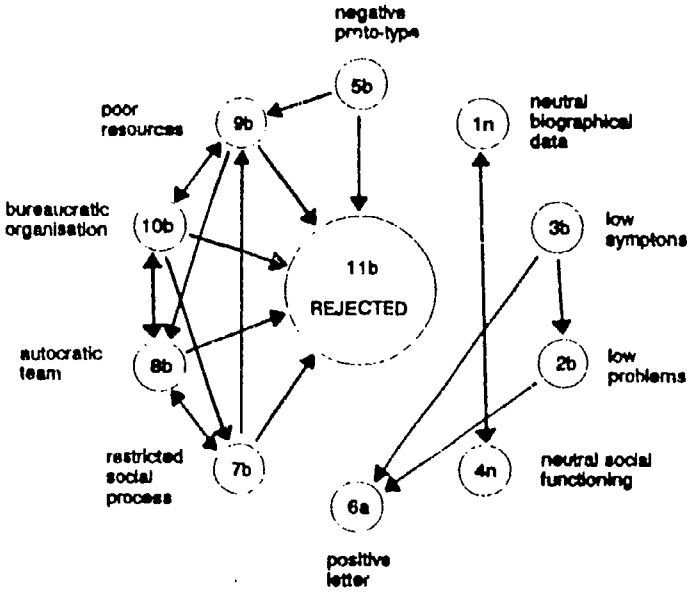
The following attribute combination was chosen by the team member to characterize this case:

1.	Biographical Data	1n neutral
2.	Behaviour Problems	2b low
3.	Psychotic Symptoms	3b low
4.	Social Functioning	4n neutral
5.	Patient Proto-Type	5b negative
6.	Letter	6a positive
7.	Social Process	7b restrictive
8.	Team Composition	8b autocratic
9.	Resources	9b poor
10.	Organisation	10b bureaucratic
11.	DECISION	11b rejected

The information of Type 2 relationships to the above attributes is available in Matrix 5.1. (rows 2, 6, 9, 11, 15, 16, 21, 24, 27, 30, and 33).

Model 5.2.1. shows, how the attributes in this combination are related to each other.

Model 5.2.1. Rejected Transfer in Case 5.2.1.



Description

Model 5.2.1. suggests how different variables of the decision making process are related when considering the transfer of the patient (Harry). The transfer was rejected.

The positive letter (6a) of the consulting psychiatrist is most obviously based on information of the patient's low behaviour problems (2b) and low psychotic symptoms (3b). The letter and fairly positive patient information (1n, 2b, 3b, 4n) do not have much influence on the decision, which is primarily based on the negative proto-type of the patient (5b). The negative proto-type does not have any relation to other variables of the patient. The model does not show any explanation to why the proto-type is negative. Decision is made in a bureaucratic organisation (10b) with little or no team cooperation (7b, 8b). The model shows, that the organisational aspects (7b, 8b, 9b, 10b) are closely related to each other, and the information concerning the patient is mostly omitted.

Assessment

"Clinically the patient did not demonstrate obvious pathology but had a history of minor heterosexual offending but with a flavour which caused anxiety about the consequences should offending escalate in seriousness.

The model clearly separates the current 'wellness' of the patient from the anxiety of the local hospital, expressed through the negative stereotype held of the patient, about the patient's future behaviour. This separation was clearly observed in the case history.

The patient was referred to a poorly resourced old style large mental illness hospital where psychiatric medicine still operated on traditional lines. The model also clearly separates out these issues and attaches appropriate importance to them in the outcome of the transfer process.

Overall relevance of the model is very good."

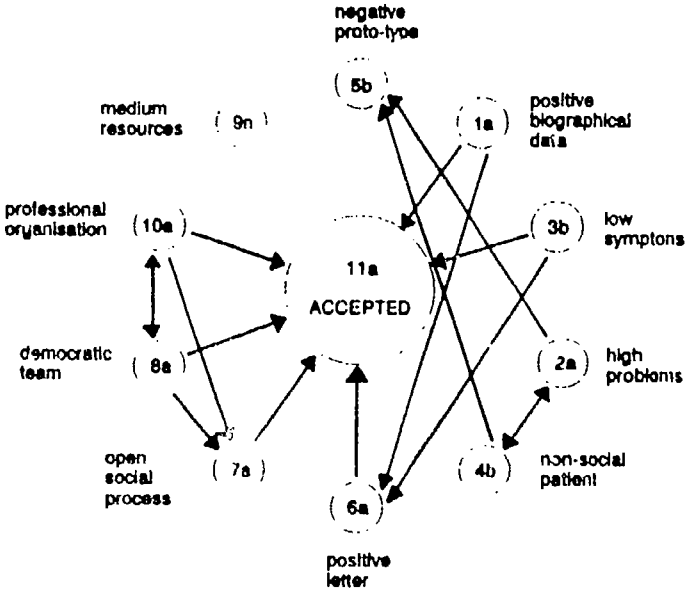
Case 5.2.2. An Accepted Transfer (Susan)

The attribute combination allocated by the team member is given below.

1.	Biographical Data	1a positive
2.	Behaviour Problems	2a hig
3.	Psychotic Symptoms	3b low
4.	Social Functioning	4b non-social
5.	Patient Proto-Type	5b negative
6.	Letter	6a positive
7.	Social Process	7a open
8.	Team Composition	8a democratic
9.	Resources	9n medium
10.	Organisation	10a professional
11.	DECISION	11a accepted

Information of Type 2 relations to the attributes of this combination is available in Matrix 5.1. (rows 1,4, 9, 12, 15, 16, 19, 22, 26, 28, and 31). Model 5.2.2. shows the relationships between the attributes in this case.

Model 5.2.2. Accepted Transfer in Case 5.2.2.



Description

Model 5.2.2. gives a hypothesis of why the transfer of the patient (Susan) has been accepted. The positive letter (6a) is likely to emphasize her positive biographical data (1a) and her low psychotic symptoms (3b). This information is taken into consideration in the decision making process as shown in the model. The patient proto-type is negative (5b), and it mainly results from her severe behaviour problems (2a) and non-social behaviour (4b). Nevertheless, this has not prevented the cooperative t[illegible] (7a, 8a), working in the professional organisation (10b), from accepting the patient into the local hospital, although the resources are not necessarily very good (9n). The decision making process is patient-centered.

Assessment

"The patient had a long standi[illegible] from early adolescence of disruptive and self destructive b[illegible]ur Although from a good 'middle class' background she had spe[illegible] of her life in institutions of one type or another. She also had [illegible]ory of rejection by various hospitals on the grounds of the intr[illegible] of her behaviour.

The model demonstrates the link between her behaviour and stereotypical image and separates these from the relative absence of psychotic or severe neurotic features - both in terms of their clinical separation and in relation to the dependent decision. The crucial importance of the 'individually centered' professional approach possessed by the clinical team accepting the patient is also highlighted by the model. The importance of the patient's middle class background is probably over-emphasized and in reality was not overtly acknowledged to be relevant.

Overall assessment of the model: good."

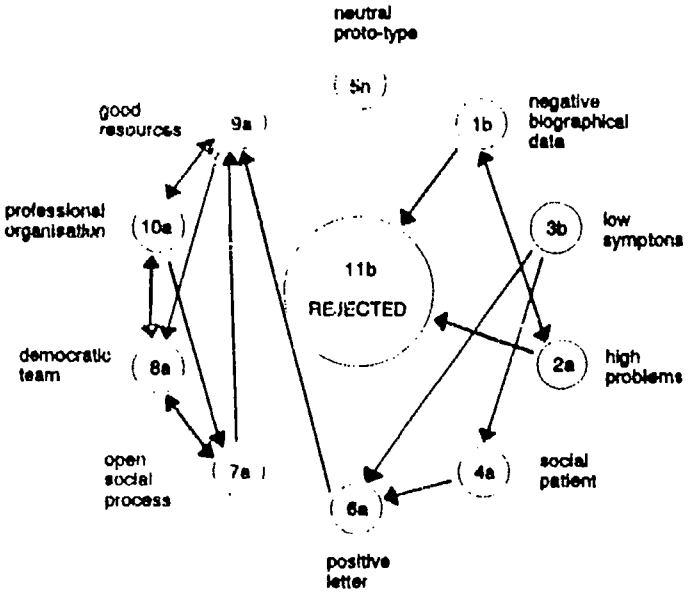
Case 5.2.3. A Rejected Transfer (Allan)

The attribute combination chosen by the team member to characterize Case 5.2.3. is given below:

1. Biographical Data	1b negative
2. Behaviour Problems	2a high
3. Psychotic Symptoms	3b low
4. Social Functioning	4a social
5. Patient Proto-Type	5n neutral
6. Letter	6a positive
7. Social Process	7a open
8. Team Composition	8a democratic
9. Resources	9a good
10. Organisation	10a professional
11. DECISION	11b rejected

Type 2 relations to the attributes in this combination can be found in Matrix 5.1. (rows 3, 4, 9, 10, 14, 16, 19, 22 25, 28, and 33).

Model 5.2.3. Rejected Transfer in Case 5.2.3.



Description

Model 5.2.3. demonstrates how the transfer of the patient (Allan) is rejected. The case is probably carefully considered by the cooperative, open team (7a, 8a), which works in the professional organisation (10a). Resources were good (9a) to place a patient. The positive letter (6a), which supports the transfer, is likely to emphasize the patient's low psychotic symptoms (3b) and his social behaviour (4a). There is, however, some ambiquity of the patient proto-type (5n), which remains non-related in the model. The transfer is rejected primarily by the information of negative biographical data (1b) and of severe behaviour problems (2a).

Assessment

"The patient was first admitted to secure care when in his 20's following a single index offence. He was transferred to an open hospital in his 60's after a long period of trouble free behaviour. Very shortly after transfer he attempted his index offence and was immediately returned to secure care. Some 15 years later his transfer was again attempted but on this occasion immediately rejected on the grounds that despite his age he was still too dangerous.

The model correctly identifies the dramatic nature of the behaviour problem in the decision to reject. However, the model fails to provide any clues as to why, for this patient, all the positive organisational indicators should here failed to impact on the decision and is therefore less useful in this case than in cases 5.2.1 and 5.2.2 in shedding light on the decision process. To have done this the description of the model would have needed more information particularly as to the valency of the positive and negative aspects."

5.8. DISCUSSION

The information structure (here: Matrix 5.1.) is in a central position in producing conceptual models. Definition of concept relations for the matrix by individual judgements (cf. the statements in the Appendix 5.1.) is always more or less influenced by personal values and views. Therefore, the suggested relations given in the matrix are open to criticism. On the other hand, such subjectivity is the norm for most decision-making in real life situations.

Nevertheless, the case studies indicate, that the information structure, Matrix 5.1., serves as a good basis for building conceptual models of decision making. The case studies show that the models give relevant pictures about the processes. However, Case 5.2.3. points out that a deeper understanding of decision making process may need more information than is available in the model.

The information structure is built here by statements of linear concept relations. A decision making process does not necessarily always follow these general rules. A decision can in some occasions be 'illogical' or in contradiction to general views of how different things are related. The process can also be a 'power game' where those in a position to make a decision may base the decision on some other factors than those included in the information structure (cf. Kakabadse et al. 1988). Or there is some specific information outside the conceptual framework of the study which is necessary to understand a particular process. This became obvious especially in Case 5.2.3.

Alltogether, this study supports the use of conceptual models to clarify the structure of a decision making process. Even the 'blind' case descriptions by models, without detailed information, proved capable of giving relevant information of what actually happened in the processes.

Conceptual models could be used to analyse different decision making processes, to simulate different decision alternatives, and in training of decision making skills.

ACKNOWLEDGEMENTS

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APPENDIX 5.1. Assumptions of Concept Relations

A statement indicates a linear relation to the variable.

- · in brackets are the variables which are considered not to have a direct relation to the variable in question
- • indicates a trend towards a relation as stated
- •• refers to the cell in the Information Structure (Matrix 5.1., p. 170)

1. Patient Biographical Data (positive - neutral - negative)

cell••
1/2 The less behaviour problems the more positive biodata
1/3· (Psychotic Symptoms)
1/4• The more social patient the more positive biodata
1/5· (Proto-Type)
1/6· (Letter)
1/7· (Team/Social Process)
1/8· (Team Composition)
1/9· (Resources)
1/10· (Organisation Type)
1/11· (Decision)

2. Behaviour Problems (high - medium - low)

cell••
2/1 The more negative biodata the more behaviour problems
2/3 The more psychotic symptoms the more behaviour problems
2/4 The more non-social the more behaviour problems
2/5· (Proto-Type)
2/6· (Letter)
2/7· (Team/Social Process)
2/8· (Team Composition)
2/9· (Resources)
2/10· (Organisation Type)
2/11· (Decision)

3. Psychotic Symptons (high - medium - low)

cell••
3/1· (Biodata)
3/2· (Behaviour Problems)
3/4· (Social Functioning)
3/5· (Proto-Type)
3/6· (Letter)
3/7· (Team/Social Process)
3/8· (Team Composition)
3/9· (Resources)
3/10· (Organisation Type)
3/11· (Decision)

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4. Social Functioning (social - neutral - non-social)

cell**
4/1* The more positive biodata the more social patient
4/2 The less behaviour problems the more social patient
4/3 The less psychotic symptoms the more social patient
4/5- (Proto-Type)
4/6- (Letter)
4/7- (Team/Social Process)
4/8- (Team Composition)
4/9- (Resources)
4/10- (Organisation Type)
4/11- (Decision)

5. Patient Proto-type (positive-neutral-negative)

cell**
5/1 The more positive patient biodata the more positive proto-type
5/2 The less behaviour problems the more positive proto-type
5/3- (Psychotic Symptoms)
5/4 The more social patient the more positive proto-type
5/6- (Letter)
5/7- (Team/Social Process)
5/8- (Team Composition)
5/9- (Resources)
5/10- (Organisation Type)
5/11- (Decision)

6. Letter (positive - neutral - negative)

cell**
6/1 The more positive biodata the more positive letter
6/2 The less behaviour problems the more positive letter
6/3 The less psychotic symptoms the more positive letter
6/4 The more social patient the more positive letter
6/5 The more positive proto-type the more positive letter
6/7- (Team/Social Process)
6/8- (Team Composition)
6/9- (Resources)
6/10- (Organisation Type)
6/11- (Decision)

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7. Social Process (open - neutral - restrictive)

cell**
7/1- (Patient Biodata)
7/2- (Behaviour Problems)
7/3- (Psychotic Symptoms)
7/4- (Social Functioning)
7/5- (Proto-Type)
7/6- (Letter)
7/8* The more democratic team the more open process
7/9- (Resources)
7/10 The less bureaucratic organisation the more open process
7/11- (Decision)

8. Team Composition (democratic - neutral - autocratic)

cell**
8/1- (Patient Biodata)
8/2- (Behaviour Problems)
8/3- (Psychotic Symptoms)
8/4- (Social Functioning)
8/5- (Proto-Type)
8/6- (Letter)
8/7 The more open social process the more democratic team
8/9 The less resources the more autocratic team
8/10* The less bureaucratic organisation the more democratic team
8/11- (Decision)

9. Resources (good - medium - poor)

cell**
9/1- (Patient biodata)
9/2- (Behaviour Problems)
9/3- (Psychotic Symptoms)
9/4- (Social Functioning)
9/5 The more positive patient proto-type the better resources for transfer
9/6- (Letter)
9/7- (Team/Social Process)
9/8- (Team Composition)
9/10- (Organisation)
9/11- (Decision)

10. Organisation Type (professional - neutral - bureaucratic)

cell**

10/1· (Patient Biodata)
10/2· (Behaviour Problems)
10/3· (Psychotic Symptoms)
10/4· (Social Functioning)
10/5· (Proto-Type)
10/6· (Letter)
10/7 The more open team process the less bureaucratic organisation
10/8* The more democratic team composition the less bureaucratic organisation
10/9· (Resources)
10/11· (Decision)

11. Decision (accepted - conditional - rejected)

cell**

11/1 The more positive patient biodata the more likely that the transfer will be accepted
11/2 The less behaviour problems the more likely that the transfer will be accepted
11/3 The less psychotic symptoms the more likely that the transfer will be accepted
11/4 The more social patient the more likely that the transfer will be accepted
11/5 The more positive patient proto-type the more likely that the transfer will be accepted
11/6 The more positive letter the more likely that the transfer will be accepted
11/7 The more open social process of the team the more likely that the transfer will be accepted
11/8* The more democratic team the more likely that the transfer will be accepted
11/9 The better resources the more likely that the transfer will be accepted
11/10 The more professional organisation the more likely that the transfer will be accepted

CHAPTER 6.

TRANSFORMING A GENERAL MODEL INTO INDIVIDUAL MODELS
Individual Models of Affective Experience of Unemployment

Seppo Kontiainen and Jyri Manninen

Abstract

The paper introduces how a general model can be transformed into individual models by applying Dynamic Concept Analysis (DCA). The general model for explaining the affective experience of unemployed men was developed by Payne and Hartley (1987) in a study of about four hundred unemployed men in England. The general model includes the conceptual categories and the concepts for this study.

By using DCA it is possible to build an individual model for all possible cases with their own characteristics. For instance, when there are in this study sixteen concepts and altogether fourty eight attributes, it is possible to point out more than fourty three million different combinations of attributes to describe individual variation in how the unemployment could be experienced. Each of these combinations or potential cases could be depicted by an individual conceptual model.

A conceptual model makes a hypothesis of the structure and dynamical nature of an actual situation. The paper demonstrates by two case studies (unemployed men in Surrey) how to build individual models in the framework of the general model. Individual models give more detailed information about the experience of unemployment when compared with the general model. An individual model makes it easier to assess the relevance of information in a real context. Case studies give promising results of the use of conceptual models in describing a complex phenomenon at the individual level.

Conceptual models may also help to analyse individual processes of change (a series of models), and simulations with future models may be useful when searching various alternatives for change.

6.1. INTRODUCTION

A general model explaining the affective experience of unemployment was developed by Payne and Hartley (1987) to predict variations in the psychological experience of unemployment. In the model they proposed an integrative framework for current research on psychological experience of unemployment.

The stress model of the psychological experience of unemployment (Payne & Hartley 1987, 39) is used here as a starting point for new analyses. The general model provides the concepts and the previous analyses the basic information needed for building individual models; some empirical results of the earlier study are now taken into further analyses.

An aim of this paper is to introduce the Dynamic Concept Analysis (cf. Chapter 1.) as a method of transforming a general model into individual models. Individual models are considered central in understanding experiences of unemployment. Unemployed people do not have anything like universality of experience. This paper gives examples of using general information about the affective experience of unemployment in descriptions of individual cases.

6.2. A GENERAL MODEL

The general model, the Stress Model of the Psychological Experience of Unemployment by Payne and Hartley (1987, 39) includes four categories:

(A) Conditioning variables
(B) Personal attributes
(C) Perceptions of the environment
(D) Current affective states.

These categories include the following variables:

(A) CONDITIONING VARIABLES

1. Financial worries (refers to subjective experience of financial-situation).

2. Financial behaviours (whether an unemployed has had to sell things, to get loans and/or to give up hire purchase agreements).

3. Income change (whether the income level is now better, the same or worse than earlier).

4. Health (reported physical health).

5. Health change (reported health change).

'Social status', a conditioning variable of the original study, is not included in this study because it has relatively little interaction with the other variables as shown in Table 6.2.

(B) PERSONAL ATTRIBUTES

6. External control (the beliefs about the degree to which one has control over one's fate).

7. Employment commitment (the degree to which a person is committed to being in employment).

8. Coping tactics (the tactics to cope with the difficulties vary from 'frequent' to 'infrequent').

(C) PERCEPTIONS OF ENVIRONMENT

9. Problems (perceived problems associated with being unemployed).

10. Support (the amount of help given to an individual by other people and organizations to cope with problems of unemployment).

11. Opportunities (perceived opportunities of unemployment).

(D) CURRENT AFFECT

12. GHQ-anxiety (anxiety as measured by the General Health Questionnaire).

13. GHQ-depression (depression as measured by the General Health Questionnaire).

14. Yesterday strain (as felt onthepreceding day).

15. Yesterday pleasure (as felt on the preceding day).

16. Felt threat (threat of continuing unemployment).

A more detailed discussion of the variables and their connections to the literature and previous studies is available in the original paper (ibid., 34-37).

The general model (Model 6.1.) suggests that the stressfulness of the environment is a function of the relative balance between the problems facing the unemployed and the degree of support under which these problems are faced (ibid., 33).

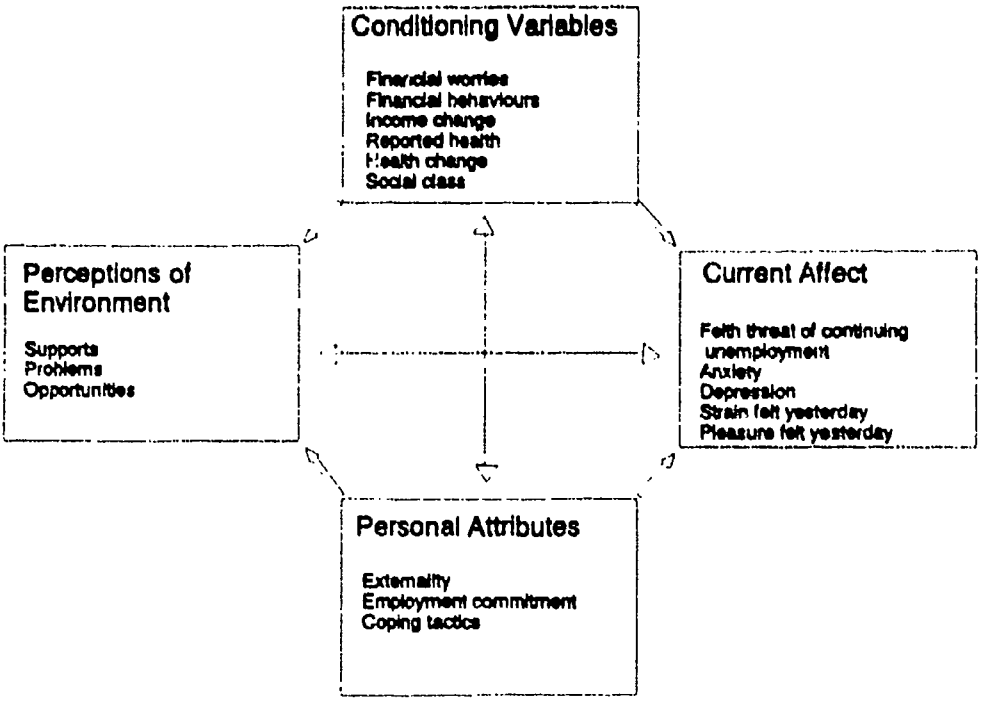
The arrows from one box to another are used to indicate conditioning effects. The arrows are double headed because it is recognized that, for example, current affect can influence perceptions of the environment, though the implicit causal implication is that environmental changes primarily lead to changes in affective experience. Becoming re-employed, for example, leads to conciderable improvement in mental health. (Payne & Hartley 1987, 33; see also Lahelma 1989.)

Model 6.1. is a rather ordinary general model which gives the categories and a structure with the variables which are concerned central in understanding the experience of unemployment. It is supposed in the general model that there are interrelationships between the variables within and between different categories. These relationships are analysed in the original study by correlational methods.

However, it is assumed in this study that Model 6.1. gives a reasonable structure and the central concepts to study experiences in unemployment,

but it is too general for analyses of individual cases. This is why there is a need to transform the general model into individual models.

Model 6.1. The Stress Model of the Psychological Experience of Unemployment (Payne & Hartley 1987, 39)



The dynamic concept analysis enables the transformation of Model 6.1. into individual models. The structure and the variables of Model 6.1. will be used in this study in building individual models.

The transformation of Model 6.1. into individual models is carried out in the following sequence:

(1) The information structure of affective experience of unemployment (Matrix 6.1.) is built by the correlations between the variables in the original study (Table 6.2.),

(2) The nature of concept relations is expressed as statements (cf. Appendix pp. 210-213) to specify the meaning of the cell information in Matrix 6.1., and finally,

(3) Two individual models are built and described by the information of concept relations in Matrix 6.1. to demonstrate how individual cases could be studied in the general framework of the previous study.

6.3. DYNAMIC CONCEPT ANALYSIS

As shown in Chapter 1 (pp. 10-12) there are five different ways how two concepts (A and B) can be related with each other:

Type 1; no relation (A B)
Type 2; one-way relation (A<--B)
Type 3; two-way relation (A<-->B)
Type 4; a relation via a third concept (A<-->C<--B)
Type 5; a relation via a longer chain of concepts.

The conceptual categories and the variables of affective experience of unemployment are now taken in further analyses by Dynamic Concept Analysis, DCA. Each concept is divided into three subconcepts, attributes, to indicate individual variation. For example, financial worries (Concept 1) can be 'high' (1a), 'medium' (1n) or 'low' (1b). The concepts and their attributes are given in Table 6.1.

Table 6.1. Concepts and Attributes of Unemployment

Concepts	Attributes		
1. Financial worries	1a high	1n medium	1b low
2. Financial behaviours	2a action	2n neutral	2b inaction
3. Income change	3a better	3n neutral	3b worse
4. Health	4a good	4n medium	4b poor
5. Health change	5a better	5n neutral	5b worse
6. External control	6a high	6n medium	6b low
7. Employment commitment	7a high	7n medium	7b low
8. Coping tactics	8a frequent	8n medium	8b infrequent
9. Problems	9a high	9n medium	9b low
10. Support	10a high	10n medium	10b low
11. Opportunities	11a high	11n medium	11b low
12. Anxiety	12a high	12n medium	12b low
13. Depression	13a high	13n medium	13b low
14. Yesterday strain	14a high	14n medium	14b low
15. Yesterday pleasure	15a high	15n medium	15b low
16. Felt threat	16a high	16n medium	16b low

The type of relationships between two attributes (Types 1-5) vary according to the attribute combination selected to describe a particular case.

This study includes 16 conceptual categories and altogether 48 characteristics or attributes. The number of possible combinations of attributes is now more than 43 million (Chapter 1, p. 23). Every combination (and a potential case) could be individually described by a conceptual model using the information of concept relations available in an information structure (Matrix 6.1.).

The next step in this study is to build an information structure of relationships between the concepts of Table 6.1.

6.4. INFORMATION STRUCTURE OF AFFECTIVE EXPERIENCE OF UNEMPLOYMENT

The variables of affective experience of unemployment will be analysed here by the Dynamic Concept Analysis, DCA. The **information structure** includes information of relationships between the variables in the study, and it serves as basis for integrating information in **conceptual models**.

The relationship between two concepts can be linear or non-linear (cf. Chapter 1, pp. 10-12). This study is based on hypotheses of linear relationships between variables given in the earlier study (Payne & Hartley 1987) as shown in the following.

The model was tested empirically in the original study by a sample of 399 men who had been unemployed for between 6 to 12 months. The correlation matrix of the original study is given in Table 6.2.

Table 6.2. Zero-order Correlation Matrix (Payne & Hartley 1987, 40).

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
1. Financial worries		43	-14	-29	-20	19	31	18	44	05	-07	39	24	25	-21	37	19
2. Financial behaviours			-01	-24	-15	04	-01	12	21	08	02	25	15	18	-08	27	04
3. Income change				-03	07	04	-17	-04	-11	-01	-02	-10	00	-03	06	-08	12
4. Health					39	-26	-10	-13	-32	02	02	-40	-40	-32	26	-43	-09
5. Health change						-17	-14	-13	07	08	03	-32	-26	-28	24	-32	00
6. External control							12	16	41	-10	01	32	41	21	-22	33	22
7. Employment commitment								20	42	11	01	30	14	16	-14	21	06
8. Coping tactics									28	22	32	31	22	28	-04	25	-02
9. Problems										-07	-02	62	46	41	-36	55	15
10. Support											25	-04	-13	-05	14	-12	-02
11. Opportunities												00	-02	-03	22	-03	-16
12. GHQ-anxiety													59	46	-32	63	-01
13. GHQ-depression														38	-27	58	08
14. Yesterday strain															-50	48	03
15. Yesterday pleasure																-34	-06
16. Felt threat																	01
17. Social status																	

Max. n=399
When r=0.08, P=0.05; when r=0.13, P=0.01

The correlations given in Table 6.2. are now used as basis for building the information structure by DCA. The Information Structure of Psychological Experience of Unemployment is given in Matrix 6.1.

Only significant correlations ($p<.01$) in Table 6.2. are taken into account when defining relationships between the concepts. A correlation can be

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presented as a statement to characterize the *r*elation between two concepts. A statement gives the content to a cell in the information structure. Statements of relationships are given in the Appendix (pp. 212-125).

The correlations at $p<.01$ gave good basis for making reasonable statements of the relationships. The correlations at $p<.001$ ($r>.17$) did not produce a more informative information structure, but excluded some relationships which proved sensible when making statements about the relationships.

Matrix 6.1. includes information only about linear relationships between the concepts. As stated in Chapter 1.6.1. (pp. 29-30), a non-significant correlation may indicate that there is no relation between the two variables or that the relationship is non-linear. The possible non-linear relationships should be studied by the raw data of the original study; this data was not available in this study. A new data base has already been collected for further studies.

Matrix 6.1. Information Structure of Psychological Experience of Unemployment

Row	CONCEPTS	Attributes	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1	1. FINANCIAL WORRIES	1a high	a		b	b	b											
2		1n medium	n		n	n	n											
3		1b low		a	a	a	a											
4	2. FINANCIAL BEHAVIOURS	2a action	a			b	b				a							a
5		2n neutral	n			n	n				n							n
6		2b inaction		b		a	a				b							b
7	3. INCOME CHANGE	3a better																
8		3n neutral																
9		3b worse																
10	4. HEALTH	4a good		b							b			b	b			
11		4n medium	n			n					n			n	n			
12		4b poor	a				a				a			a	a			
13	5. HEALTH CHANGE	5a better		b				b										
14		5n neutral	n				n	n										
15		5b worse	a				a	a										
16	6. EXTERNAL CONTROL	6a high	a			b	b				a	b		a	a			
17		6n medium	n			n	n				n	n		n	n			
18		6b low		b		a	a				b	a		b	b			
19	7. EMPLOYMENT COMMITMENT	7a high	a		b		b				a			a				a
20		7n medium	n		n		n				n			n				n
21		7b low		b	a		a				b			b				b
22	8. COPING TACTICS	8a frequent	a			b	b	a	a	a	a	a		a		a		a
23		8n medium	n			n	n	n	n	n	n	n		n		n		n
24		8b infrequent		b		a	a	b	b	b	b	b		b		b		b
25	9. PROBLEMS	9a high	a			a		a										
26		9n medium	n			n		n										
27		9b low		b		a		b										
28	10. SUPPORT	10a high								a		a						
29		10n medium								n		n						
30		10b low								b		b						
31	11. OPPORTUNITIES	11a high								a		a						
32		11n medium								n		n						
33		11b low								b		b						
34	12. ANXIETY	12a high	a	a		b	b	a	a	a	a			a				a
35		12n medium	n	n		n	n	n	n	n	n			n				n
36		12b low		b		a	a	b	b	b	b			b				b
37	13. DEPRESSION	13a high	a	a		b	b	a	a		a	b		a	a			a
38		13n medium	n	n		n	n	n	n		n	n		n	n			n
39		13b low		b		a	a	b	b		b	a		b	b			b
40	14. Y-STRAIN	14a high	a	a		b	b	a	a	a	a			a	a	a		a
41		14n medium	n	n		n	n	n	n	n	n			n	n	n		n
42		14b low		b		a	a	b	b	b	b			b	b	b		b
43	15. Y-PLEASURE	15a high		b		a	a	b	b		b	a	a	b	b			b
44		15n medium	n			n	n	n	n		n	n	n	n	n			n
45		15b low	a			b	b	a	a		a	b	b	a	a			a
46	16. FELT THREAT	16a high	a	a		b	b	a	a	a	a			a	a	a	b	a
47		16n medium	n	n		n	n	n	n	n	n			n	n	n	n	n
48		16b low		b		a	a	b	b	b	b			b	b	b	a	

- A cell shows the relationship between two concepts.
- A row shows the attributes with Type 2 (A<··B) relation to the attribute in question.

It is recognized here that a zero order correlation coefficient as such may be an insufficient measure of a relationship. A correlation can be spurious, i.e. caused by an intervening variable. According to Simon (1971) it is possible to use a theoretical framework and common sense to analyse conceptual relations according to correlation coefficient. A more appropriate approach would be a multivariate analysis or an analysis of higher order partial correlations.

In the cells of Matrix 6.1. positive and negative correlations get the following formats:

a positive correlation

a		
	n	
		b

a negative correlation

		b
	n	
a		

An empty cell indicates that there is a non-significant correlation between the two concepts, or it is considered not reasonable to make a statement.

For example, the relationship between Concept 1 'Financial Worries' and Concept 3 'Income change' can be expressed as follows (cf. the Appendix; 1/3):

1/3 The worse income change the more financial worries

This statement indicates a significant negative correlation, and appears in Matrix 6.1. in Cell 1/3:

			(3) Income Change		
			3a	3n	3b
(1) Financial Worries	high	1a			b
	medium	1n		n	
	low	1b	a		

Inspite of the significant correlation between these two concepts, this relationship is given only in Cell 1/3 but not in Cell 3/1. It was not considered sensible to state in Cell 3/1 'the more financial worries the worse income change' because the financial worries as such are not likely to have this kind of influence on the income change. This is why Cell 3/1 is left empty, and the information of the correlation between the two variables appears only in Cell 1/3. This causes asymmetry in the matrix.

The rows of Matrix 6.1. are central in building conceptual models. A row gives the other attributes which have Type 2 (A<--B) relation to the attribute in question. A conceptual model for a particular combination of attributes in a case can be built by combining all Type 2 relations in a model: the final model may include all five types of relations. Use of the information is now demonstrated by two case studies.

6.5. CASE STUDIES

A conceptual model gives a hypothesis of how different attributes are likely to become related in a real life situation. Thus the two case studies presented in this paper are primarily conceptual analyses which give hypotheses of actual experience of unemployment. How well a model represents an actual case should be tested in the real context. Nevertheless, the primary intention of this study is to demonstrate how a general model could be transformed by DCA into individual models. New empirical studies have already started to analyse further the concepts of this study and to produce a more reliable information structure including possible non-linear relationships, too. Case studies of this paper show how the transformation of the general model into individual models can be carried out by applying DCA.

The individual experience of unemployment will be analyzed by conceptual models in two cases. They are two middle aged unemployed men from Surrey, England. The analyses include the following phases:

(1) The unemployed men were asked to select one attribute under each concept to characterize their own life situation.

(2) The Information Structure (Matrix 6.1.) is used in building a conceptual model of the case with his particular attribute combination.

(3) The models were analysed and described by the authors.

(4) The two men were asked to assess their own model and the description of it: how well the hypotheses of their life situations fit with their own experience.

Two models are built to find out a structure of these individual life situations.

Case 1: a fourty years old man; unemployed for ten years

The following attributes were chosen by him to describe his life situation:

1.	Financial worries	1a	high
2.	Financial behaviours	2a	action
3.	Income change	3b	worse
4.	Health	4a	good
5.	Health change	5a	better
6.	External control	6a	high
7.	Employment commitment	7a	high
8.	Coping tactics	8n	medium
9.	Problems	9a	high
10.	Support	10n	medium
11.	Opportunities	11a	high
12.	Anxiety	12n	medium
13.	Depression	13n	medium
14.	Strain	14n	medium
15.	Pleasure	15n	medium
16.	Felt threat	16a	high

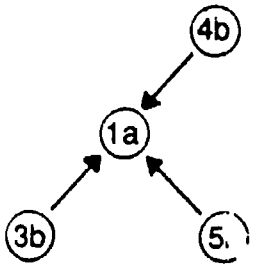
As stated earlier, the information in Matrix 6.1. can be used in building conceptual models for every combination of attributes. It is shown by the attribute combination in Case 1, how the relations between attributes can be identified, and how the model is built.

Information of Type 2 (A<--B) relations to each attribute can be found in Matrix 6.1. on the row of this particular attribute.

For instance, Row 1 in Matrix 6.1. shows that there are three attributes (3b, 4b and 5b) with Type 2 relation to 1a (high financial worries):

	CONCEPT		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Row		Attributes	a n b	a n b	a n b	a n b	a n b	a n b	a n b	a n b	a n b	a n b	a n b	a n b	a n b	a n b	a n b	a n b
1		1a high	a		b	b	b											
2	1 F-WORRIES	1n medium	n		n	n	n											
3		1b low	b		a	a	a											

This suggests that in general the weakened income level (3b), poor health (4b) and the health change towards worse (5b) have a Type 2 (A<--B) relation to 1a (high financial worries). The relations to 1a can be expressed as follows:



When building a model for Case 1, the Type 2 (A<--B) relations to every attribute in this particular combination should be identified as above. These relations can be found on the following rows in Matrix 1:

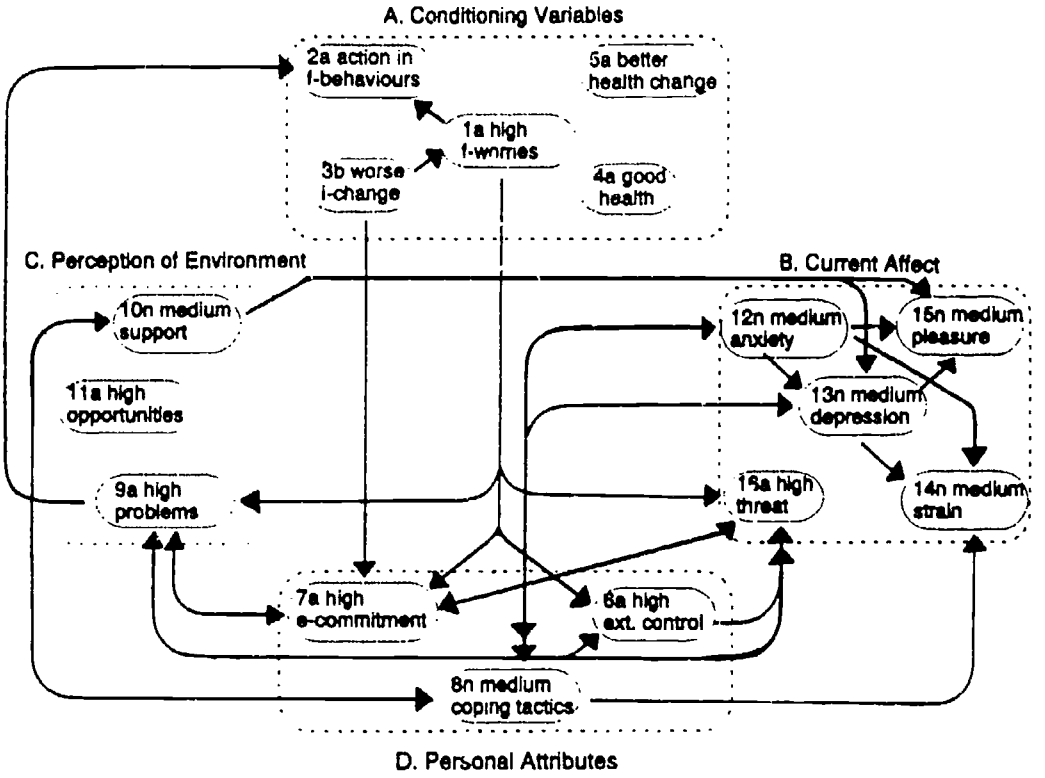
Attribute

1a	2a	3b	4a	5a	6a	7a	8n	9a	10n	11a	12n	13n	14n	15n	16a
1	4	9	10	13	16	19	23	25	29	31	35	38	41	44	46

Row/Matrix 6.1.

When all Type 2 relations are put together in Model 6.1.1, some relations may change into Type 3 (A<-->B) relation, or two attributes can found a relation via a third attribute (Type 4) or via a longer chain of relationships (Type 5), or two attributes can have no connection (Type 1).

Model 6.1.1. Individual Experience of Unemployment in Case 1



The description of Model 6.1.1. will be given at first under each main category of the variables. Comments and conclusions are then made to point out some central characteristics of the case.

(A) CONDITIONING VARIABLES

1. Financial worries	1a high
2. Financial behaviours	2a action
3. Income change	3b worse
4. Health	4a good
5. Health change	5a better

Model 6.1.1. indicates that the worse income level (3b) is a primary cause to financial worries (1a). These worries and other problems of this life

situation have made him to develop various actions to balance the financial situation (1a and 9a with 2a).

His health is good (4a), even better than earlier (5a): this could serve good basis for developing positive attitudes towards life. Nevertheless, good health has a less powerful position in the model. Good health is likely to be taken as granted.

(B) PERSONAL ATTRIBUTES

6. External control	6a high
7. Employment commitment	7a high
8. Coping tactics	8n medium

The problematic life situation with financial worries is likely to make him feel to be other directed, i.e. to be externally controlled and not free to decide upon his own matters (1a and 9a with 6a).

High employment commitment (7a) results in the model from the financial worries, the worse income level, many problems related to the everyday life, and from the threat of continuing unemployment (1a, 3b, 9a and 16a with 7a). Therefore, re-employment is likely to be regarded by him as a means to solve these problems.

The support he has received and some strain make him to find tactics to cope with this life situation (10n and 14n with 8n). Developing new tactics could be seen as an attempt to find an exit from the feelings of anxiety and depression (12n and 13n with 8n).

(C) PERCEPTION OF ENVIRONMENT

9. Problems	9a high
10. Support	10n medium
11. Opportunities	11a high

There are many problems (9a) in his everyday life The model suggests that these problems are primarily due to financial worries (1a), external control (6a) and high employment commitment (7a).

He seeks external support (8n with 10n); he tries to develop tactics to cope with difficulties and to solve them by the help of others.

Although there are potentially good opportunities (11a) to change the present situation, this does not have many practical consequences: 11a does not have any link to the other variables in the model. These opportunities are not necessarily taken by him very seriously or he may have difficulties to use these opportunities.

(D) CURRENT AFFECT

12. Anxiety	12n medium
13. Depression	13n medium
14. Strain	14n medium
15. Pleasure	15n medium
16. Felt threat	16a high

Moderately frequent, but perhaps rather unsuccessful attempts to cope with difficulties cause some anxiety (8n with 12n). Depression (13n) results in the model partly from not necessarily efficient coping tactics, and partly from feelings of anxiety (8n and 12n with 13n). The model suggests that the external support is likely to help him to keep at a tolerable level of depression (10n with 13n).

Medium strain (14n) is due to some difficulties to cope with the present situation, and to the feelings of anxiety and depression (8n, 12n and 13n with 14n).

Model 6.1.1. suggests that moderate level of anxiety and depression together with external support bring some pleasure to his life (10n, 12n and 13n with 15n).

The threat of continuing unemployment (16a) results in the model from high financial worries (1a), from his actions in financial matters (2a), from external control (6a), from high employment commitment (7a) and from the problematic life situation (9a). High threat (16a) has a dominant position in this model of the individual experience of unemployment; the situation is experienced by him as stressful and threatening.

Conclusions

The financial problems and the income change towards worse reflect to many activities in his life situation, and to how the present life is experienced. The physical state is good, even better than earlier. Present problems are related particularly to the affective experience of unemployment. Although there are some worries about the present and the future, he is able to find a fairly good balance in these feelings, and he is able to develop various strategies to cope with everyday problems. However, the situation is experienced as problematic, partly due to financial worries, and partly to his keen orientation towards employment. He has strong motivation to become employed, and by employment to make the financial situation better and the life altogether less problematic and threatening. In the present situation he feels not to be free to decide about his own matters. However, this has not prevented him of being active in trying to solve everyday problems; in this he has received some support from other people.

In the discussion he assessed the information given by the model to be very close to his own experience.

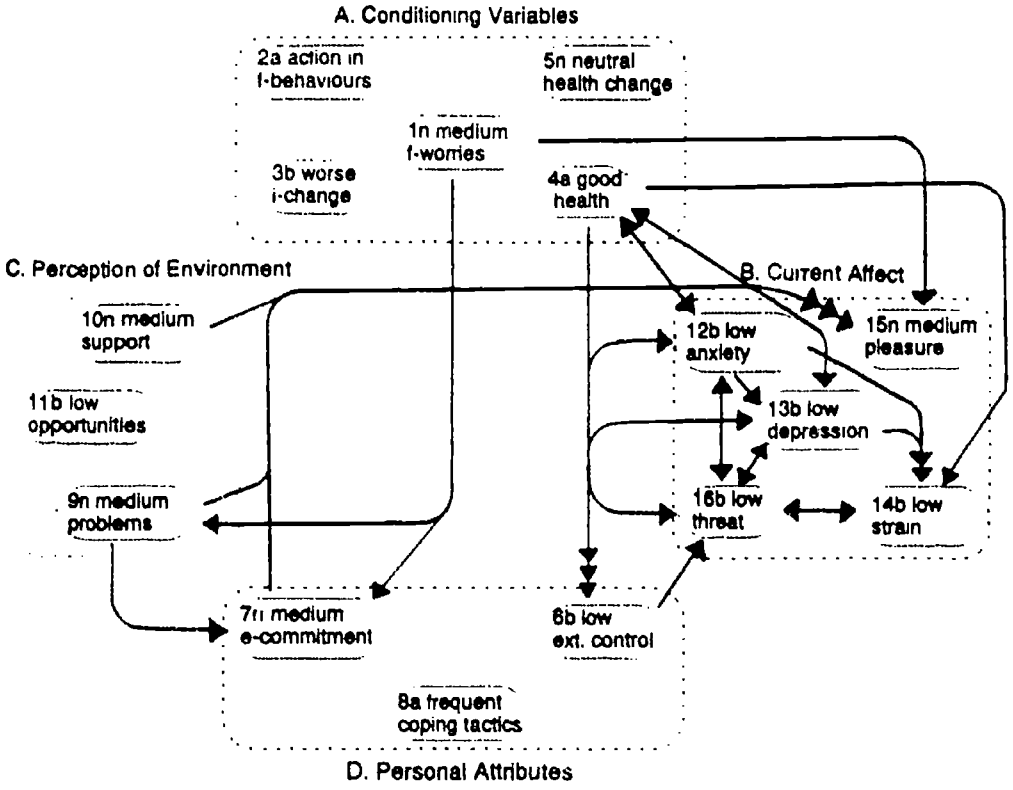
Case 2: a fourty years old man; unemployed for two years

The following attributes were chosen by him to describe his life situation:

1.	Financial worries	1n	medium
2.	Financial behaviours	2a	action
3.	Income change	3b	worse
4.	Health	4a	good
5.	Health change	5n	neutral
6.	External control	6b	low
7.	Employment commitment	7n	medium
8.	Coping tactics	8a	frequent
9.	Problems	9n	medium
10.	Support	10n	medium
11.	Opportunities	11b	low
12.	Anxiety	12b	low
13.	Depression	13b	low
14.	Strain	14b	low
15.	Pleasure	15n	medium
16.	Felt threat	16b	low

Model 6.1.2. combines the Type 2 (A<--B) relations of each attribute from Matrix 6.1.

Model 6.1.2. Individual Experience of Unemployment in Case 2



(A) CONDITIONING VARIABLES

1. Financial worries	1n medium
2. Financial behaviours	2a action
3. Income change	3b worse
4. Health	4a good
5. Health change	5n neutral

The financial situation is rather unsatisfactory: the income level is getting worse (3b). He needs to develop various temporary actions (2a) to balance the present financial situation. Nevertheless, he is not particularly worried about financial matters (1n), and the model indicates that he is

likely to feel physically and mentally sound enough to cope with this situation (4a 'good health' with 12b 'low anxiety' and 13b 'low depression').

(B) PERSONAL ATTRIBUTES

6. External control	6b low
7. Employment commitment	7n medium
8. Coping tactics	8a frequent

In the present situation he feels rather independent (6b) to decide about his own matters. He has some, but not very strong, orientation towards getting employed (7n). He develops various tactics to cope with the present life situation (8a). In the model 8a is not related to the other attributes: this may refer to his general activity in the life rather than to a need to change much the present life style.

(C) PERCEPTION OF ENVIRONMENT

9. Problems	9n medium
10. Support	10n medium
11. Opportunities	11b low

He does not see much opportunities (11b) to change the present situation although he receives some external support (10n). This support may help him to adjust in the existing circumstances, but it does not necessarily help him to find new structures or strategies. The model indicates that the external support has a minor role in the total life situation.

Nevertheless, he does not consider the situation very problematic (9n). The model suggests that this is primarily due to his moderate financial situation (1n) and to his relatively weak orientation towards employment (7n).

(D) CURRENT AFFECT

12. Anxioty	12b	low
13. Depression	13b	low
14. Strain	14b	low
15. Pleasure	15n	medium
16. Felt threat	16b	low

He has developed a stable affective environment with little anxiety (12b) and depression (13b). He does not have strain (14b) or feel threat of unemployment. The model indicates that good physical health (4a) strenghtens these positive feelings: he is likely to feel strong enough to cope with everyday problems. Little external control (6b) is likely to make him feel independent to decide about his own matters. Moderate financial worries (1n) with problems relating to unemployment (7n, 9n, 10n), may, to some degree, decrease satisfaction (15n).

Conclusions

During unemployment he has developed an independent and in many ways satisfactory life style in spite of some obvious difficulties (e.g. worse income level, difficulties to get employed). Good health and positive attitudes help him to achieve a balance in the life situation in which everyday problems are taken more as practical ones without giving them too much scope and power. He could be characterized as an active and optimistic survivor.

When assessing the description and the model he fully agreed with the information given above.

6.6. DISCUSSION

The paper demonstrates how a general model of affective experience of unemployment can be transformed by Dynamic Concept Analysis (DCA) into individual models. Individual models give relevant and detailed information about the structure and dynamics of a life situation as shown in the paper.

An aim of DCA analyses is to combine nomothetic and idiographic approaches so that the same source of information (an information structure) can be used to describe a phenomenon in general as well as in individual cases. This study seems to support the view that general information of concept relations as given in Matrix 6.1. serves as good basis for describing individual life situations. Transformation of a general model into individual models by DCA gave promising results.

A conceptual model gives a hypothesis of how different attributes could be related with each other in a real life situation. The models should be assessed in their real contexts. The two cases introduced in this paper are chosen from a study of 22 cases. The concepts were assessed by these cases to be relevant to describe the life situation in unemployment. The cases of this study from England were analysed by the concepts produced in their own national context of unemployment.

The validity of the models and the descriptions were discussed with each individual. The descriptions of the life situation based on the individual models were assessed by the cases to give rather realistic and valid pictures of their life structures.

Conceptual models may also help to analyse individual processes of change (a series of models), and simulations with future models may be useful when searching various alternatives for change.

ACKNOWLEDGEMENTS

We would like to thank Dr. Jean Hartley, the Department of Occupational Psychology, Birkbeck College, University of London, Dr. John Hobrough and Dr. Nicholas Walters, the Department of Educational Studies, University of Surrey for help and cooperation. Financial support from the Finnish Academy is gratefully acknowledged. Last but not least we would like to thank the unemployed men from Surrey who participated this study.

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APPENDIX 6.1. Statements of Relationships between the Concepts of Affective Experience of Unemployment

A statement indicates a linear relation ($r>.13$; $p<.01$) from another concept to the concept in question

* the cell in the Information Structure (Matrix 6.1., 196)

1. Financial Worries (high - medium - low)

cell*
1/3 The worse income change the more financial worries (-.14)
1/4 The worse health the more financial worries (-.29)
1/5 The worse health change the more financial worries (-.20)

2. Financial Behaviours (action - neutral - inaction)

cell
2/1 The more financial worries the more action in financial behaviour (.43)
2/4 The worse health the more action in financial behaviour (-.24)
2/5 The worse health change the more action in financial behaviour (-.15)
2/9 The more problems the more action in financial behaviour (.21)
2/16 The more felt threat the more action in financial behaviour (.27)

3. Income Change (better - neutral - worse)

4. Health (good - medium - poor)

cell
4/1 The more financial worries the worse health (-.29)
4/9 The more problems the worse health (-.32)
4/12 The more anxiety the worse health (-.40)
4/13 The more depression the worse health (-.40)

5. Health Change (better - neutral - worse)

cell
5/1 The more financial worries the worse health (-.20)
5/6 The more external control the worse health (-.17)

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6. External Control (high - medium - low)

cell	
6/1	The more financial worries the more external control (.19)
6/4	The worse health the more external control (-.26)
6/5	The worse health change the more external control (-.17)
6/9	The more problems the more external control (.41)
6/12	The more anxiety the more external control (.32)
6/13	The more depression the more external control (.41)

7. Employment Commitment (high - medium - low)

cell	
7/1	The more financial worries the higher employment commitment (.31)
7/3	The worse income change the higher employment commitment (-.17)
7/5	The worse health change the higher employment commitment (-.14)
7/9	The more problems the higher employment commitment (.42)
7/12	The more anxiety the higher employment commitment (.30)
7/16	The more felt threat the higher employment commitment (.21)

8. Coping Tactics (frequent - medium -infrequent)

cell	
8/1	The more financial worries the more frequent coping tactics (.18)
8/4	The worse health the more frequent coping tactics (-.13)
8/5	The worse health change the more frequent coping tactics (-.13)
8/6	The more external control the more frequent coping tactics (.16)
8/7	The more employment commitment the more frequent coping tactics (.20)
8/9	The more problems the more frequent coping tactics (.28)
8/10	The more support the more frequent coping tactics (.22)
8/11	The more opportunities the more frequent coping tactics (.32)
8/12	The more anxiety the more frequent coping tactics (.31)
8/14	The more strain the more frequent coping tactics (.28)
8/16	The more felt threat the more frequent coping tactics (.25)

9. Problems (high - medium - low)

cell	
9/1	The more financial worries the more problems (.44)
9/4	The worse health the more problems (-.32)
9/6	The more external control the more problems (.41)
9/7	The higher employment commitment the more problems (.42)

BEST COPY AVAILABLE

10. Supports (high - neutral - low)

cell
10/8 The more frequent coping tactics the more support (.22)

11. Opportunities (good - medium - poor)

cell
11/8 The more frequent coping tactics the more opportunities (.32)
11/10 The more support the more opportunities (.25)

12. Anxiety (high - medium - low)

cell
12/1 The more financial worries the more anxiety (.39)
12/2 The more action in financial behaviours the more anxiety (.25)
12/4 The worse health the more anxiety (-.40)
12/5 The worse health change the more anxiety (-.32)
12/6 The more external control the more anxiety (.32)
12/7 The higher employment commitment the more anxiety (.30)
12/8 The more frequent coping tactics the more anxiety (.31)
12/9 The more problems the more anxiety (.62)
12/13 The more depression the more anxiety (.59)
12/16 The more felt threat the more anxiety (.63)

13. Depression (high - medium - low)

cell
13/1 The more financial worries the more depression (.24)
13/2 The more action in financial behaviours the more depression (.15)
13/4 The worse health the more depression (-.40)
13/5 The worse health change the more depression (-.26)
13/6 The more external control the more depression (.41)
13/7 The higher employment commitment the more depression (.14)
13/9 The more problems the more depression (.46)
13/10 The less support the more depression (-.13)
13/12 The more anxiety the more depression (.59)
13/16 The more felt threat the more depression (.58)

14. Yesterday Strain (high - medium - low)

cell
14/1 The more financial worries the more strain (.25)
14/2 The more action in financial behaviours the more strain (.18)
14/4 The worse health the more strain (-.32)
14/5 The worse health change the more strain (-.28)
14/6 The more external control the more strain (21)
14/7 The higher employment commitment the more strain (16)
14/8 The more frequent coping tactics the more strain (.28)
14/9 The more problems the more strain (.41)
14/12 The more anxiety the more strain (.46)
14/13 The more depression the more strain (.38)
14/16 The more felt threat the more strain (.48)

15. Yesterday Pleasure (high - medium - low)

cell
15/1 The more financial worries the less pleasure (-.21)
15/4 The worse health the less pleasure (.26)
15/5 The worse health change the less pleasure (.24)
15/6 The more external control the less pleasure (-.22)
15/7 The higher employment commitment the less pleasure (-.14)
15/9 The more problems the less pleasure (-.36)
15/10 The less support the less pleasure (.14)
15/11 The less opportunities the less pleasure (.22)
15/12 The more anxiety the less pleasure (-.32)
15/13 The more depression the less pleasure (-.27)
15/16 The more felt threat the less pleasure (-.34)

16. Felt Threat (high - medium - low)

cell
16/1 The more financial worries the more felt threat (.37)
16/2 The more action in financial behaviours the more felt threat (.27)
16/4 The worse health the more felt threat (-.43)
16/5 The worse health change the more felt threat (-.32)
16/6 The more external control the more felt threat (.33)
16/7 The higher employment commitment the more felt threat (.21)
16/8 The more frequent coping tactics the more felt threat (.25)
16/9 The more problems the more felt threat (.55)
16/12 The more anxiety the more felt threat (.63)
16/13 The more depression the more felt threat (.58)
16/14 The more strain the more felt threat (- 48)
16/15 The less pleasure the more felt threat (.34)

CHAPTER 7.

SUPERVISION OF TEACHING PRACTICE IN ADULT EDUCATION
Student's and Supervisor's Perceptions of Supervision

Seppo Kontiainen and John Hobrough

Abstract

The study considers the perceptions of supervision held by both supervisors and students on teaching practice within a post graduate course in adult education. Both groups in England were asked to evaluate the supervision process in terms of work carried out in Finland (Kontiainen 1973, 1989) using a questionnaire from which information structures could be developed. The production of models, by DCA based on supervisory concepts and attributes, show that there are differences between the perceptions of the supervisor and the supervised within the supervisory process as discussed in the two case studies. These differences, for example, in personal style as well as the understanding of supervision, allow post supervison evaluation to have depth of meaning to both participants not normally occuring without the model analysis. Thus these models are seen as useful tools for analysing the supervisory process.

7.1. INTRODUCTION

7.1.1. Context of Study

In a one year Post Graduate course for the preparation of teachers of adults at the University of Surrey there is a period of supervised practice within a variety of institutions. The course (Post Graduate Certificate in the Education of Adults [PGCEA]), caters for students who wish to teach in their profession (eg. health and social services, adult education, youth and community etc.) having been involved in practice or in previous education within their own field of study. Thus the institutions in which students will practice the teaching and learning interphase vary from hospital teaching schools to colleges and institutes of adult, further or higher education.

During the teaching practice each student is supervised by two individuals. The internal supervisor, who is a member of the university staff, who has been allocated as a personal tutor, will act both as a point of contact within the university for the student as well as visiting the practice on at least three occassions. The internal supervisor need not necessarily be an expert in the material being taught, although some will be, but as a member the education staff will be able to comment on the process of teaching.

The external supervisor is a member of staff belonging to the host institution. They will be both an expert in the material taught, as well as being an educator. Their role is to provide help and guidance to the student whilst at the host institution as well as supervising the practice in terms of process and content, both in teaching and administration.

At the end of the practice the two supervisors will meet to assess the performance of the student and to make recommendations to the University.

7.1.2. Aims of Study

In general, supervision may be seen as relating to the practical part of training, whether it be teaching or research. In order to achieve good supervision the quality of the practice periods has to be considered

(Handal and Larvas 1987). We would contend that the evaluation of supervision must span a wider range including preparation, the practice period and the evaluation. In the process described, such a range of supervisory evaluation occurs, enabling the participants to act as professionals.

Handal and Larvas do see supervision as a mainly couselling role which is reinforced in this work. Others refer to supervision as a function of the workplace and suggest in that context that the supervisor is subject to the same order of confusions as the supervised, frequently because of communication problems which may cause 'painful feelings' for both. There is evidence in the present work that this might be so in the teaching context, the models produced allowing confusions to be ironed out. Whatever the confusion however, supervision must be seen in the context of support and value (Christian and Kitto 1987).

Counselling and guidance systems are seen by Miller (1982) as an important aspect of tutoring. His approach to the skills of tutoring as reflecting such issues as teaching, informing, counselling, advising, taking action and changing systems have application to the supervisory process. Such issues are summed up in an earlier work by Handal and Larvas (1980) in which they suggest that teaching practice is more than what actually goes on in the concrete encounter between supervisor and the supervised, but in a conceptual framework surrounding the whole process.

Supervision within higher education includes postgraduate work. The processes outlined in this paper have been considered by a small group of post graduate students at the University of Surrey. The attributes considered have relevance to research supervision, particularly in the professional interphase between student and tutor in terms of involvement and interaction which are considered as important by Moses (1985).

In a previous study (Kontiainen 1973) carried out in Finland, student teachers were asked to report their perceptions of their supervision according to the concepts and attributes in Table 1.1. (Chapter 1., 18.)

In this study it was decided to adopt the previous work, which although it is recognised that there may be cultural differences, would assume that the previous database of concept relationships would be appropriate. This assumption will be rediscussed after an analysis of assessments made by both supervisors and students of the models so derived. It was therefore

decided to look at the concepts and attributes of supervisory behaviour as perceived both by the student of the supervisor, and by the supervisor of themselves. Thus for each section of data, four separate pieces of information were supplied which are capable of comparison and analysis.

These are as follows:

* Students perception of internal supervisor.
* Students perception of external supervisor.
* Internal supervisor's perception of self.
* External supervisors' perception of self.

Within the aim of the study it was hoped that these comparisons would lead to a number of possibilities:

* An awareness of the nature of supervision in individual student-supervisor interactions.
* A consideration of the differences and similarities between the perceptions of the student and the supervisor.
* To discuss possible staff development strategies in supervision.

In the event, this paper explores the comparison of student's perceptions of supervision with the supervisor's self-perception.

7.2. DYNAMIC CONCEPT ANALYSIS

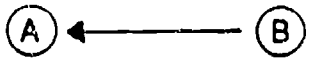
Supervision will be analysed here by the Dynamic Concept Analysis, DCA (Chapter 1). An **information structure** includes information of relationships between the variables of a study, and serves as basis to integrate this information in **conceptual models**.

It was shown in the methodological paper (Chapter 1., 10-12), that there are altogether five different ways of how two concepts can be in relation with each other: (1) they have no relation, (2) they have a one-way relation, (3) they have a two-way relation, (4) they have no direct relation, but they are related with each other via a third concept, or (5) they are related via a longer chain of concept relations.

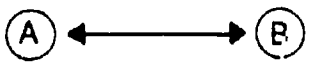
Different types of relations can be illustrated by variables A and B as follows:

Type 1.

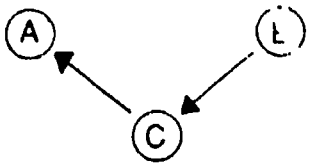
Type 2.



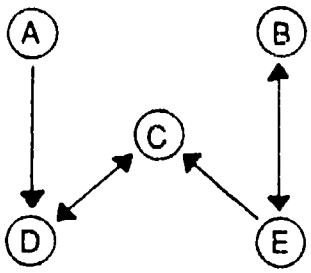
Type 3.



Type 4.



Type 5.



The information structure includes information of different types of relations between the variables in a study. This information can be integrated in conceptual models, in which the relations between all variables in question are shown simultaneously. A conceptual model is a network of concept relations like Type 5, in which different types of relations may appear in the same structure.

7.3. CONCEPTS OF SUPERVISORY BEHAVIOUR

The concepts of this study are derived from an earlier study of supervision in two Finnish teacher education institutions (Kontiainen 1973).

The study was based on a semantic differential type questionnaire by which student teachers (N=189) assessed the behaviour of their supervisors (N=32). The assessments (altogether 1528 individual trainee-trainer interactions) were analysed by factor analysis which resulted in five factors/concepts of supervisory behaviour. The concepts with their specifications (attributes) are given in Table 7.1.

Table 7.1. Concepts and attributes of the behaviour of supervisors

Factors	Concepts*	Attributes**
F1/C1	General attitudes	1a authoritarian
		1n neutral ***
		1b non-authoritarian
F2/C2	Role stability	2a stable
		2n neutral
		2b unstable
F3/C3	Style of working	3a easy-going
		3n neutral
		3b serious
F4/C4	Effect of supervision	4a positive
		4n neutral
		4b negative
F5/C5	Individual attitudes	5a sympathetic
		5n neutral
		5b unsympathetic

*) 'Concept' refers here to the interpretation of the factor
**) 'Attribute'is a subconcept identified in the study of supervision by f-scores in a factor (a=high, n=medium, b=low).
***) 'neutral' refers here to attitudes which are not obviously either authoritarian or non-authoritarian.

Use of factor analysis and factor scores is, however, only one way to produce concepts for analyses. Various other ways can be found (cf. Chapter 1).

For fuller description of attributes, see Appendix 1.1. (Chapter 1, 49.)

7.4. INFORMATION STRUCTURE OF SUPERVISORY BEHAVIOUR

The information structure, the matrix of concept relations of the supervisory behaviour will be introduced here. It was originally produced in the earlier study and modified later and included more than 1500 individual student-supervisor interactions (Kontiainen 1973, Chapter 1).

In Matrix 7.1. five concepts with three attributes are listed on the left. A row brings together those attributes with a Type 2 relationship to the attribute in question. Thus the qualities which specify the content and meaning of that particular attribute are brought together in the conceptual framework of the study.

Attributes on each row were identified in the original study by analysing frequency distributions of factor scores.

Matrix 7.1. Information structure of the supervisory behaviour

	F/C			C1			C2			C3			C4			C5		
Row			Attributes	a	n	b	a	n	b	a	n	b	a	n	b	a	n	b
1		1a	authoritarian	a			a		b			b			b			b
2	F1/C1	1n	neutral		n				b		n	b		n	b		n	
3		1b	non-authoritarian			a		n			n		a	n		a		
4		2a	stable	a			a					b		n	b		n	b
5	F2/C2	2n	neutral		n			n			n	b		n			n	
6		2b	unstable	a					b		n				b			b
7		3a	easy-going			b		n	b	a				n	b			b
8	F3/C3	3n	neutral	a		b			b		n			n		a		
9		3b	serious		n		a					b		n		a		
10		4a	positive			b	a				n	b	a				n	
11	F4/C4	4n	neutral		n			n	b		n			n			n	
12		4b	negative		n	b			b	a	n				b			b
13		5a	sympathetic		n			n				b	a	n		a		
14	F5/C5	5n	neutral		n			n				b	a				n	
15		5b	unsympathetic	a					b		n	b			b			b

- A cell shows the relationship between two concepts.
- A row shows the attributes with type 2 (A<··B) relation to the attribute in question

The following example is one demonstration of using the data base in Matrix 7.1.

There are two typical cases of authoritarian behaviour as indicated in Row 1; one combined with supervisor's stable role (2a) and the other with unstable role (2b). In the following the attribute combination with the unstable role (2b) is chosen, and the attributes are:

1a authoritarian
2b unstable
3b serious
4b negative
5b unsympathetic

7.4.1. Building a Model

The process of building a model of supervisory behaviour using the combination of qualities indicated above, by reference to Matrix 7.1. is described below in developing stages.

(a) **Row 1** in Matrix 7.1. shows the attributes which have a direct Type 2 relationship to 1a (authoritarian attitudes). This can be worked out by reference to the following analysis. Matrix 7.1.1.

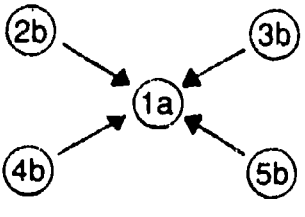
Matrix 7.1.1. Type 2 (A<--B) Relations to Attribute 1a (authoritarian)

	C1			C2			C3			C4			C5		
	a	n	b	a	n	b	a	n	b	a	n	b	a	n	b
Matrix 7.1./Row 1/1a:	a			a		b			b			b			b
This combination:	a					b			b			b			b
Type 2 relations to 1a:						+			+			+			+

In the above matrix '+' points out those attributes which have a Type 2 relation to attribute 1a (authoritarian). In this case all the relationships to 1a are of Type 2 and this is illustrated by Model 7.1.1.

Model 7.1.1. Type 2 (A<--B) Relations to Attribute 1a (authoritarian)

1a authoritarian
2b unstable
3b serious
4b negative
5b unsympathetic



(b) The same analysis is now conducted in Matrix 7.1.2. in relation to attribu e 2b (unstable role) by using the information in **Row 6** in Matrix 7.1.

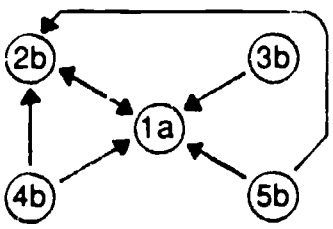
Matrix 7.1.2. Type 2 (A<--B) Relations to Attribute 2b (unstable role)

	C1			C2			C3			C4			C5		
	a	n	b	a	n	b	a	n	b	a	n	b	a	n	b
Matrix 7.1./Row 1/1a:	a					b		n				b			b
This combination:	a					b			b			b			b
Type 2 relations to 1a:	+							-				+			+

'–' shows that the attribute 3b (serious style) does not have a Type 2 relation to attribute 2b. Thus the model develops:

Model 7.1.2. Type 2 (A<--B) Relations to Attributes 1a and 2b

1a authoritarian
2b unstable
3b serious
4b negative
5b unsympathetic



(c) To get a comprehensive picture of all the relationships which exist between the five attributes in this particular case, all the Type 2 relations (to 3b/row 9, 4b/row 12, 5b/row 15) should be identified in the same way as above.

This total information is gathered in Matrix 7.1.3.

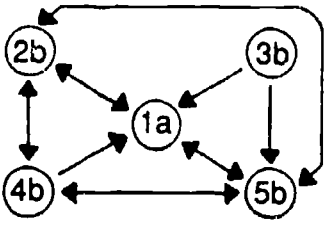
Matrix 7.1.3. Type 2 (A<--B) Relations (+) in the Attribute Combination

	1a	2b	3b	4b	5b
1a authoritarian		+	+	+	+
2b unstable	+		–	+	+
3b serious	–	–		–	–
4b negative	–	+	–		+
5b unsympathetic	+	+	+	+	

These relationships are now shown in Model 7.1.3 which is the completed model for the above combination of attributes.

Model 7.1.3. Relationships between Attributes as indicated in Matrix 7.1.3

1a authoritarian
2b unstable
3b serious
4b negative
5b unsympathetic



Within the model all Types (except Type 1) of relationships can be identified. The case studies below will show how the information in the models can be used as descriptors of supervisory behaviour.

7.4.2. Different Combinations of Attributes

Similar kinds of submatrices and models can be made for all the possible combinations of attributes. The number of combinations depends upon the number of concepts and attributes included in a study.

In this study it is possible to identify 81 different combinations of attributes with each individual attribute from five concepts and fifteen attributes. For instance, there are 81 more or less different ways of being an authoritarian supervisor. There are 243 different combinations between all the attributes concerned with supervisory behaviour: i.e. there are therefore as many models of supervision possible. (Chapter 1., p. 23.)

7.5. CASE STUDIES

The cohort of PGCEA students (1988-89) were asked if they would wish to be included in the study. Of the 144 possible students, 39 agreed to act in the pilot study. They wished to be responsible for negotiating with their external supervisor, and were thus enabled to do so with a letter from the University. Internal supervisors were contacted direct by the research team. Table 7.1. was sent to all students, internal and external supervisors asking them to identify those attributes which most closely described their own perceptions of supervision. In the event there were 18 responces in which all supervisors and students had given their assessments.

Two case studies from the above 18 are discussed, analysed and re-assessed in order to illustrate the research strategy.

Each of the two case studies (consisting in total of eight models) has been analysed in the following sequence:

1) The student and each supervisor selected a combination of five attributes from Table 7.1. for further analysis.

2) Submatrices of Type 2 (A<--B) concept relationships were constructed (Cf. Matrix 7.1.3).

3) Conceptual models were produced as in section 4.

4) The possible supervisory interactions suggested by the models were described and presented to the students and supervisors,

5) comparative summaries of the models were produced,

6) a discussion was held with both the student and each supervisor to assess the interpretation based on the models.

7.5.1. Case A

The student gave an overall assessment of supervision of an (1) external supervisor and of an (2) internal supervisor. Both of the supervisors made assessment of their own supervisory perceptions with this student.

The student in Case A was in practice in a sixth form college teaching art subjects. Both the internal supervisor and the external supervisor were educationalists and had an art/humanity background.

(1) Student A and External Supervisor

The following attributes were chosen by the student and the by the external supervisor to describe supervision in Case A:

	Perceptions of Student	Self-perceptions of Supervisor
1. General Attitudes	**1b** non-authoritarian	**1b** non-authoritarian
2. Role Stability	**2b** unstable	**2n** neutral
3. Style of Working	**3a** easy-going	**3a** easy-going
4. Effect of Superv.	**4a** positive	**4a** positive
5. Indiv. Attitudes	**5a** sympathetic	**5a** sympathetic

The attributes given by the student and the supervisor are here much the same. The only difference is in variable 2, Role Stability: the student considers the role as unstable (2b) and the supervisor sees his role as slightly more stable (2n).

This difference reflects the relationships between the attributes of supervision. This is studied in the submatrices 7.1.4. and 7.1.5. in which the information of concept relations (of Type 2) in these two attribute combinations are given using the information available in Matrix 7.1. Two different conceptual models of supervision (Model 7.1.4. and Model 7.1.5.) result from only one difference in the attribute combinations.

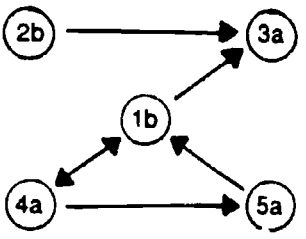
Matrix 7.1.4. Student's perceptions of supervision

	1b	2b	3a	4a	5a
1b non-auth/n		–	–	+	+
2b unstable	–		–	–	–
3a easy-going	+	+		–	–
4a positive	+	–	–		–
5a sympathetic	–	–	–	+	

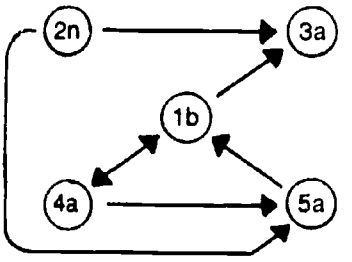
Matrix 7.1.5. Self-perceptions of supervision

	1b	2n	3a	4a	5a
1b non-auth/n		–	–	+	+
2n neutral	–		–	–	–
3a easy-going	+	+		–	–
4a positive	+	–	–		–
5a sympathetic	–	+	–	+	

Model 7.1.4. Student's Perception



Model 7.1.5. Self-perception



Student Perception (Model 7.1.4.)

The unstable role of the supervisor (2b) does not have a central position in supervision. It reflects only on an easy-going style (3a), i.e. the supervisor when being unsure about the role is not involved as a person very deeply in the process.

Non-authoritarian attitudes (1b) have a direct impact on the effect of supervision, which is experienced as positive (4a). The student is not receiving much actual help from the supervisor, but is given space to take a personal responsibility for learning in a free and positive environment (1b, 3a, 5a).

Role of supervisor: *social participant*

Supervisor's Perception (Model 7.1.5.)

The supervision takes place in a positive, encouraging atmosphere (1b, 3a, 5a). The supervisor does not see him or herself in an expert role (2n), but more as a catalyst of learning (there is no direct relation between attributes 2n and 4a). The positive effect (4a) is therefore more closely related to the non-authoritarian attitudes (1b).

Role of supervisor: *catalyst*

Comparison

The supervisor regards his/her role as more professional (2n) than the student assesses it. The supervisor is willing to give to the student more responsibility of her/his own learning and does not give as much emphases on his/her own role in the process. By the supervisor being distanced from the expert role, the student may feel divorced from direct advice when expected.

Assessment

In discussion the student expressed concern about the nature of the term "easy-going", prefering the relationship to be seen more as one of negotiation and suggesting that he was not interfered with or directly instructed, rather than not being given "actual help" as required. The supervisor agreed with the perception of her role as a catalyst as perceived by the model. This analysis by the supervisor does not necessarily refute the perceptions of the student who felt that he had space in which to work and change attitudes to his practice, and yet could reflect this against the supervisor as required without fear of direct interference in his teaching process.

(2) Student A and Internal Supervisor

The following sub-matrices (7.1.6. and 7.1.7.) show the attributes and their relationships as perceptions given by student A and as his/her internal supervisor's self-perception.

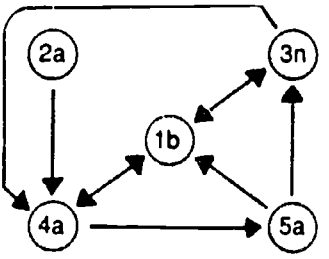
Matrix 7.1.6. Student's perceptions of supervision

	1b	2a	3n	4a	5a
1b non-auth/n		–	+	+	+
2a stable	–		–	–	–
3n neutral	+	–		–	+
4a positive	+	+	+		–
5a sympathetic	–	–	–	+	

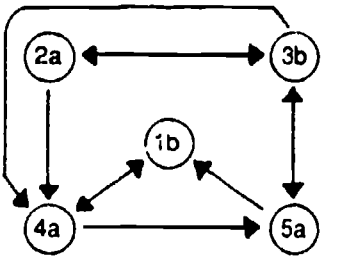
Matrix 7.1.7. Self-perceptions of supervision

	1b	2a	3b	4a	5a
1b non-auth/n		–	–	+	+
2a stable	–		+	–	–
3b serious	–	+		–	+
4a positive	+	+	+		–
5a sympathetic	–	–	+	+	

Model 7.1.6. Student's Perception



Model 7.1.7. Self-perception



Student's Perception (Model 7.1.6.)

The non-authoritarian attitudes of supervisor (1b), stable role (2a) and rather 'neutral' style of working (3n) have the most direct influence on the supervision as experienced by the student as positive (4a). The supervisor with an expert role (2a) is likely to be actively involved in the learning process of the student. This occurs, however, in a positive, humanistic atmosphere (1b, 5a).

Role of the supervisor: *expert-advisor*

Supervisor's Perception (Model 7.1.7.)

The expert role (2a) and serious style of working (3b) are closely related together to result in positive effect (4a). The supervisor is likely to see his own role in a rather central position in promoting learning. However supervision takes place in a democratic and caring (1b, 5a) atmosphere.

Role of the supervisor: *expert-active participant*

Comparison

The only difference in the attribute combination is in style of working. The supervisor regards himself as personally more involved in the process (3b with 2a and 5a). The student might see the supervisor slightly more in a distant expert role. The effect of supervision is positive (4a) in both cases.

Assessment

The student accepted the analysis of his perceptions as did the supervisor of his self-perceptions. However, the supervisor specified his own style of working as being rather supervisor centred, not didactic, and stated that in his case, a serious style related to 'academic' supervision.

7.5.2. CASE B

1) Student B and External Supervisor

In this case the student was a nurse, training as a nurse tutor, with both the external and internal supervisors having health care and education backgrounds. The students, assessments are the same for both supervisors and are identical to Model 7.1.6. in Case A. The purpose for selecting this case is to enable comparisons to be made in the pairings when student perceptions remain the same.

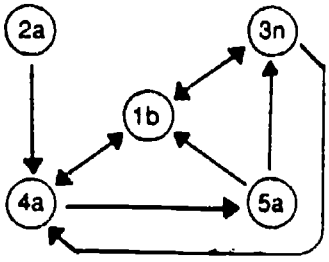
Matrix 7.1.8. Student's perceptions of supervision

	1b	2a	3n	4a	5a
1b non-auth/n		–	+	+	+
2a stable	–		–	–	–
3n neutral	+	–		–	+
4a positive	+	+	+		–
5a sympathetic	–	–	–	+	

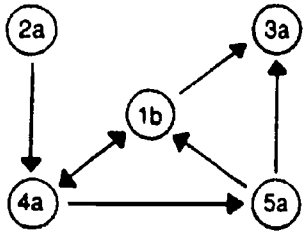
Matrix 7.1.9. Self-perceptions of supervision

	1b	2a	3a	4a	5a
1b non-auth/n		–	–	+	+
2a stable	–		–	–	–
3a easy-going	+	–		–	+
4a positive	+	+	–		–
5a sympathetic	–	–	–	+	

Model 7.1.8. Student's Perception



Model 7.1.9. Self-perception



Student's Perception (Model 7.1.8.): (See also Model 7.1.6.).

The non-authoritarian attitudes of supervisor (1b), stable role (2a) and rather 'neutral' style of working (3n) have the most direct influence on the supervision as experienced by the student as positive (4a). The supervisor with an expert role (2a) is likely to be actively involved in the learning process of the student. This occurs, however, in a positive, humanistic atmosphere (1b, 5a).

Role of the supervisor: *expert-advisor*

Supervisor's Perception (Model 7.1.9.):

The supervisor creates a democratic 'adult to adult' relationship (1b non-authoritarian) with concern for the student as an individual (5a sympathetic). This learning climate is in a central position in the supervision, which is experienced as positive (4a). The stable expert role (2a) brings the supervisor's experience and knowledge into the learning process. However, the model indicates that the supervisor's own role is not in a very dominant position. In addition, the easy-going style (3a) results from positive attitudes, but does not have much direct influence in supervision. The supervisor is likely to give more emphasises on the student role than on the role of his/her own, and gives space for personal development of the student.

Role of the supervisor: *expert-catalyst*

NB. This model is the most commonly occuring one, (18 cases in the study) both by students of their supervisors, and as supervisors' self-perception.

Comparison

There is only one difference in the attributes given by the student and the supervisor. The student sees the supervisor's style of working (3n) as rather central in supervision. The supervisor considers his style (3a) more as a byproduct without a direct link to the positive effect of supervision (4a).

Assessment

The student perceived the supervisor as providing for him as much practical experience as possible within a friendly climate, even though the supervisor seemed to think that she was not doing enough. The student felt that both positive and negative feedback was given. The supervisor certainly felt that the description given of her perceptions was what she hoped or aimed to do. However she would like to be more of a synthesiser, helping the student to bring together all the complex parts of being a nurse tutor into a whole. Thus there was no contradiction of the information provided in the models by either student or supervisor, but it did serve to develop some of their thinking related to supervision and to suggest further avenues for discussion.

2) Student B and Internal Supervisor

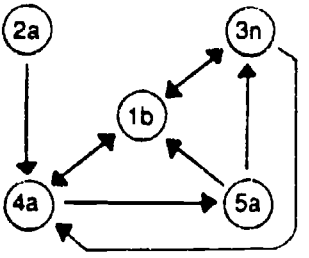
Matrix 7.1.10 Student's perceptions of supervision

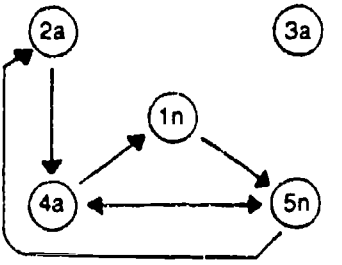
	1b	2a	3n	4a	5a
1b non-auth/n		–	+	+	+
2a stable	–		–	–	–
3n neutral	+	–		–	+
4a positive	+	+	+		–
5a sympathetic	–	–	–	+	

Matrix 7.1.11. Self-perceptions of supervision

	1n	2a	3a	4a	5n
1n neutral	–	–	–	+	
2a stable	–		–	–	+
3a easy-going	–	–		–	–
4a positive	–	+	–		+
5n neutral	+	–	–	+	

Model 7.1.10. Student's Perception **Model 7.1.11.** Self-perception





Student's Perception (Model 7.1.10.)

The non-authoritarian attitudes of the supervisor (1b), stable role (2a) and rather 'neutral' style of working (3n) have the most direct influence on the supervision as experienced by the student as positive (4a). The supervisor with an expert role (2a) is likely to be actively involv _ in the learning process of the student. This occurs, however, in a positive, humanistic atmosphere (1b, 5a).

Role of the supervisor: *expert-advisor*

Supervisor's Perception (Model 7.1.11.)

The supervisor is likely to distance her/himself from a very personal relationship with the student (1n, 5n). S/He is acting more as an expert (2a) giving his/her professional help to the student. The easy-going style (3a) may help the student to take more personal responsibility for self development, in which the supervisor's advice and help (2a) is available. Nevertheless, the model suggests, that the supervisor may have some difficulties in integrating the style of working (3a) in the supervision, or intentionally stands aside to give more freedom to the student.

Role of the supervisor: *non-directive expert*

Comparison

The two models indicate that the student and the supervisor have quite different views of supervision. The student considers the supervisor as being more personnally involved in the interaction than the supervisor might be ready to admit. The supervisor regards his/her general and individual attitudes as neutral (1n, 5n) but the student has recieved them as non-authoritarian (1b) and sympathetic (5a). The student considers the supervisor's style of working slightly more serious (3n), and the supervisor's personal style has, unlike in the supervisor's model, a direct and positive influence on the supervision (4a).

Assessment

In discussion it was felt that the suggestion made from the models that the supervisor might not be ready to admit personal involvement in the interaction was perhaps too strong. The supervisor percieved herself ready to be involved more generally with the student beyond the supervision activity, if that was what the student felt would be helpful. The student felt that although he had had less to do with the internal supervisor, he perceived her as a very caring person who wished to ensure that teaching aims were met and that teaching skills were improved. She was prepared to help at all times outside the supervisory activity. Therefore the models were felt to reflect this particular supervisory interaction.

7.6. DISCUSSION

Models can provide a simplification of reality and the analysis often is to establish how well they might assist in understanding reality. Thus the models described in this study give an indication of the nature of supervision. In discussion with one supervisor, it was considered that the models of supervision established in this paper could be a way in which the supervisor and student might analyse their supervisory relationships. It was perceived that the models would provide useful means of both discussion and analysis, which would help towards a greater understanding of the supervisory process between individual adults. Such discussions would help to clarify concepts and it is hoped lead to a more dynamic supervision.

Some models were very common; for example the model which has been identified as expert-catalyst (Model 7.1.9.). It is a model in which there is a democratic "adult to adult" relationship. It might be considered that this is a model which is approporiate to adult education and to which supervisors might be directed in staff development activities.

However, as in this project, where it was inevitable that in some cases both students and supervisors presented similar perceptions of the supervisory process, the question must be asked as to whether identical perceptions lead to the most successful supervision. It might be argued therefore that a degree of conflict in the supervisory interaction creates greater possibilities for discussion and change within the supervisory process. If the perceptions are too different, they may produce too much conflict which would be negative and hinder the potential outcomes of the supervision. Such analysis could be a subject of further research.

The information structure of concept relations (Matrix 7.1.) used in this paper have been produced within the Finnish culture. The evidence produced in discussion with students and supervisors within the case study, and in post-graduate research seminars, suggest that the information base provides an adequate information structure for use in the UK.

As stated earlier, the models produced here are simplifications of reality. They do however give a structure which is useful in their comparisons,

and in seeking changes or new structures for more successful interactions if needed.

To this end the information in Matrix 7.1. can be used to build models of interaction of which the two case studies are only a part. Interpretations, whether of self or of others, should however be carried out with care, as should the implications of such interpretation. It should be remembered that the model itself reduces a number of complex human interactions and perceptions into a single pattern and that there may be others which have, by the very nature of the work, not been included.

But; the possibility of developing interaction between individuals by the use of such models and their interpretations is the power of the process.

ACKNOWLEDGEMENTS

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