

THE UNIVERSITY OF HULL

The Development of a Purposeless System Approach

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by

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To my parents

Chung-Hsin Su and Shu-Yuan Chiang

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Summary of Thesis submitted for Ph.D. degree

by Hwan-Yann Su

on

The Development of a Purposeless System Approach

This thesis explores how one's understanding of the world may be broadened by consciously engaging rationalities in opposition. I conduct this exploration by considering the relationship between what I call one's "originating rationality" and its opposites. By "originating rationality" I mean the way of thinking that one initially embraces. Opposite of the originating rationality is: some opposition that one can envisage and take on board; and some opposition which one cannot consider as relevant. This latter I call the opposite irrelevant or unknown to one's originating rationality.

I introduce the concept of systems thinking and show that the link between opposites is systemic. I organise my discussion of the exploration of the systemic link between opposites by making reference to, and revisiting, the proposals of the Viable System Model (VSM) and the ideas of System Dynamics (SD). Through my discussion of these, I suggest that a new concept of systems thinking (the concept of a *purposeless system*) is needed. Operating in terms of this concept, I develop a *purposeless system approach* named Complementary Intervention (CI).

I indicate how in a specific context of a CI project carried out in a supermarket chain in Taiwan, participants' understanding of the world could be broadened by their consciously engaging rationalities in opposition, while at the same time developing caution about their broadened understanding and about their decisions and further actions. I show how my own understanding of a purposeless system could be used in this context to organise a debate around the idea of such a system and, in this case, to consider what the embodiment of a purposeless system might involve. Through the project, I arrive at the suggestion that participants' rational framework can be defined as an evolving rational framework; and that the relationship between it and its opposite is an evolving relationship.

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The Development of a Purposeless System Approach

Chapter One: Introduction

1.1. INTRODUCTION

This thesis explores, from a social constructivist perspective, how one's understanding of the world may be broadened by engaging consciously rationalities in opposition. The social constructivist argument (Denzin and Lincoln, 1994, 1998a,b,c; Gergen, 1994; Lather, 1993, 1995; Lincoln, 1985, 1995; Romm, 1996a,b,c, 1997, 1998; Shotter, 1993a,b; Shotter and Gergen, 1989) suggests that one's understanding of the world can never be complete, but it can be broadened by co-constructing it with its alternatives. That is, one's understanding of the world is regarded as narratives about the world which are open to co-construction and reconstruction with its alternative positions. Meanwhile, "final" narratives about the world can never be reached and, in the same sense, one's understanding of the world cannot be complete.

To inquire further into the incompleteness of one's understanding of the world, this thesis explores the relationship between what I call one's "originating rationality" and its opposites. By "originating rationality" I mean the way of thinking that one initially embraces. Opposite of the originating rationality is: some opposition that one can envisage and take on board; and some opposition which one cannot consider as relevant. This latter I call the opposite irrelevant or unknown to one's originating rationality. As I will show later, the exploration of the relationship between all these opposites suggests that they may try to conceal and exclude one another. The mutual exclusion of opposites may contribute to the incompleteness of one's understanding of the world.

However, as I will also show later, the exploration of the relationship between one's *originating rationality*, the *opposite envisaged and taken on board* by one's originating rationality, and the *opposite irrelevant or unknown* to one's originating rationality, also suggests that opposites define one another. This mutual definition of opposites casts light on the link between them. Since the relationship between these opposites may not necessarily be exclusive, one may consider taking on board the opposite which one could envisage and having a reserve of resources for the opposite irrelevant or unknown to one's originating rationality. In this way, it is possible that these opposites may learn from one another, rather than try to exclude one another. I will also introduce later in the thesis the concept of systems thinking and show that the link between these opposites is systemic. The understanding of the systemic link between opposites may contribute to the possibility of mutual learning between these opposites and of broadening one's understanding of the world.

I organise my discussion of the exploration of the systemic link between opposites by making reference to, and revisiting, the proposals of the Viable System Model (VSM) (Beer, 1979, 1981, 1985, 1989a,b) and the ideas of System Dynamics (SD) (Forrester, 1961, 1969a; Coyle, 1977; Meadows, 1980; Roberts *et al.*, 1983). Through my discussion of these, I suggest that a new concept of systems thinking is needed to address the systemic relationship between opposites. Addressing the systemic link between opposites in both VSM and SD facilitates me to explore the concept of a *purposeless system*. Operating in terms of the concept of a *purposeless system*, I develop an *approach* named Complementary Intervention (CI).

Complementary Intervention (CI) is aimed at exploring how in a specific context, one's understanding of the world may be broadened by engaging consciously rationalities in opposition. What opposition will be taken on board in a specific context is a choice made by people in that context from the opposites they could envisage, regarding what they believe to be the most opposite to their originating rationality.

Therefore, the opposition chosen to be taken on board by people tends to be the kind of opposite most likely to be concealed and excluded by their originating rationality. Nonetheless, the opposition chosen at any point in time as opposition that can be taken on board, is likely to relate to the area of action in which people see themselves as involved. Once one defines one's originating rationality in a context as related to some purpose(s), then some area of action becomes identified. For example, if one's originating rationality is connected with pursuing some business in computing, then one's opposition to this, to be taken on board, can be used to express alternative choices which still seem feasible in the area in which one is operating. Exactly how this expression of opposites is bounded by people so that it does not include everything different or alternative, can be decided only according to the situation in which participants define themselves as involved at some point in time.

Meanwhile, some of the opposites considered to be irrelevant or unknown are those rationalities which are raised by people but are not identified either as people's originating rationality or as the opposite to be taken on board. These opposites can be considered to be beyond what both people's originating rationality and the opposite envisaged and taken on board by that rationality can address. The others of the opposites considered to be irrelevant or unknown are those rationalities which are never raised by people because they are irrelevant or unknown. Thus, the extent to which an opposite envisaged is opposite enough to be taken on board (but still relevant to the situation) and what is considered to be irrelevant or unknown, are defined by people according to their situation.

By engaging consciously rationalities in opposition, CI seeks to facilitate people to see what would have otherwise been concealed and excluded by their originating rationality; to reconsider their originating rationality; and to make their own decisions regarding further actions towards that rationality. It implies that people develop caution about their broadened understanding of the world and about decisions

and further actions. I will also show through a CI project carried out in a supermarket chain in Taiwan how the learning process of CI may facilitate participants to broaden their understanding of the world and to improve their understanding of options within that situation.

1.2. RESEARCH ISSUES AND RESEARCH PROCESS

The research issues of the thesis are as follows:

1. In the first place, I wish to explore how one can undertake a critique of action research and a revisitation of systems thinking in the context of developing the concept of a purposeless system;
2. Arising out of 1, the next issue is to develop a theoretical understanding of the concept of a purposeless system (which will be defined in Chapter Six as a system consisting of opposites whose rationality is not necessarily to be realised and whose purpose(s) is(are) not necessarily to be achieved);
3. Arising out of 2, the next issue is to explore how the concept of a purposeless system may be applied.

The research process of the thesis will address these research issues and explain how their theoretical and practical aspects are related. Firstly, the research process will explore what theorising may occur through the critique of the literature of action research and through the revisitation of the literature of systems thinking. Secondly, it will explore how the theories developed may be applied to a research project. Thirdly, it

will explore what theorising may occur through considering the theoretical relevance of the project (for theory development). Therefore, a research project will be a part of the research process, aiming to explain how the theoretical and practical aspects of the research issues are related. Through this project, I will show in detail how my understanding of the concept of a purposeless system may be utilised to organise a research project and a debate around such a concept in a particular context. At the same time, this project also facilitates participants in that context to consider the possible importance of the concept of a purposeless system, and it allows me in engagement with participants, to further develop the concept through reflecting upon the theoretical relevance of the project in terms of (re)considering the concept of a purposeless system.

This research project also has an exploratory significance. From participants' point of view, they may broaden their understanding of the world through engaging consciously their originating rationality with the opposites of their originating rationality which tend to be concealed and excluded. From a researcher's point of view, he or she may learn from this project regarding how to apply the concept of a purposeless system to organising a research project and a debate in that project and regarding the theoretical relevance of the project to the concept.

An informal pilot study was carried out prior to my organisation of my research project as explained in the thesis. The pilot study facilitated me to explore what participants in a specific context may think about a debate organised in line with the notion of a purposeless system (although for simplification I did not introduce explicitly the components thereof in the discussion). It also facilitated me to explore what

participants may learn through this debate and to practice the skill of conducting my research project. This pilot study offered me some ideas about what could happen when participants debate the concept of a purposeless system in a specific context. It therefore aided me in the development of my plan for the CI project (as explained in Chapter Seven). It should be noted that neither the participants nor the social context of the pilot study and the CI project had a bearing on each other - except through the fact that from the pilot I was able to glean ideas as to how I might proceed with my CI project in terms of its organisation. It was therefore useful to me as a researcher *in this respect*. For this reason I discuss it in Chapter Seven before going on to discuss the plan for the CI project.

The ideas behind the use of case study research may support my choice of conducting a research project in a particular context as a means to organise the link between the theoretical and practical aspects of the work undertaken by me to explore the development of the concept of a purposeless system. Case study research is sometimes used with the idea that cases may be important for their own sake and that the generalisation of their findings is not necessarily the primary concern. Thus, for instance, Punch (1998, p.154) indicates that “[a] case may be so important, interesting, or misunderstood that it deserves study in its own right. ... It is not the intention of such a study to generalize, but rather to understand this case in its complexity and its entirety ...”. Stake (1994) also suggests that case studies can be intrinsic where the cases themselves are the focus of the research rather than their implications to other contexts. Remenyi *et al.* (1998, p. 169) similarly point out that “one case study ... cannot provide sufficient evidence to be able to make robust generalisations but in business studies this

may not be essential”. Remenyi *et al.* indicate that even though implications to other contexts may not be the primary focus of case studies, one can use them to explore in detail a particular context. They suggest that this kind of study is appropriate in business contexts where the idea is to gain a rich understanding of particularities of a case. Following these lines of arguments, and considering them in relation to action research, this thesis argues that participants in a particular context and *facilitating these participants in that context* may be regarded as the kind of cases important for their own sake. By conducting my research project in a particular context, it becomes possible to facilitate participants in that context according to their perception of issues of relevance therein.

The idea of case study research also suggests, however, that a case may be used for the purpose of *explanation* and *illustration*. Hakim (1992, p.61) points out that “a case study can provide a richly detailed ‘portrait’ of a particular social phenomenon ... [Case studies] may be illustrative ‘portraits’ of social entities or patterns thought to be typical, representative, or average”. My (CI) research project is an intervention which may change the social phenomena, entities or patterns in a particular context - which case study researchers would normally not attempt to alter. Nonetheless, it may still be argued that by conducting my research project in a particular context, my project can provide a richly detailed and an *illustrative portrait of an intervention, which explains and illustrates how the concept of a purposeless system may be applied*. Through this project, I explain in detail how my understanding of the concept may be utilised to organise a research project and a debate around such a concept. This project may also be an illustration of how the concept may be utilised to organise a research project and a

debate around such a concept in a different setting. The extent to which this project may be relevant to other contexts will be discussed later in this section.

The idea of case study research is associated with an acknowledgement that a case may be used for the exploration and emergence of insights and theories. Through the involvement of a researcher in a particular context for a period of time, valuable insights may be explored and theoretical concepts can emerge and develop. Hakim (1992, p.61) argues that "... case studies may be exploratory, if relatively little previous research exists on the topic ...". Punch (1998, p.156) also points out that "... only the in-depth case study can provide understanding of the important aspects of a new or persistently problematic research area". Through my involvement in a particular context for a period of time, my research project also aims to explore and show how the theorising of and the application of the concept of a purposeless system are related. From a researcher's point of view, further insights regarding how to apply the concept of a purposeless system to organising a research project and a debate in that project and further insights regarding the theoretical relevance of the project to the concept, may be explored through this project. However, these insights and theories explored and developed through my research project do not necessarily have to claim a general relevance to all situations. As Bryman (1989, p. 173) indicates, one does not have to adopt a view of research that steers towards generalisation but a view that "engenders patterns and linkages of theoretical importance".

Although the insights or theories explored and developed through my research project do not have to be relevant for all situations, neither do they necessarily confine

themselves to the very context where they are explored. As mentioned above, the ideas behind the use of case study research may support my choice of conducting a research project in a particular context. My project has an intrinsic significance where participants in that context, and facilitating these participants through this project, are important for their own sake. My project has an explanatory significance in the sense that through this project, I explain in detail how my understanding of the concept of a purposeless system may be utilised to organise a research project and a debate around such a concept. My project has an exploratory significance in the sense that it explores and shows how the theorising of and the application of the concept of a purposeless system are related. My project may also have an illustrative significance in the sense that it may be an illustration of how the concept may be utilised to organise a research project and a debate around such a concept in this setting as a possible illustration of a way of using the concept. This does not, of course, mean that it can be applied without modification to other contexts. As a researcher, I am cautious about the extent to which the illustrative and the exploratory significance of my research project may be relevant to another setting. As I will show in Chapter Seven and Chapter Eight, I organise my research project in a way which avoids claiming an indefensible relevance of the insights explored and theories emerged to another context. I argue that by being cautious and by not claiming the relevance of the insights explored and theories emerged to an extent beyond what seems defensible, some kind of generalisation, i.e. some kind of relevance of the insights explored and theories emerged in a particular context, to another context, is possible. It can be a problem when a researcher claims (without sufficient substance) the relevance of insights explored and theories emerged from a single case.

Punch (1998, p.156) indicates that the criticism against a case study can have validity “when more is claimed from its findings than the data can bear”. Remenyi *et al.* (1998, p. 168) point out that this problem could be dealt with by a researcher’s awareness that “case study research is not an easy option and the business and management researcher needs to be prepared for a distinct challenge”. Therefore, as long as I take the challenge of being prepared to defend my way of proceeding, it is possible to make some kind of claim as to how the concept of a purposeless system can possibly be applied as illustrated through my research project. In Chapter Nine, I offer further detail - through my reflections - on what I believe was achieved on a theoretical and practical level in this case.

1.3. THE STRUCTURE OF THE THESIS

There are nine chapters in this thesis. This introductory chapter is the first chapter; the remainder is as follows:

Chapter Two: Openness towards Alternatives: A Literature Review

In this chapter, I argue the need of openness towards alternatives and of taking on board opposition, by addressing the question: does there exist one single rational framework which is comprehensive enough alone, to address social reality? If the answer is “yes”, then we may devote all our research concerns and possibilities of action to it. If the answer is “no”, then we might need to start listening to alternative researches and adopting alternative actions.

Firstly, I introduce some theories regarding the philosophy of science. I will suggest that they all prescribe their own research concern and that they each prescribe their own possibility of action, as well. Meanwhile, I will also suggest that they try to exclude their opposite and the research concern and possibility of action prescribed by it.

Secondly, I suggest that the mutual definition and exclusion of opposite theories also occur in the literature of action research, which argues that our research is not only for the sake of research itself, but also for the improvement of practitioners' action.

Thirdly, I argue that it is important to understand the mutual definition and exclusion of opposite theories and of their prescribed research concerns and possibilities of action. This understanding makes us realise that our research concern and possibilities of action can never be complete, no matter what theory we choose, as we exclude the opposite of the chosen theory and the research concern and possibility of action prescribed by it. Finally, in line with a social constructivist argument, I argue the need for openness towards alternatives and of taking on board opposition.

Chapter Three: The Systemic Link between Opposites

In this chapter, I will argue that there is a systemic link between one's originating rationality, the opposite envisaged and taken on board by this rationality, and the opposite irrelevant or unknown to it. Firstly, I will give some brief examples to show that these opposites may conceal and exclude one another and that they cannot be dealt with separately. Secondly, I will show that these opposites are linked in terms of description and also in terms of consequences of purposeful actions. Thirdly, I will offer

an account of the concepts of systems thinking, and fourthly, I will show why the link between these opposites is systemic.

Chapter Four: Addressing the Systemic Link between Opposites in Viable System Model (VSM)

This chapter is aimed at addressing the systemic link between opposites, with reference to a discussion of Beer's Viable System Model (VSM) (Beer, 1979, 1981, 1985, 1989a,b). I begin with an account of the cybernetic concepts of the black box technique and negative feedback, which are at the core of Beer's VSM. Then I address these concepts of cybernetics in terms of the systemic link between opposites - i.e., the systemic link between the organisation's *originating rationality* (which seeks to achieve the purpose of the organisation by adopting these cybernetic concepts), *the opposite envisaged and taken on board* by this rationality, and the opposite irrelevant or unknown to it. I then offer an account of the mechanism and the components of Beer's VSM, in terms of the systemic link between opposites. Based on the above, I suggest that there is a need for the practitioners of VSM to consider the opposite of their originating rationality (that they can envisage) and to remind themselves that their purpose of adopting VSM may conceal and exclude the opposite from them. This may also remind them that there is always an alternative purpose available. I suggest, furthermore, that there is a need for the practitioners of VSM to keep a reserve of their resources available for the opposite irrelevant or unknown. This may remind them that there is still something beyond their whole rational framework - i.e., the whole of their originating rationality and the opposite envisaged and taken on board. This may also remind them that there should still be resources reserved for when their situation affirms some purpose which is beyond their rational framework.

Chapter Five: Addressing the systemic link between opposites in System Dynamics

This chapter is aimed at addressing the systemic link between opposites with reference to a discussion of System Dynamics (SD) (Forrester, 1961, 1969a; Coyle, 1977; Meadows, 1980; Roberts *et al.*, 1983). Through revisiting System Dynamics, I explore the concept of a purposeless system and show that one can arrive at this concept in a variety of ways.

I begin by showing how some concepts of systems thinking mentioned in Chapter Three may relate to intuitive actions and to the way in which System Dynamics deals with the long-term unforeseen impact of intuitive actions. Secondly, I introduce additional concepts and theories of System Dynamics and show how these concepts and theories of System Dynamics may further deal with intuitive actions. Thirdly, I offer an example of how System Dynamics may be applied to the managerial context. Fourthly, I will show that the systemic link between opposites is not addressed in System Dynamics. Finally, I conclude that there is a need to address the systemic link between opposites in System Dynamics and that there is also a need for a new concept of systems thinking - named a purposeless system.

Chapter Six: A Purposeless System

In this chapter, I will propose the concept of a purposeless system. Firstly, I will give some accounts regarding the concept of a purposeless system. Secondly, with reference to the concept of Deconstruction, I will address in more depth the systemic relationship between one's originating rationality and opposition of it, and my employing the concept of a purposeless system. Thirdly, I will discuss the danger that the concept of Deconstruction tends to focus on the significance of some component of a purposeless system by concealing and excluding the significance of other components

of it. I suggest that Deconstruction tends to develop an *asymmetric relationship* between rationality and opposition. Instead I develop an argument for proposing a *symmetric relationship* in a purposeless system.

Chapter Seven: Complementary Intervention: A Purposeless System Approach

In this chapter, I apply the concept of a purposeless system developed in previous chapters to organising a purposeless system approach - Complementary Intervention (CI) - and I propose CI as a research alternative to conventional action researches.

Firstly, I explain why Complementary Intervention (CI) is complementary. Secondly, I show how CI applies the concept of a purposeless system to organising a CI project and how CI further applies the concept of a purposeless system to organising a debate process in a CI project. Thirdly, I show the relevance for me of the informal pilot study conducted prior to my CI project in Taiwan. Fourthly, I present in detail a plan for my CI project. Through the plan for my CI project, I show in detail how my CI project may facilitate participants to broaden their understanding of the world and to remain cautious about their broadened understanding of it and about their decision and their further action towards their originating rationality after a CI project. Finally, I show why CI is a research alternative to conventional action researches.

Chapter Eight: A Complementary Intervention Project in Taiwan

In this chapter, I report the result of a Complementary Intervention (CI) project carried out in a supermarket chain in Taiwan, showing how the learning process of CI

might facilitate participants to broaden their understanding of the world and to improve their understanding of options for their situation.

Chapter Nine: Conclusion

This chapter summarises the key arguments of the thesis. I provide here a statement of the contribution of the thesis to both theory and practice (including a discussion of the way in which the theoretical development of the concept of a purposeless system took place in the thesis). I also discuss, as part of my reflections, possible limits of the work undertaken. These reflections include an indication of how my choice of the Viable System Model and System Dynamics to develop my ideas might have influenced the theoretical development. I also show what further work would be of value in carrying further the ideas as I pursued them in this thesis.

Chapter Two: Openness towards Alternatives: A Literature Review

2.1. INTRODUCTION

One question regarding action and research will be addressed in this chapter. Does there exist one single rational framework which is comprehensive enough to address social reality alone? If the answer is “yes”, then we may devote all our research concern and possibilities of action to it. If the answer is “no”, then we might need to start listening to alternative researches and adopting alternative actions.

This chapter starts with introducing some theories regarding the philosophy of science, including Descartes' (1931, 1954a,b,c) rationalism, Locke's (1894) empiricism, Kant's (1933) principles of thinking, positivism (Bryant, 1985; Comte, 1880; Giddens, 1974; Kolakowski, 1972), Popper's (1959, 1969) deductive falsifiability, and Kuhn's (1957, 1970, 1977) account of scientific revolution. Through the discussion of these theories mentioned above, I will suggest that they all prescribe their own research concern and that they each prescribe their own possibility of action, as well. And yet, through the discussion of these theories, I will also suggest that they try to exclude their opposite and the research concern and possibility of action prescribed by it.

Similarly, the mutual definition and exclusion of opposite theories occur in the literature of action research, which argues that our research is not only for the sake of research itself, but also for the improvement of practitioners' action (Lewin, 1946). Some theories regarding action research introduced in this chapter will be Lewin's (1946) Action Research, Argyris and Schön's (1974, 1991) Action Science, Whyte, Greenwood and Lazes's (1991) Participatory Action Research (Whyte, 1991a,b), and Reason's Collaborative Inquiry (Reason, 1988, 1991, 1994; Reason and Heron, 1996).

Through the discussion of these theories mentioned above, I will also suggest that they all prescribe their own research concern and that they each prescribe their own possibility of action, as well. However, through the discussion of these theories in the literature of action research, I will suggest again that they try to exclude their opposite and the research concern and possibility of action prescribed by it.

It is very important to understanding the mutual definition and exclusion of opposite theories and of their prescribed research concern and possibilities of action. As this chapter will show, this understanding makes us realise that our research concern and possibilities of action can never be complete, no matter what theory we choose to direct our research concern and possibilities of action, for we have already excluded the opposite of the theory which we choose and the research concern and possibility of action prescribed by it. Therefore, this chapter highlights the problem that when we do not have this understanding, we come to believe our research concern and possibilities of action may be complete and to conceal completely from ourselves the opposite of the theory which we choose and the research concern and possibility of action prescribed by it.

Openness towards alternatives and taking on board opposition will be what I suggest in this chapter, to make the opposite of the theory which we choose appear again. Romm (1996a,b,c, 1997, 1998) together with some other social constructivists (Denzin and Lincoln, 1994, 1998a,b,c; Gergen, 1994; Lather, 1993, 1995; Lincoln, 1985, 1995; Shotter, 1993a,b; Shotter and Gergen, 1989) argue that our understanding of the world can never be complete and yet it can be broadened by co-constructing it with its alternatives. That is, our understanding of the world is broadened when we surface and challenge our assumptions of the world by encountering the points of view of others. By taking on board opposition (Romm, 1996a,b,c, 1997, 1998) and being open towards alternatives, we begin to see the opposite of the theory which we have (or might have) chosen.

2.2. MUTUAL DEFINITION AND EXCLUSION OF OPPOSITE THEORIES

Opposite theories try to exclude each other from their own research concern and possibilities of action, and yet they define each other. For instance, induction and deduction exclude each other and yet they define each other. Induction is known as researching empirical evidence in a specific situation in order to arrive at a general theoretical framework; while deduction is known as applying a general theoretical framework to a specific situation under research. As May (1993, p. 22) says:

First, we might consider a general picture of social life and then research a particular aspect of it to test the strength of our theories. This is known as *deduction* Research then functions to produce empirical evidence to test or refute theories. On the other hand, we might examine a particular aspect of social life and derive our theories from the resultant data. This is known as *induction*. ... [W]e seek to generate theoretical propositions on social life from our data.

However, without a general framework or preconceptions of what we are to see, we will not be able to see anything in a particular situation. In this sense, deduction, which provides a general framework of preconceptions of what we are to see, enables us to see data as such and is the foundation of induction (which is to collect the data seen in a particular situation to arrive at a general theoretical framework later on). Therefore, deduction defines induction. In the meantime, without empirical evidence we have previously seen in a particular situation, we cannot arrive at any general framework. In this sense, induction, which collects data in a particular situation to arrive at a general theoretical framework, is the foundation of deduction (which provides a general framework or preconceptions of what we are to see and which enables us to see data as such later on). Therefore, induction also defines deduction.

Hanson's (1958) visual examples can illustrate this mutual definition of induction and deduction in more detail. Can we see what the picture below is about (Figure 2.1)? No, the picture does not tell us anything because it does not look familiar to us.

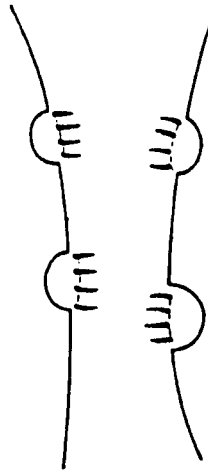


Figure 2.1: My first example of mutual definition of induction and deduction.
Source: Hanson, 1958, p. 12.

And yet, when a story describes this picture as “a bear climbs up the other side of a tree”, it brings together and organises these piecemeal meaningless empirical evidences. This story (framework) enables us to see and to make sense of what we see. Otherwise we can see nothing. Therefore, we need to have a general framework or preconceptions of what a bear, a tree, and climbing, are like and of what a bear climbing up a tree is like, in order to deduce and recognise them in this particular picture. That is, first of all, we have a general framework or preconceptions of what a bear, a tree, and climbing, are like and of what a bear climbing up a tree is like. Then we suppose that these piecemeal lines in the particular picture represent a bear, a tree, and the story. Then we deduce that these piecemeal lines in the particular picture shown above should fit our general framework or preconceptions of what a bear, a tree, and climbing, are like and of what a bear climbing up a tree is like. In this particular picture, these piecemeal lines do fit and therefore they are deduced to represent a bear climbing up the other side of a tree. In this

sense, deduction, which provides a general framework or preconceptions of what we are to see (i.e., what a bear, a tree, and climbing, are like and what a bear climbing up a tree is like), enables us to see data as such and is the foundation of induction which is to collect data seen in a particular situation (i.e., this picture, for instance) to arrive later on at a general theoretical framework (such as a bear being able to climb up a tree). However, how do we acquire the general framework or preconceptions of what we are to see? Is/Are our general framework or preconceptions of what a bear, a tree, and climbing, are like and what a bear climbing up a tree is like, purely our imagination? No, we cannot arrive at any general framework or preconceptions without empirical evidences which we have seen previously in a particular situation. For instance, we have seen previously some empirical evidences regarding some animals which have four feet, long claws, and thick palms, and some plants which have thick stems; then we know that these animals are called bears and these plants are called trees; and then we induce what a bear and a tree are like. In this sense, induction, which collects data previously in a particular situation to arrive at a general theoretical framework, is the foundation of deduction (which provides a general framework or preconceptions of what we are to see and which enables us to see data as such later on). Therefore, induction and deduction are the foundation of each other and they define each other.

Another point is that through different frameworks, we can see different empirical evidences while observing the same objects. That is, the framework we apply enables us to see and limits what we see at the same time. In Figure 2.2 below - another of Hanson's (1958, p. 11) visual examples - what does this picture tell us?



Figure 2.2: My second example of mutual definition of induction and deduction.
Source: Hanson, 1958, p. 11.

Different people see different things. Some people do see an old lady; some see a young one; some see a nest with straws on a branch of a tree (seeing from the top); some might see a wooden pipe with tobacco (seeing from the right). Some people might never see what other people see although they are looking at the same object - the same picture. Therefore, Scheffler's (1967, p. 10) argument that theories are justified by people observing empirical evidences together, is not complete. This is because people might see different things when they observe the same object. That is, because they have different theoretical frameworks in their minds, people recognise and deduce different things from the same object. Nonetheless, Hanson's (1958, pp. 4-19) argument that the observation of empirical evidences reflects underlying theoretical frameworks is similarly incomplete. This is because these underlying theoretical frameworks are obtained from the induction of previous empirical evidences that have been observed. Therefore, while pure deduction without previous piecemeal empirical evidences to induce a framework is incomplete, pure induction without a previous framework to organise empirical evidences is similarly incomplete. That is, while induction and

deduction are busy excluding each other from their own research concern and possibilities of action, they define each other. In the next part of this chapter, I will show how this theme of mutual definition, and yet mutual exclusion, of opposite theories occurs in the literature of philosophy of science and action research. The literature review, below, will show that whatever choices people make about opposite theories, an open mind towards alternative theories is necessary.

2.3. SOME EXAMPLES OF MUTUAL DEFINITION AND EXCLUSION OF OPPOSITE THEORIES IN THE LITERATURE OF PHILOSOPHY OF SCIENCE

In the field of philosophy, Descartes' (1931, 1954a,b,c) rationalism argues that the only knowledge which can be allowed is what is derived from innate deductive reasoning. For him, our research concern is within the framework of our innate deductive reasoning, and so is our possibilities of action. Anything which is beyond the framework of our innate deductive reasoning, is therefore excluded. For instance, empirical experiences can be excluded from our research concern and possibilities of action.

In disagreement with Descartes, Locke's (1894) empiricism, on the other hand, argues that our mind is completely blank when we are born and that our ideas are aroused by the external world. That is, we do not have innate ideas. Our knowledge comes from our mind's acquaintance with the ideas from the external world and subsequent manipulation of them. For him, our research concern is within the framework of acquainting ourselves with external ideas, and so is our possibilities of action. Anything beyond the framework of acquainting ourselves with external ideas, is therefore excluded. For instance, innate ideas can be excluded from our research concern and possibilities of action.

Influenced both by Descartes and Locke, Kant's (1783) principles of thinking suggest that our mind does not only acquaint with ideas from the external world, but also vigorously produces them. For him, ideas are aroused by the external world, and yet they are not equivalent to knowledge. Our mind is not completely blank and it contains some ideas or ways of thinking which organise external ideas and transform them into knowledge. Knowledge comes from our mind's transformation of external ideas, which is organised by certain rules of understanding. Therefore, our research concern is within the framework of our mind's transforming external ideas according to certain rules of understanding and so is our possibilities of action. Something beyond this framework is therefore excluded. For instance, the possibility of our mind's learning external ideas as a framework to organise innate ideas can be excluded from our research concern and possibilities of action.

Another attempt to reconcile deduction and induction is the development of positivism (Bryant, 1985; Comte, 1880; Giddens, 1974; Kolakowski, 1972). Positivism argues that the inductive element of knowledge which is based on empirical evidences should, of course, be verified by verifying empirical evidences. And yet, positivism also argues that the deductive element of knowledge should be verified by verifying empirical evidences regarding its empirical implication. Therefore, acknowledging both the inductive and the deductive elements of knowledge, positivism still argues that verification of knowledge should be done through verification of direct or implied empirical evidences. Thus, positivism swings back to root itself in a purely inductive way of justifying knowledge.

Emphasising the importance of empirical evidence, and yet disagreeing with the positivist's inductive approach, Popper's (1959, 1969) deductive falsifiability argues that knowledge comes not from verification, but from falsification. That is, a statement cannot be proved by empirical evidences, but falsified by them. The empirical evidences

which fit the conclusion of a theory might fit those of another as well. Therefore, knowledge can never be completely verified. A well-known example of Popper's argument is Einstein's claim that Newton's law of motion is a special case of his relativism; all the empirical evidences fitting Newton's law of motion fit his relativism. However, Popper still argues that the credibility of knowledge is increased as more and more empirical evidences prove unable to falsify it. It then becomes well-tested. According to him, our research concern is within the framework of falsifiability through empirical evidences, and so is our possibilities of action. Therefore his position does not focus on the argument that knowledge is falsified not only by objective empirical evidences, but also by a consensus of human beings regarding its falsifiability. Nor should our research and action be concerned with the opposite of "well-tested" knowledge. In Popper's position the opposite of "well-tested" knowledge must be wrong.

A further attempt to resolve the issue of induction or deduction is Kuhn's (1957, 1970, 1977) argument. Opposing Popper's argument, Kuhn's account of the scientific revolution has made the norms of objective science a subjective matter: a matter of consensus of human beings. His study of scientific history suggests an alternative view of knowledge falsification. He argues that every epoch has its own ruling paradigm which depicts its own norms regarding scientific inquiries. A paradigm is a framework for looking at the world. The providential norms of a ruling paradigm in a particular era might be considered as meaningless by its successive paradigm. The ruling paradigms define the problems they would like to solve; and they solve the problems they define. In the golden age of a ruling paradigm in a particular era, the ruling paradigm is very efficient in solving the problems it defines and the assumptions it makes regarding the nature of the problems are not challenged. However, anomalies regarding the norms of the ruling paradigm do not cease accumulating. Sometimes the ruling paradigm will manage to address these anomalies and maintain its leadership. Sometimes these anomalies are far beyond the reach of that particular era and they are

shelved for a future generation. Sometimes the anomalies arouse the consensus of contemporary scientists regarding the inability of the ruling paradigm to solve the anomalies confronting this era. At the moment, when an alternative paradigm is available, a scientific revolution will take place. These anomalies are the problems defined by the alternative paradigm, and this alternative paradigm is set out to address them. New norms of scientific inquiries are depicted by this alternative paradigm. Eventually, the alternative paradigm establishes itself as a new ruling paradigm and the previous providential norms of the previous ruling paradigm are regarded as meaningless. This story repeats itself in scientific history. Therefore, a new paradigm is accepted not because of its absolute truth, but because of its “agreed” usefulness with respect to the problems confronting a particular era.

The implication of Kuhn’s account of scientific revolution is that our research concern and possibilities of action in a particular era exclude alternative paradigms in that particular era. For Kuhn, a ruling paradigm is not more true than its alternatives, but it should be more useful in that particular era. Kuhn’s argument implies a certain research concern and possibilities of action: in a particular era, finding out its ruling paradigm and norms of scientific inquiry and acting accordingly because they will be more useful than the alternatives. One problem with this implication is that Kuhn also argues that there is no rule which regulates the choice of the next ruling paradigm in a particular era. The rationality of the next paradigm is beyond the rational framework of the current ruling paradigm. Therefore, this implication of finding a ruling paradigm in a particular era and its norms of scientific inquiry and acting accordingly, guide our research concern and possibilities of action to a ruling paradigm and then we do not know when, where, and how, to shift to the next one before the current paradigm sinks. This is because the rationality of this ruling paradigm cannot tell us what will be the next ruling paradigm: do the anomalies confronting us mean that the current paradigm will manage to solve them, or that they should be shelved for a future generation, or that a new paradigm is coming, or something else? In the meantime, the implication to

finding out a ruling paradigm in a particular era and its norms of scientific inquiry and acting accordingly, excludes from our research concern and possibilities of action, those prescribed by alternative paradigms. This is because alternative paradigms must be less useful than the ruling paradigm. Therefore, when we have a ruling paradigm in hand, we seldom pay attention to its alternatives. The problem is that we will still be more confused about the choice of the next ruling paradigm, because we hardly know the alternatives.

2.4. SOME EXAMPLES OF MUTUAL DEFINITION AND EXCLUSION OF OPPOSITE THEORIES IN THE LITERATURE OF ACTION RESEARCH

Action research is a research whereby practitioners, rather than a researcher alone, are involved in knowledge creation and learning in a research process. The knowledge created or learned does not get credit if it cannot facilitate practitioners to improve their situation; moreover, the knowledge created or learned does not pretend to claim its general relevance and yet it does not confine itself to the particular setting in which it was created or learned either. First presented by Lewin (1946), action research argues that a research is not only for the sake of research itself but also for the improvement of practitioners' action. Having in mind the concern with the improvement of practitioners' action, a researcher in a research process now starts to involve practitioners in knowledge creation and learning in a particular situation. Knowledge created and learned in the research process and in this particular setting will then improve the practitioners' action in that particular setting. An attempt could then be made to apply that knowledge to another setting: it could, for instance, be used as a scenario for the debate on possible actions by practitioners in a different setting. Therefore action research balances the emphasis on action with that on research by improving practitioners' action while at the same time trying to apply the knowledge created and learned to a different setting, without pretending to claim the general

relevance of any knowledge created and learned in the research process of action research. There are several views which are applied in action research to facilitate practitioners to improve their situation. I will introduce below the views of scientific objectification, human judgement, and power relations. Figure 2.3 (see below) shows the mutual definition of these views.

The theme in the literature of action research is similar to that described in the previous section: mutual definition and exclusion in this case, of scientific objectification and human judgement. As in the case of induction and deduction, the view of human judgement needs the support of empirical evidences gained by scientific objectification while the view of scientific objectification needs the support of human judgement to provide a framework for appreciating piecemeal empirical evidences. This mutual definition of human judgement and scientific objectification in the literature of action research also calls to mind Carr's (1962) suggestion that history is a continuous interaction between a historian and his/her facts: without the interpretation and view of a historian, history becomes an encyclopaedia of facts about the past, while without facts about the past, history becomes a historical fiction. That is, the interpretation and view of a historian provide a framework for appreciating and organising piecemeal empirical facts about the past while piecemeal empirical facts about the past also constitute and shape the interpretation and view of a historian. And yet, while human judgement and scientific objectification define each other, these two views also similarly try to exclude each other in the literature of action research.

The theme of mutual definition and mutual exclusion of opposite theories and their research concern and possibilities of action need understanding in a broader sense here. We cannot regard the mutual definition and exclusion of scientific objectification and human judgement as "all" that is about in the literature of action research. Scientific objectification and human judgement as a whole might produce a further opposition - something beyond the rationality of scientific objectification and human judgement as a

whole - such as the power relations. For example, we might regard power as a source which produces empirical evidences in the social context. Thus, in the social context, power makes things happen. Then the theme of mutual definition and exclusion of opposite theories and their research concern and possibilities of action may arise again. As we can see in Figure 2.3, the view of power relations needs both the support of scientific objectification to provide empirical evidences observed and the support of human judgement to provide frameworks for appreciating piecemeal empirical evidences. The support of scientific objectification and human judgement produces frameworks to appreciate the power relations. Without these frameworks provided by scientific objectification and human judgement, power relations cannot produce empirical evidences in accordance with them in the social context. In addition, the view of scientific objectification and human judgement as a whole also needs the support of power relations to produce empirical evidences. Similarly, without these empirical evidences produced by power relations in the social context, scientific objectification and human judgement cannot provide any frameworks. And yet, these two views also similarly try to exclude each other in the literature of action research. Some issues of action research (Su, 1996) will be used to address the literature: the relationship between a researcher and practitioners; the role of a professional researcher and practitioners regarding skills required; conflict; power; desirable action; and the consequence of applying the approach.

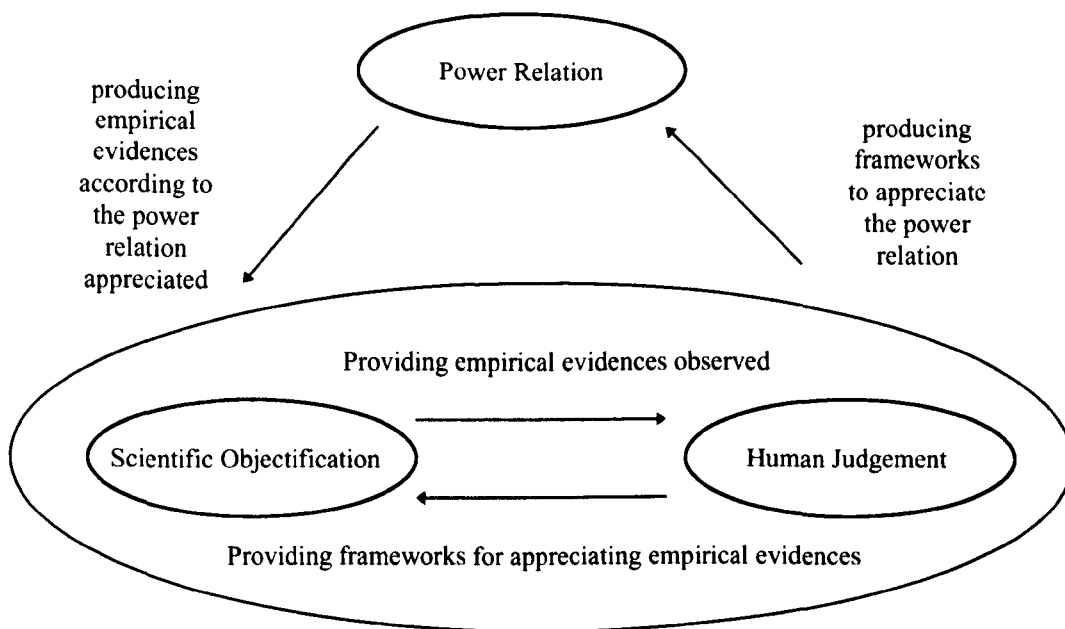


Figure 2.3: Diagram of the mutual definition of scientific objectification, human judgement, and power relations.

Before discussing the literature of action research, it is worth noting that social reality is more complicated than any particular rational framework can address. Scientific objectification, human judgement and power relations, taken together are still not “all” that happens in the social context. They, as a whole, might produce an even further opposition - something which is still beyond the rationality of them as a whole. For instance, the view of modes of production and economic relations (i.e., the view of Historical Materialism) argues that modes of production and economic relations are the decisive factors and human judgement and power relations are shaped by them (Engels, 1950, 1969a,b,c, 1987; Marx, 1950, 1970; Su, 1995). Understanding the mutual definition and yet mutual exclusion of opposite theories and their research concern and possibilities of action, this thesis follows the argument of *taking on board opposition*

(Romm, 1996a,b,c, 1997, 1998) and tries to investigate in more depth the relations between opposites.

2.4.1. Lewin's Action Research

First presented by Lewin (1946), Action Research argues that a research should not be a mere academic work, and it should set out also to facilitate practitioners. Lewin rests his practitioner facilitation by Action Research on the application of scientific methods. He argues that practitioners can act better if they act scientifically. That is, practitioners are able to find facts and plan and evaluate their actions scientifically in terms of the relationship between the efforts of their actions and their achievement. In this way, practitioners learn how to act scientifically.

According to Lewin's study of small groups (Moreland, 1996), the relationship between a researcher and practitioners is that a researcher can be regarded as conducting a scientific experiment among practitioners researched within a kind of social laboratory and observing the reactions of practitioners. As in natural science, a researcher of Action Research is then detached from practitioners (the object) researched and the practitioners researched do not have a say in the design of, and the interpretation of the results of, the experiment. The role of a professional researcher regarding skills required is that a researcher should be able to fact-find - to observe the results of the experiment (the reactions of practitioners to different experimental conditions) - and to evaluate them. Lewin (1946, p. 38) refers explicitly to the importance of the experiment as a fact-finding process.

Conflict is not explicitly addressed by Lewin. However, if practitioners can act better by acting scientifically, the implication of Lewin's Action Research might be that science can be regarded as a resolution of conflicts. That is, if practitioners are willing to

follow the results of scientific experiments, the conflict among them can be resolved. Power relations among a researcher and practitioners researched are not explicitly addressed by Lewin either. Lewin does not claim that a researcher should have power over practitioners researched. What Lewin (Schein, 1996) argues is that Action Research can facilitate practitioners to know how scientific experiments can be set up and how practitioners can evaluate their own actions. Therefore, as long as practitioners believe that science can facilitate their actions, the power relationship between a researcher and the practitioners researched is not a relevant question. The desirable actions expected by Action Research are actions which are grounded on fact-finding, planning and evaluation, in terms of the relationship between the efforts of their actions and their achievement. The consequence of applying this approach is that practitioners might *limit their research concern and possibilities of action within the framework of scientific rationality*. Practitioners might rely merely on science to provide solutions for all of their actions. This is why Gustavsen (1992) argues that action research can become a kind of social experimentation that fits in with positivist views about the authority of science.

Lewin's research concern and possibilities of action are how to facilitate practitioners to bring about changes through acting scientifically. Alternative research concerns and possibilities of action regarding human judgement and participation, which oppose scientific objectification and detachment, should be excluded.

2.4.2. Argyris and Schön's Action Science

Also focusing on scientific actions, Argyris and Schön's (1974, 1991) "Action Science" is particularly concerned with scientific inquiry into the improvement of practitioners' learning anxiety. Action Science investigates scientifically the causality between practitioners' self-defensive behaviours and their learning anxiety. Self-

defensive behaviours refer to practitioners' behaviours of protecting their own positions, and learning anxiety refers to practitioners' stopping addressing problematic issues publicly and stopping learning. Therefore, Action Science aims to investigate how self-defensive behaviours cause learning anxiety. Action Science comes up with a Model I pattern of thinking: how practitioners become self-defensive - for instance, when they are embarrassed - stop further discussion and learning, and engage themselves in self-defensive behaviours. Action Science argues that the Model I pattern of thinking can be broken by engaging practitioners in a project (Action Science project), where they may see the relationships among themselves differently. Once practitioners have a different and yet more comfortable feeling about their relationships with one another, they will stop self-defence. They will be able to shift to the Model II pattern of thinking: a non-self-defensive and non-self-protective relationship among practitioners which improves their learning (Argyris and Schön, 1996, p. 36). Practitioners will then open their minds to one another and address problematic situations "by coming to see and act in them in new ways" (1996, p. 36).

The relationship between a researcher and practitioners in Action Science is that a researcher, similar to that of Action Research, can be regarded as conducting a scientific experiment among practitioners researched, regarding the following statements: that self-defence causes learning anxiety and that a non-self-defensive and non-self-protective relationship among practitioners improves their learning. The practitioners' reactions regarding their openness towards addressing problematic issues publicly, are observed. In Action Science, practitioners researched are allowed to have a say in the design of, and the interpretation of the results of, the experiment, although the researcher still dominates the process (Whyte, 1991a). The role of a professional researcher concerning skills required is that a researcher should be able to fact-find (i.e., to observe the result of the experiment regarding practitioners' openness towards addressing problematic issues publicly) and to evaluate it, and to set up the experiment (an Action Science project). According to Argyris and Schön the cycle of creating and

testing hypotheses can come to a close “when their [practitioners’] inquiry enables them to achieve their intended results and when they like, or can live with, the unintended side effects inherent in their designing” (1996, p. 37).

Conflict is not explicitly addressed by Action Science. However, if practitioners can act less self-defensively, the implication of Argyris and Schön’s Action Science might be that science can be regarded as a resolution of conflicts. That is, if practitioners are willing to follow the results of scientific experiments - see the relationships among themselves differently and continue to open their minds with one another - the conflict among them might be resolved. The power relations among a researcher and practitioners researched are not explicitly addressed by Action Science either. Argyris and Schön do not claim that a researcher should have power over practitioners researched. What they argue is that Action Science can facilitate practitioners to know how self-defence causes learning anxiety and how a non-self-defensive and non-self-protective relationship among practitioners improves their learning. Therefore, as long as practitioners believe that science can facilitate their actions, the power relationship among a researcher and practitioners researched is not a relevant question. The desirable actions expected by Action Science are actions which are grounded on the result of Action Science’s experiments. That is, stop self-defence and open your mind! The consequence of applying the approach, similar to Action Research, is that practitioners might limit their research concern and possibilities of action within the framework of scientific rationality. Practitioners might rely merely on science to provide solutions for all of their actions.

Similar to Action Research, Argyris and Schön’s Action Science’s research concern and possibilities of action are, then, how to facilitate practitioners to act scientifically regarding the question of learning anxiety and of the improvement of learning. An alternative research concern and possibilities of action *regarding human*

judgement and participation, which oppose scientific objectification and detachment, would, however, be excluded.

2.4.3. Whyte *et al.*'s Participatory Action Research

Whyte, Greenwood and Lazes's (1991) "Participatory Action Research" (PAR) explicitly emphasises practitioners' judgement and participation (Whyte, 1991a,b). Whyte *et al.*'s Participatory Action Research can be regarded as being issue-emerging oriented rather than testing and observing causal relationships. In Participatory Action Research, issues emerge during the research process through the judgement and participation of practitioners rather than being predetermined and brought-in from outside by a researcher. In order to allow issues and their solutions to emerge among practitioners, a researcher needs to be very sensitive about the responses of practitioners towards one another and towards the researcher himself or herself. Trust between a researcher and practitioners and among practitioners themselves is therefore very important. This is because if there is no mutual trust, issues and their solutions are either unlikely to emerge or will become a kind of manipulation.

Looking at Participatory Action Research in this way, we can understand why Whyte (1991b, p. 5) suggests a researcher involve practitioners "as active participants in the research process" and Whyte *et al.* (1991) argue that a researcher should involve practitioners in the whole process of research: practitioners should be involved in the design of the research, the data collection and the analysis of the data collected, the interpretation of the results of the research, and the consideration of what actions they should take to improve their situation. In a case study carried out in Xerox, Whyte *et al.* (1991, p. 26) introduced an organisational learning process by applying Participatory Action Research. Whyte *et al.* did not bring in any predetermined form of organisational learning for Xerox; rather they emerged with practitioners Xerox's way of

organisational learning through the research process. They asked all the involved practitioners in Xerox about how they could learn from one another. This was done by inviting practitioners in interviews to “select controversial issues and research them among people most likely to be at odds with them” (Whyte *et al.*, 1991, p. 35). Practitioners then learned from one another through the addressing of controversial issues, and ways of learning were emerged in the research process (p. 36). That is, with the initiation and facilitation of a researcher for the learning process, ways of learning emerged among practitioners and the researcher. In this sense, a researcher should not be detached from the practitioners he or she would like to study in the social context, if the researcher focuses on issue-emerging rather than on testing hypotheses.

The relationship between a researcher and practitioners is that a researcher can be regarded as facilitating an issue-emerging and learning process among the practitioners researched. A researcher of Participatory Action Research does not dominate the scientific inquiry. The role of a professional researcher concerning skills required, is that a researcher should be able to facilitate practitioners to trust one another and the researcher himself or herself. A researcher should also be able to facilitate an issue-emerging and learning process among practitioners through addressing controversial issues while being not biased on any particular side. Conflict is addressed in Participatory Action Research by practitioners’ learning to trust one another, the researcher, and the research process through the addressing of controversial issues. Conflicts are resolved when practitioners and a researcher trust one another and they address conflicts like controversial issues. The power relation among practitioners themselves is not explicitly addressed by Participatory Action Research. The power relations between a researcher and practitioners are balanced by a researcher’s regard that the practitioners researched are active participants. Whyte *et al.* did not show in the Xerox case what might occur if practitioners, union or management for instance, tried to insist on their views. What they showed was that practitioners did not try to insist on their views, trusted one another, and learned from one another. Action Science accuses

Participatory Action Research of failing to address deeper issues regarding the unconscious defensive mechanism among practitioners, which generate conflicts and unilateral control (Argyris and Schön, 1991). In the meantime, Participatory Action Research argues that it is precisely the addressing of defensive causes that might stop possibilities of actions (Whyte, 1991a). The desirable actions expected by Participatory Action Research are actions which are grounded on mutual learning and are emerged among practitioners through the learning and issue-emerging process of Participatory Action Research. It does not matter so much what kinds of actions emerge as long as they emerge through participation by and mutual learning among practitioners. The consequence of applying the approach is that practitioners might limit their research concern and possibilities of action within the framework of *mutual learning among practitioners*. Practitioners might rely merely on human participation and judgement to provide solutions for all of their actions.

Whyte *et al.*'s research concern and possibilities of action are how to facilitate practitioners to bring about changes through the process of mutual learning. It seems that, for instance, the argument that apples will not drop down to the ground, holds, if there is agreement to that effect among practitioners and a researcher. That is, researches and actions need not to be tested in an objectified manner, as long as they emerge through human judgement and participation. In this way, alternative research concern and possibilities of action regarding scientific objectification and detachment, which oppose human judgement and participation, are similarly excluded by Participatory Action Research.

2.4.4. Reason's Collaborative Inquiry

While Whyte *et al.*'s Participatory Action Research encourages practitioners to discard the power relationship among them for a moment and learn to trust and listen to

one another, Reason's Collaborative Inquiry (Reason, 1988, 1991; Reason and Heron, 1996) encourages them to address it directly. Reason's Collaborative Inquiry can be regarded as being oriented to challenge power and norms. In Collaborative Inquiry, current power relations or norms are directly challenged in order to bring about better justice and effectiveness during the research process. This challenge is done through a researcher's encountering practitioners regarding the current power relations and norms by which they conduct their lives. Therefore, a researcher also needs to be able to deal with his or her own personal uneasiness, as well as that of practitioners. This is because the researcher's direct encountering practitioners regarding the current power relations and norms, by which they conduct their lives, produces uneasiness for the researcher himself or herself and for practitioners as well. Although uneasiness is felt by a researcher and practitioners during the research process, they together will be able to transform themselves and bring about better justice and effectiveness (Moggridge and Reason, 1996).

Looking at Collaborative Inquiry in this way, we can understand why Reason (1988, 1991) argues that Collaborative Inquiry is an unconventional way of addressing issues, which is originated from a fundamentally different perspective. In the initiation process, a researcher should encounter practitioners regarding the power relations and norms that practitioners bring into the research context (Reason, 1991). Reason (1988, p. 28) argues that Collaborative Inquiry needs to address power relations and norms among practitioners explicitly and that it could become "an upsetting business". In a project carried out in a city hall, Krim (1988, p. 148) directly challenged the norms of the city hall where "nice people will get eaten-up" and "open sharing of information was viewed as dangerous and foolhardy" (p. 145). Krim's (1988, p. 152) approach brought him uneasiness and he tried to set some working rules to deal with this. Despite all the uneasiness felt by a researcher and practitioners, Moggridge and Reason (1996) suggest the whole process makes it possible to bring about better justice and effectiveness. Krim's (1988, p. 162) claim of his managing to transform the original norms of hostility

to more participatory and co-operative ones, seems to suggest a similar result. Krim's claim also in some way affirms Reason and Heron's (1996, p. 83) argument: it is possible for practitioners to transform themselves through the research process of Collaborative Inquiry.

The relationship between a researcher and practitioners in Collaborative Inquiry is that a researcher can be regarded as facilitating a power-challenging and mutual learning process among practitioners researched. Similar to Participatory Action Research, a researcher of Collaborative Inquiry is no longer detached from the practitioners researched. In addition, since Collaborative Inquiry is explicitly concerned with power relations, a researcher of Collaborative Inquiry does not regard himself or herself as having any right to dominate the scientific inquiry. Therefore, the practitioners researched do have a say in the whole research process. And yet, any say from practitioners or a researcher needs balancing with another perspective regarding the issue raised, in order to prevent domination. In this sense, practitioners of Collaborative Inquiry are regarded as co-researchers and the research process is to make sure all parties can have an equal chance to contribute to the inquiry and mutual learning. The role of a professional researcher concerning skills required is that a researcher should be able to facilitate a power challenging and mutual learning process among practitioners through directly encountering the current power relations and norms. Because of this direct encountering feature of the approach, a researcher should also be able to deal with his or her own personal uneasiness as well as that of practitioners. Conflict is addressed by Collaborative Inquiry by practitioners' learning to encounter directly the current power relations and norms through the initiation and facilitation of a researcher. Conflicts are regarded as a nature of life, which must be faced directly. Power relations among a researcher and practitioners, and among practitioners themselves, are balanced by preventing any domination in the research process. In Action Research and Action Science, power relations among a researcher and practitioners, and among practitioners themselves, are not an issue because science is the power. In Participatory Action

Research, power relations between the researcher and practitioners, and among practitioners themselves, are left alone because they should trust one another. In Collaborative Inquiry, power relations between the researcher and practitioners, and among practitioners themselves, are explicitly addressed and any domination needs to be prevented. The desirable actions expected by Collaborative Inquiry are actions which are grounded on the mutual learning and power-challenging research process. The consequence of applying the approach is that practitioners might limit their research concern and possibilities of action within the framework of mutual learning and power challenging among practitioners. Practitioners might rely merely on challenging the power relations to provide solutions for all of their actions.

Collaborative Inquiry's research concern and possibilities of action are how to facilitate practitioners to bring about changes through directly *encountering the current power relations and norms*. It seems for Collaborative Inquiry that new power relations or norms must be a better justice and be more effective than the current ones. That is, new researches and actions need not be tested in an objectified manner or be judged according to whether they make sense to practitioners in that particular setting, as long as they emerge through challenging the power relations and norms of the status quo. In this way, alternative research concern and possibilities of action regarding the scientific objectification and detachment, or regarding the making sense of how and why the current human judgement, participation, and power relations "work" in a particular setting, which is not relevant to challenging the current power relations and norms, are excluded by Collaborative Inquiry.

Understanding the complexity regarding the reality of the world, Romm (1996a,b,c, 1997, 1998) argues that the point is whether or not any particular research is open to take on board of opposition. Romm is one of the social constructivists (Denzin and Lincoln, 1994, 1998a,b,c; Gergen, 1994; Lather, 1993, 1995; Lincoln, 1985, 1995; Shotter, 1993a,b; Shotter and Gergen, 1989) who argue that our understanding of the

world can never be complete and yet it can be broadened by co-constructing it with its alternatives. That is, our understanding of the world is broadened when we surface and challenge our assumptions of the world by encountering the points of view of others. Romm agrees that some practitioners in the end might still choose the way they used to act. And yet, the point is that these practitioners become aware that their concern is not the only concern which people could have and that their action is not the only action which people could take.

Understanding the mutual definition and exclusion of opposite theories regarding their own research concern and possibilities of action, we now are able to address the following question. Exists there one single rational framework which is comprehensive enough alone to address social reality? If we still believe that there exists such a rational framework, then we at the same time close ourselves completely to alternative rational frameworks and their research concerns and possibilities of action prescribed by them. If we do not, then we might start to open up to alternatives and to take on board opposition.

2.5. CONCLUSION

This chapter has presented an argument for the need of openness towards alternatives and of taking on board opposition. Through the discussion of some theories regarding the philosophy of science, it was argued that they try to exclude one another from their own research concern and possibilities of action although they define one another. Similarly, through the discussion of some theories in the literature of action research, I show that these theories try to exclude one another from their own research concern and possibilities of action although they define one another. Therefore, highlighted was the danger that we come to believe that there exists one theory which is comprehensive enough alone, to direct our research concern and possibilities of action;

that our research concern and possibilities of action are complete. At the same time, we conceal completely from ourselves the opposite of the theory which we choose and the research concern and possibility of action prescribed by it. Openness towards alternatives and taking on board opposition are then suggested in order to see what has so far been excluded by the theory which we choose (or might choose).

In the next chapter - Chapter Three - examples and theories will be given regarding the mutual definition of opposites and the mutual exclusion of them. In line with the social constructivist view and the argument of openness to alternatives, the chapter - "The Systemic Link between Opposites" - will explore in more depth the relationship between opposites.

Chapter Three: The Systemic Link between Opposites

We develop wonderful skill in manufacture, part of which we devote to making ships, automobiles, telephones, and other means of living luxuriously at high pressure, while another part is devoted to making guns, poison gases, and aeroplanes for the purpose of killing each other whole-sale. We have a first-class system of administration and taxation, part of which is devoted to education, sanitation, and such useful objects, while the rest is devoted to war. ... We have a police system of unexampled efficiency, part of which is devoted to the detection and prevention of crime and part to imprisoning anybody who has any new constructive political ideas.

(Russell, 1961, p. 559)

3.1. INTRODUCTION

In this chapter, I would like to argue that there is a link between opposites and that it is systemic. Firstly, I will give some brief examples to show that opposites may conceal and exclude from each other and that they cannot be dealt with separately. Secondly, I will show why there is a link between opposites through showing that they are linked in terms of description and that they are also linked in terms of consequences of purposeful actions. Thirdly, I will offer an account of the concepts of systems thinking. And fourthly, I will show why the link between opposites is systemic.

3.2. SOME BRIEF EXAMPLES SHOWING THAT OPPOSITES MAY CONCEAL AND EXCLUDE EACH OTHER AND THAT THEY CANNOT BE DEALT WITH SEPARATELY

Our preferences and their opposites cannot be dealt with separately. Our preferences and their opposites are, however, normally separately dealt with. Indeed, they are dealt with so separately as if they could be cut off and there is no link between them. Our preferences are highly encouraged and their opposites are seldom seriously considered. The three examples from Russell (cited above) show how the success of our preferences, such as the wonderful skill in manufacture; a first-class system of administration and taxation; and a police system of unexampled efficiency may conceal and exclude from people's attention their opposites such as that they may also be devoted to making guns, poison gases, and aeroplanes, for the purpose of killing each other whole-sale; to war; and to imprisoning anybody who has any new constructive political ideas.

In the managerial context, famous examples are numerous.¹ The success of proprietary mainframe computer and its corresponding centralised management information system (MIS) made IBM a blue giant (Moore, 1998, p. 126). However, this success was so huge that it stamped itself on all the employees' minds and concealed and excluded from all the employees their customers' demand on an open client-server decentralised Unix system, which was opposite to their preference and value. That demand was very strong but the success of IBM gave people therein eyes that could not see, and ears that could not hear. The market of workstations was completely lost to Sun, Hewlett-Packard, Sequent, and AT&T, although IBM had at the time the most advanced technology and the strongest sales team on workstations. That success also delayed IBM's response to the development of personal computers later on. In the end, this development of the opposite seriously destroyed IBM and made it a giant in a blue mood, despite that IBM has still the strongest expertise on manufacturing mainframe

computers today, but it cannot sell them well. IBM was not the only case in the aspect; mainframe computer and minicomputer manufacturers such as DEC, Unisys, Fujitsu, Hitachi and NEC did the same thing.

Similar to that was the success of Computerland and Businessland, which made them close down in the end (Moore, 1998, p. 93). Computerland and Businessland were computer service providers. They were very successful when mainframe computers and minicomputers were at their glorious age, which demanded plenty of expensive computer services. However, their success also concealed and excluded from them the opposite development of the need for computer services - the development of workstations and personal computers which demanded few, if not no, computer services. That is, their success concealed and excluded from them its opposites. This concealment and exclusion of the opposites of their success made them continued to follow their knack to success - i.e., to expand and to make available more computer services - and eventually they had to close down.

Could IBM and other mainframe computer and minicomputer manufacturers mentioned above, and Computerland and Businessland, have prevented this? This thesis will not provide a definite answer to this question. What this thesis suggests in the later chapters is that they should make efforts to take on board the opposite of their success which they could have envisaged. For instance, this thesis suggests that they consider what they might have done in the situation when mainframe computers and minicomputers or computer services were suddenly no longer popular. In that situation, manufacturing workstations and personal computers was not a bad idea. However, this thesis also argues that it is impossible to take all the opposition on board. Therefore, this thesis suggests in the later chapters these companies have had a reserve for the irrelevant or unknown opposite, which is to reserve some of their resources, for instance, policies, time, money, ..., etc., available for the irrelevant or unknown. That is, the irrelevant or unknown opposite is accounted for by leaving some of their resources unplanned; these

unplanned resources could have provided these companies with the chances of having a trial for some seemingly irrelevant ideas or they could have provided these companies with the chances of changing their purposes when their purposes were not allowed by their situation at that time. For instance, with these reserved resources, they might have a trial of programming business computer software. Therefore, by taking on board the opposition which they could envisage, these companies would have had more opportunities to see what their success would have had otherwise concealed and excluded from them. By having had a reserve for the opposite irrelevant or known, these companies would have been all right when they had taken on board the opposition envisaged and still had failed to prevent this.

What is shown above are the examples which illustrate that opposites may conceal and exclude each other and that they cannot be dealt with separately. The next section will provide a theoretical account for the link between opposites.

3.3. WHY IS THERE A LINK BETWEEN OPPOSITES?

We are accustomed to take progress for granted: to assume without hesitation that changes which have happened during the last hundred years were unquestionably for the better, and that further changes for the better are sure to follow indefinitely. On the Continent of Europe, the war and its consequences have administered a blow to this confident belief, and men have begun to look back to the time before 1914 as a golden age, not likely to recur for centuries.

(Russell, 1961, p. 555)

3.3.1. What is one's opposite?

One's opposite addressed in this thesis is regarded as something beyond one's own rational framework. The apparent opposite expression of two poles which one could envisage, are not necessarily opposites addressed in this thesis. As shown in Chapter Two, the theories based on scientific objectification may be an opposite against the theories based on human judgement. And yet, when one is capable of addressing scientific objectification and human judgement together, they as a whole become a homogeneous rationality and they are no longer opposites against each other. At that moment, their opposite is something beyond this whole, such as power relations. Therefore, one's opposite addressed in this thesis could be something apparently opposite which one could envisage, or it could be irrelevant or unknown to one's rational framework as long as it is not addressed by and is beyond one's rational framework at that moment.

Therefore, there are two kinds of opposition which could be, but not necessarily, the opposite addressed in the thesis. One kind of them is the apparent opposite which one could envisage and the other kind is the opposite which is irrelevant or unknown to one's rational framework. The relationship between one, one's opposite which one could envisage, and one's opposite irrelevant or unknown to one's rational framework, are shown below in Figure 3.1. We can use as an example the theories based on scientific objectification, the theories based on human judgement, and the theories based on power relations mentioned in Chapter Two and above, to illustrate the relationship between one and two kinds of one's opposition mentioned just now. When one has adopted only the theories based on scientific objectification, the theories based on scientific objectification are one's rational framework. One's rational framework is denoted by the grid without shadow in the figure. The theories based on human judgement are the kind of one's opposite which one could envisage. At that moment, the theories based on power relations are the kind of one's opposite which is still irrelevant

or unknown to one’s rational framework. That is, at that time, both the theories based on human judgement and the theories based on power relations are still beyond one’s rational framework and they both are opposite to one’s rational framework; both of them are denoted by the grids with shadow in the figure.

<p>One’s rational framework.</p> <p>Such as the theories based on scientific objectification mentioned in Chapter Two.</p>	<p>One’s opposite which one could envisage.</p> <p>Such as the theories based on human judgement mentioned in Chapter Two.</p>
<p>One’s opposite irrelevant or unknown to one’s rational framework.</p> <p>Such as the theories based on power relations mentioned in Chapter Two.</p>	

Figure 3.1: The relationship between one’s rational framework, one’s opposite which one could envisage and one’s opposite irrelevant or unknown to one’s rational framework. In this figure, both one’s opposite which one could envisage and one’s opposite irrelevant or unknown to one’s rational framework (the grids with shadow) are opposite to one’s rational framework (the grid without shadow). This figure uses as an example the theories based on scientific objectification, the theories based on human judgement, and the theories based on power relations mentioned in Chapter Two.

One could address the kind of one’s opposite which one could envisage by taking it on board and then it is not opposite to one’s rational framework. The theories based on scientific objectification - now becoming one’s originating rationality - could address the theories based on human judgement by taking them on board. At that time, the theories based on human judgement are not opposite to one’s rational framework, which addresses both scientific objectification and human judgement. Meanwhile, the theories based on power relations are still beyond one’s rational framework at the moment because they are beyond both of scientific objectification and human judgement, and they are still opposite to one’s rational framework. The relationship between one’s originating rationality, one’s opposite which one could envisage and

which is taken on board by one’s originating rationality, and one’s opposite irrelevant or unknown to one’s originating rationality is shown in Figure 3.2 (see below). In this figure, the theories based on scientific objectification are one’s originating rationality and the theories based on human judgement are one’s opposite which one could envisage and which is taken on board by one’s originating rationality; both of them are addressed by one’s rational framework. One’s rational framework is denoted by the grid without shadow and the grid with light shadow in the figure. The theories based on power relations are one’s opposite irrelevant or unknown to one’s originating rationality and they are still opposite to one’s rational framework; they are denoted by the grid with stripe-like shadow in the figure.

<p>One’s originating rationality.</p> <p>Such as the theories based on scientific objectification mentioned in Chapter Two.</p>	<p>One’s opposite envisaged and taken on board by one’s originating rationality.</p> <p>Such as the theories based on human judgement mentioned in Chapter Two.</p>
<p>The opposite irrelevant or unknown to one’s originating rationality.</p> <p>Such as the theories based on power relations mentioned in Chapter Two.</p>	

Figure 3.2: The relationship between one’s originating rationality, one’s opposite envisaged and taken on board by one’s originating rationality, and one’s opposite irrelevant or unknown to one’s originating rationality. In this figure, both one’s originating rationality (the grid without shadow) and one’s opposite envisaged and taken on board by one’s originating rationality (the grid with light shadow) are addressed by one’s rational framework. One’s opposite irrelevant or unknown to one’s originating rationality (the grid with stripe-like shadow) is still opposite to one’s rational framework. This figure uses as an example the theories based on scientific objectification, the theories based on human judgement, and the theories based on power relations mentioned in Chapter Two.

3.3.2. Opposites being linked in terms of description

Opposites are linked in terms of description. We may consider the link between being “subjective” and being “objective”, and the link between being “radical” and being “conservative”. Is objectivity being objective purely because of itself? Is radical being radical purely because of itself? Without objectiveness, what is subjectivity? Without conservative, what is radical? Without other people, how do we know we are tall or short, man or woman? So is vice versa. Therefore, without its opposites, a description loses its basis of comparison. In the meantime, to be subjective, objective, radical, conservative, tall, short, man or woman are all linked. Let us suppose a situation in which one’s originating rationality is to be subjective. The opposite envisaged and taken on board by one’s originating rationality could be one of being objective. The opposite irrelevant or unknown to one’s originating rationality in this situation becomes to be radical, conservative, tall, short, man or woman. Is to be radical, conservative, tall, short, man or woman irrelevant purely because of itself? No, each of them can be a rationality itself. They become irrelevant because they are irrelevant to the originating rationality of being subjective in the supposed situation. Similarly, is to be objective an opposition purely because of itself? No, to be objective can itself be a rationality. It becomes an opposition because it is opposite to the originating rationality of being subjective in the supposed situation. Therefore, to begin to identify one’s originating rationality as to be subjective, produces the link between one’s originating rationality and the opposite which could be envisaged by one’s originating rationality (i.e., to be objective); and the link between one’s originating rationality and the opposite irrelevant or unknown to one’s originating rationality (i.e., to be radical, conservative, tall, short, man or woman). The link between one’s originating rationality, the opposite envisaged and taken on board by one’s originating rationality and the opposite irrelevant or unknown to one’s originating rationality in this supposed situation is shown below in Figure 3.3.

One's originating rationality to be subjective.	One's opposite envisaged and taken on board by one's originating rationality: to be objective.
<p>The opposite irrelevant or unknown to one's originating rationality.</p> <p>Such as the rationality of being radical, conservative, tall, short, man or woman.</p>	

Figure 3.3: The link between one's originating rationality, one's opposite envisaged and taken on board by one's originating rationality, and one's opposite irrelevant or unknown to one's originating rationality in a supposed situation, where one's originating rationality is to be subjective.

Thus, in terms of description, opposites are inter-dependent on and are linked with one another.

A child-like story called *The Ugly Duckling* (Anderson, 1967, 1994) might explain to us further the inter-dependence and the link between opposites in terms of description. *The Ugly Duckling* was about a swan which was born among a group of ducks. The swan did not know that it was a swan but thought that it was an ugly duckling. It was so different from the rest of its group that not only its pals but also it itself deeply believed that it was ugly and strange. Its belief was strong because it was always ugly and strange compared with whoever it met. It could not relate itself to a group of swans even when it saw them because it was too young and was still plump and grey. Next year, it grew up, and, when it met a group of swans again, it saw itself as a grown-up swan:

[H]e saw beneath him his own form, no longer that of a plump, ugly, grey bird - it was that of a swan. It matters not to have been born in a duckyard, if one has been hatched from a swan's egg. The good creature felt himself really elevated by all the troubles and adversities he had experienced. He could now rightly understand his own happiness ...

(Anderson, 1994, p. 162)

At that time, it then identified that it was a swan and not an ugly duck. It started to be beautiful. It had been ugly because it thought it was a duck and it became beautiful because it thought it was a swan. It would not have been ugly and strange if it had been born in a group of swans because everyone was similarly ugly and strange. Its ugliness or beauty was not purely because of itself but also because of the basis of comparison - the comparison with others (that is, any other). What is it? an ugly duck? a beautiful swan? or whatever? What is the basis of comparison? In other words, if a swan born in a group of ducks may be an ugly duckling, a duckling born in a group of swans may be an ugly swan. Therefore, what one is described as, depends on what its opposite is as much as what one is - this is the mutual definition and exclusion of opposites in terms of description. One's opposite is part of one's identity and one's opposite has to be concealed and excluded from one's identity. For instance, a swan born into a group of ducks may be an ugly duckling. But the swan does not know that the reason why it is ugly is because it is compared with other ducks in the group. Similarly, a duck born into a group of swans may be an ugly swan. But the duck does not know that the reason why it is ugly is because it is compared with other swans in the group, not with other ducks.

Thus, the originating rationality of considering a little swan as a duck may make the little swan an ugly duckling. The opposite envisaged and taken on board by the originating rationality to consider the little swan as a swan may make the little swan a beautiful swan. The opposite irrelevant or unknown to the originating rationality to consider the little swan as a chicken, a cat, or something else, may make the little swan an ugly chicken, an ugly cat, or some other ugly creature. Therefore, to begin to identify the little swan as a duck rather than a swan, a chicken, a cat, or something else, produces the link between an ugly duckling, a beautiful swan, an ugly chicken, an ugly cat, or some other ugly creature. The link between one's originating rationality, the opposite envisaged and taken on board by one's originating rationality and the opposite irrelevant or unknown to one's originating rationality in the situation where the little swan is identified originally as a duck, is shown below in Figure 3.4.

One's originating rationality to identify a little swan as a duck (which may make the little swan an ugly duckling).	One's opposite envisaged and taken on board by one's originating rationality: to identify the little swan as a swan (which may make the little swan a beautiful swan).
<p>The opposite irrelevant or unknown to one's originating rationality.</p> <p>Such as the rationality of identifying the little swan as a chicken, a cat, or something else (which may make the little swan an ugly cat, an ugly chicken, or some other ugly creature).</p>	

Figure 3.4: The link between one’s originating rationality, one’s opposite envisaged and taken on board by one’s originating rationality, and one’s opposite irrelevant or unknown to one’s originating rationality in a situation where a little swan is originally identified as a duck.

3.3.3. Opposites being linked in terms of consequences of purposeful actions

Opposites are also linked in terms of consequences of purposeful actions. In the managerial context, efficiency, preferences, desires, wills, and purposes are our concern and what about their opposites? Efficiency is measured in accordance with how well our preferences, desires, wills, and purposes - in short, what we want - are achieved. But how about something beyond what we want which is concealed and excluded by what we want? Are they linked to each other? What we want and things beyond what we want are conventionally dealt with separately as if there is no link and there is a clear cut between them. What we want is highly encouraged and things beyond what we want are cut off and thrown away as far as possible. However, is it possible to throw away things beyond what we want - the opposite of what we want? Let us use our everyday life as an example. Our everyday life does not consist of one single aspect but of several inter-related aspects. We do not live to work only; we also live to have recreation, to have a healthy body, a happy family, friends, ..., etc. What we want starts our preference and we start to trade off among these inter-related aspects: which is/are more important than

another/others? Two opposite groups are produced. Then we put more efforts on the more important one and suppress the less important. And then we emphasise more and more on the more important one and suppress more and more on the less important until one or several aspect(s) of the less important group break(s) down and our life breaks down “all together”.² Therefore, opposites mutually define and exclude one another and opposites are linked in terms of the consequences of our purposeful actions. For instance, let us pause here and ask ourselves a question regarding the example of our everyday life mentioned above. The question is, what we would do in the situation in which our success regarding our work stops working suddenly for whatever reason? Well, recreation, a healthy body, a happy family and friends are supposed to be what we will have at that moment. However, we will not have them because they have been unimportant for long, we have been suppressing them for long, and they are no longer with us. Let us think about this: are they really not important because of themselves or does our success regarding our work make them unimportant?

Thus, in the supposed situation mentioned above where one's originating rationality is to be successful at work, the link between one's originating rationality and the opposite envisaged and taken on board by one's originating rationality and the opposite irrelevant or unknown to one's rationality is shown in Figure 3.5 below. In this figure, one's originating rationality is to be successful at work. The opposite envisaged by one's originating rationality may be to have some recreation which makes one's life more cheerful. The opposite irrelevant or unknown to one's originating rationality may be to have a healthy body, to have a happy family or to have a good relationship with friends. One's originating rationality of being successful at work may make a person who concentrates fully on work a successful person. The opposite envisaged and taken on board by one's originating rationality of simply to live to have recreation to make one's life more cheerful may make the person who concentrates fully on work a person with a boring life. The opposite irrelevant or unknown to one's originating rationality to simply to live to have a healthy body, to have a happy family or to have a good

relationship with friends may make the person who concentrates fully on work an unhealthy person, an uncaring family member or an uncaring friend.

One's originating rationality to be successful at work (which may make a person who concentrates fully on work a successful person).	One's opposite envisaged and taken on board by one's originating rationality: simply to live for recreation in order to make one's life more cheerful (which may make the person who concentrates fully on work a person with a boring life).
<p>The opposite irrelevant or unknown to one's originating rationality.</p> <p>Such as the rationality simply to live to have a healthy body, to have a happy family or to have a good relationship with friends (which may make the person who concentrates fully on work an unhealthy person, an uncaring family member or an uncaring friend).</p>	

Figure 3.5: The link between one's originating rationality, one's opposite envisaged and taken on board by one's originating rationality, and one's opposite irrelevant or unknown to one's originating rationality in a situation where to be successful at work is identified as one's originating rationality.

Thus, is to have some recreation which simply makes one's life more cheerful an opposition because of itself? No, it can be a rationality itself. It becomes an opposition because it is opposite to one's originating rationality of being successful at work. To simply live to have a healthy body, to have a happy family or to have a good relationship with friends; is that irrelevant? No, each of them may be a rationality itself. They become irrelevant because they are irrelevant to one's originating rationality of being successful at work. Therefore, to begin to identify one's originating rationality as successful at work, rather than as having some recreation, a healthy body, a happy family or a good relationship with friends, produces the link between a successful person at work, a person with a boring life, an unhealthy person, an uncaring family member and an uncaring friend. In the meantime, once one or several of these *opposite* aspects of one's life (in relation to this *important* aspect of one's life of being successful

at work) break(s) down, one's life may break down all together. Therefore, opposites are also linked in terms of consequences of purposeful actions.

3.3.4. Our description and achievement of something and the concealment and exclusion of their opposites

Describing and achieving something can conceal and exclude from us the description of and our achievement of its opposites. One's identity is presented by one's opposite and yet by excluding one's opposite at the same time. That is, although one is recognised by opposing one's opposite, one needs to conceal and exclude from oneself one's opposite in order to identify oneself. This is not merely because one neglects to pay attention to one's opposite, but because one has to. The following figure - Figure 3.6 - may illustrate this. What do we see in the picture?

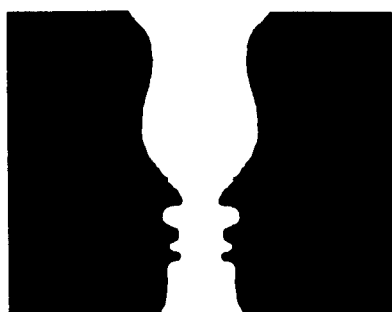


Figure 3.6: My first example of mutual definition and exclusion of opposites.
Source: Adapted from Hwang and Hung, 1992, p. 101.

Some may see a glass; some may see two heads facing each other; some may see both. A glass is recognised by the contrast of the black areas beside it and as soon as it is presented, its contrast becomes its background and context and is concealed and invisible. Similarly, two heads are recognised by the white area between them and as

soon as they are presented, the white area - their contrast - becomes their background and context and is concealed and invisible. Both a glass and two heads as a whole are recognised by the contrast of their conceptual rectangular frame and the white area beyond the frame. They as a whole are presented by the conceptual frame and the white area beyond the frame and yet the conceptual frame and the white area beyond the frame have to go silently.

Therefore, what we can learn from this picture in Figure 3.6, is the danger we are in when we believe we have seen and heard everything about something. At the first glance of the picture, we might see a glass, two heads facing each other, or both of them. If we do not manage to see anything in the picture at the first glance, we might spend some more time on looking at the picture more closely. Paradoxically, we stop paying attention to the picture when we believe we have known all that the picture is about, whatever, we believe, the picture is a glass, two heads, or both. Therefore, our recognition of a glass may conceal and exclude from ourselves the two heads; our recognition of the two heads may conceal and exclude from ourselves the glass; our recognition of both may conceal and exclude from ourselves the conceptual frame of the picture and the white area beyond the frame. Unless we are aware of that one is presented by one's opposite and by the exclusion of one's opposite at the same time, and of that we can only see and hear some aspects of something, we will continue to conceal and exclude from us the opposite of something, which we believe we have known well.

For instance, if we believe that a glass, two heads, a conceptual frame, and white area beyond the frame are all that the picture is about, we might never see a pile of hats in the picture. Some might argue that the picture is "actually" a spreading-out of a cylinder on which a picture of piled hats is printed. In Figure 3.7 shown below, the picture on the upper left corner shows the same picture we saw in Figure 3.6. The picture on the lower left corner shows that we can get a cylinder when we attach together two edges of the picture in Figure 3.6. The picture on the lower right corner of

Figure 3.7 shows that we can see the edges of a pile of four hats printed on the cylinder if we turn the cylinder in the picture on the lower left corner a bit counter-clockwise. The picture on the upper right corner of Figure 3.7 shows a pile of four hats printed on the cylinder if we cut through the right-hand-side edge of the cylinder on the lower right corner and spread out the cylinder. Therefore, the reason why we may see from the picture in Figure 3.6 a glass, two heads facing each other, a conceptual frame, or the white area beyond the frame is because we believe this picture is a two-dimensional picture. The glass, the two heads facing each other, the conceptual frame, and the white area beyond this frame are presented by the assumption that the picture in Figure 3.6 is not a three-dimensional picture and by “excluding” at the same time the possibility that the picture in Figure 3.6 is a three-dimensional picture. From the same picture, we see the danger again that we believe we have seen and heard everything about something.

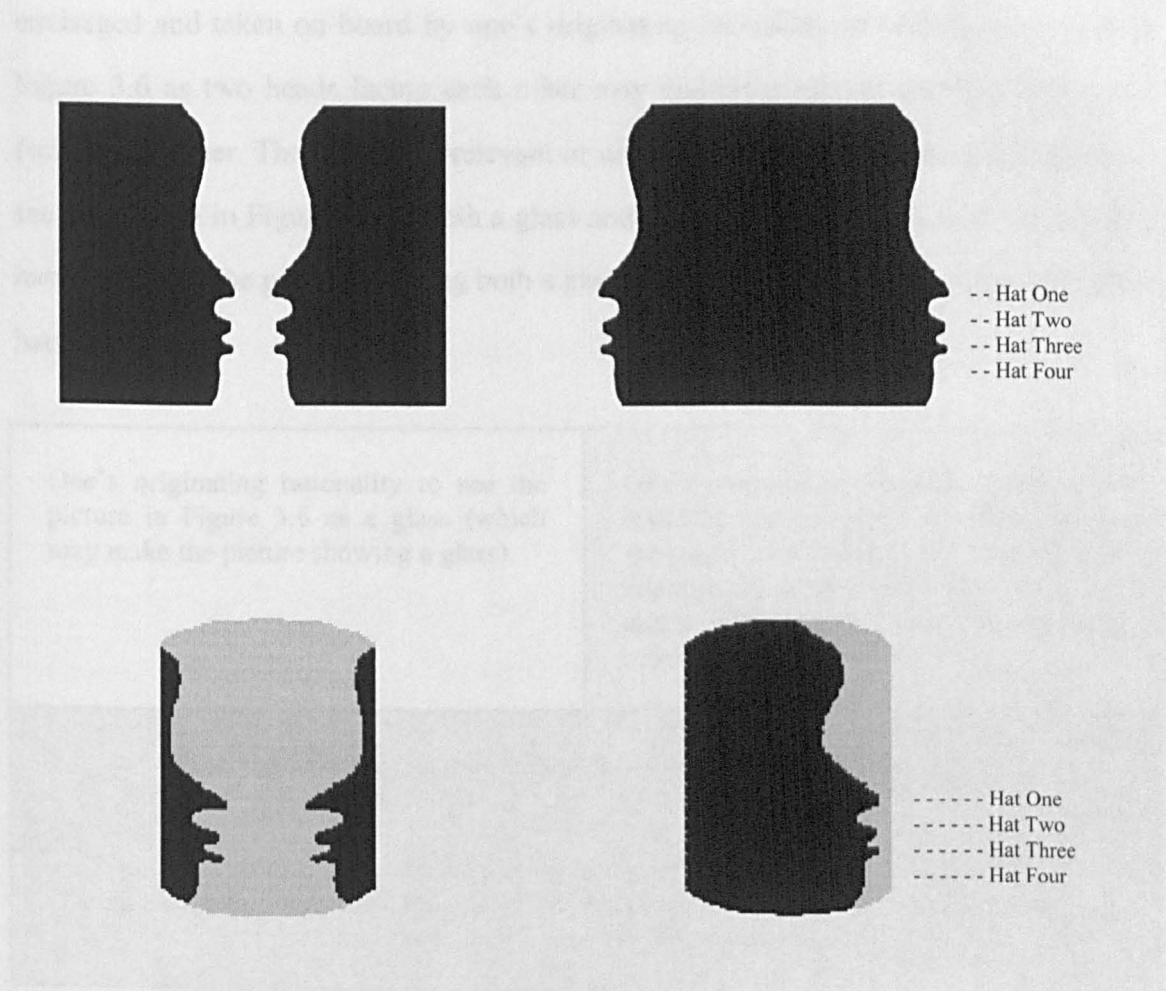


Figure 3.7: The link between one's originating rationality and the opposite envisaged and taken on board by one's originating rationality.

Figure 3.7: My second example of mutual definition and exclusion of opposites.

Let us suppose a situation where one's originating rationality is to see the picture in Figure 3.6 as a glass; the link between one's originating rationality and the opposite envisaged and taken on board by one's originating rationality and the opposite irrelevant or unknown to one's rationality is shown in Figure 3.8. below. The opposite envisaged and taken on board by one's originating rationality may be to see the picture in Figure 3.6 as two heads facing each other. The opposite irrelevant or unknown to one's originating rationality may be to see the picture in Figure 3.6 as both a glass and two heads facing each other or as piled hats. One's originating rationality of seeing the picture in Figure 3.6 as a glass may make the picture showing a glass. The opposite

envisaged and taken on board by one's originating rationality of seeing the picture in Figure 3.6 as two heads facing each other may make the picture showing two heads facing each other. The opposite irrelevant or unknown to one's originating rationality to see the picture in Figure 3.6 as both a glass and two heads facing each other or as piled hats may make the picture showing both a glass and two heads facing each other or piled hats.

One's originating rationality to see the picture in Figure 3.6 as a glass (which may make the picture showing a glass).	One's opposite envisaged and taken on board by one's originating rationality: to see the picture in Figure 3.6 as two heads facing each other (which may make the picture showing two heads facing each other).
The opposite irrelevant or unknown to one's originating rationality. Such as the rationality to see the picture in Figure 3.6 as both a glass and two heads facing each other or as piled hats (which may make the picture showing both a glass and two heads facing each other or piled hats).	

Figure 3.8: The link between one's originating rationality, one's opposite envisaged and taken on board by one's originating rationality, and one's opposite irrelevant or unknown to one's originating rationality in a situation where to see the picture in Figure 3.6 as a glass is identified as one's originating rationality.

Thus, is to see the picture in Figure 3.6 as two heads facing each other an opposition and a concealed contrast because of itself? No, it can be a rationality itself. It becomes an opposition and a concealed contrast because it is opposite to and it contrasts against one's originating rationality of seeing the picture in Figure 3.6 as a glass. Is to see the picture in Figure 3.6 as both a glass and two heads facing each other or as piled hats irrelevant and are they (i.e., both a glass and two heads facing each other or as piled hats) concealed contrasts because of themselves. No, each of them may be a rationality itself. They become irrelevant or become concealed contrasts because they are irrelevant

to and they contrast against one's originating rationality of seeing the picture in Figure 3.6 as a glass. Therefore, to begin to identify one's originating rationality as to see the picture in Figure 3.6 as a glass rather than to see the picture in Figure 3.6 as two heads facing each other or as both a glass and two heads facing each other or as piled hats, produces the link between a glass, two heads facing each other, both a glass and two heads facing each other and piled hats. From the same picture in Figure 3.6, we see the danger again that we believe we have seen and heard everything about something.

Therefore, whenever one is identified, there must be something missing, which has become one's "contrast" to present one's identity, and which has to be concealed and invisible at the same time. The theme of mutual definition and exclusion of one and one's opposite here is similar to that of mutual definition and exclusion of opposite theories mentioned in Chapter Two: one is defined and presented by one's opposite and by excluding one's opposite at the same time. In a word, whenever one is identified, one's opposite has to go, despite that one's opposite does not go but is concealed, invisible, and still linked to oneself, as shown above in Figure 3.8.

Then could we stop concealing and excluding from us the opposite of what we want? Our attempt to have a preference, desire, will, and purpose, produces two opposites, what we want and our purposeful action and things beyond what we want and the counter-action, and the link between them. This link, once produced, cannot be cut off and thrown away although it can be, as always, concealed. This link cannot be dissolved unless it has never been produced, i.e., if we do not want something in particular or we do not act in a purposeful way and thereby their opposite cannot be produced in the first place. Otherwise, we conceal and exclude from us things beyond what we want and the counter-action, and the link between them. Therefore, we cannot stop concealing and excluding from us the opposite of what we want if we want them purposefully.

For instance, satisfying our desires purposefully may conceal and exclude from us our suffering from the process of satisfying our desires. Desiring satisfaction is our deepest desire, but desiring satisfaction is seldom made easier by us by attempting to make our desire smaller and smaller.

My teacher, ... Edgar Arthur Singer Jr., who systematized this childlike wisdom [i.e.: the story of a young man who was granted three wishes] by identifying a desire so universal that it unifies all men at all times. It is the desire to be able to satisfy our desires, whatever they might be, even if we should desire nothing ... (Ackoff, 1976).
(Oshodi, 1985, p. 3)

Indeed, why not. Why have we never considered of wishing nothing? If desiring satisfaction makes us happy, why do we keep our desires bigger and bigger so that we are always in a hurry to satisfy them? Is there an ultimate desire which once satisfied can end people's desire satisfaction circle forever? If the answer is no, how much time is spent on satisfying a desire and how much time is left for our satisfaction of what we have achieved? And again, how much on yet satisfying another desired and how much left for what we have? This paradox can be expressed via a desire satisfaction cycle as illustrated in Figure 3.9.

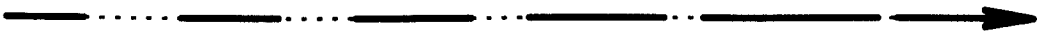


Figure 3.9: Desire satisfaction cycle: time spent on desiring satisfaction denoted by — ; time left for our satisfaction of what we have achieved denoted by

In the long run and as a whole, do people enjoy more from a desire satisfied than suffer more from their desire satisfaction cycle, which makes them always in a hurry and tension (see again Figure 3.9)? Consider the quotation from Russell mentioned in the beginning of this chapter: people live luxuriously at the price of suffering from high pressure! Consider also the quotation from Russell mentioned in the beginning of this

section: the progress which have been made during the last hundred years may conceal and exclude its opposites - the war and the consequences of the war. Therefore, similarly, purposefully satisfying our desire conceals and excludes from us its opposites that we may suffer more from the desire satisfaction cycle and that desiring satisfaction may be made easier by attempting to make our desire smaller and smaller.

3.3.5. The preferences, desires, wills, or purposes which are not necessarily to be achieved

Having shown that opposites are linked to each other, this thesis, however, does not suggest that we do not need to have any preference, desire, will, or purpose at all; what this thesis suggests is that we need to have some preferences, desires, wills, and purposes, but we are also able to change them according to what we believe our situation allows. Through the discussion above, we know the danger of success. Success may conceal and exclude its opposite. As we become more and more successful, we have more and more knack to our success; however, this also means that we have got more and more opposition, the opposites of our knack, to take on board. For instance, what if suddenly our knack does not work anymore for whatever reason. And we gradually then have neglected the possibility of the application of the opposite of our knack. Like that IBM and other mainframe computer and minicomputer manufacturers mentioned above gradually neglected the possibility of the development of workstations and personal computers or that Computerland and Businessland gradually neglected the possibility of the development of computers which did not need computer services. Therefore, when we become more and more successful, we need to become more cautious about our success and the opposites of our success which we could envisage. There might be a need for us to change our preferences, desires, wills, and purposes if our situation does not allow us to have them anymore.

Taking on board opposition enables us to change our preferences, desires, wills, and purposes to those opposite preferences, desires, wills, and purposes which we could envisage. These are still opposite to our originating rationality but they are not opposite to our rational framework, which addresses both our originating rationality and the opposite envisaged and taken on board by our originating rationality. For instance, the preferences, wills, desires, and purposes of IBM and the other mainframe computer and minicomputer manufacturers mentioned above were to be the leading manufacturers of mainframe computers and minicomputers; these might be their originating rationality. Their originating rationality could address the possibility of being the leading manufacturers of workstations or personal computers by taking it on board. That is, for example, if IBM and the other mainframe computer and minicomputer manufacturers mentioned above, had considered the situation in which mainframe computers and minicomputers were suddenly no longer popular, they might have initiated within or without their companies different brands to deal with the business of manufacturing workstations and personal computers. Manufacturing workstations and personal computers under different brands would not have affected much their originating preferences. Just like that car manufacturers use different brands within or without their companies to cover a wide range of cars from economic to luxurious models. At that time, being the leading manufacturers of workstations or personal computers was not opposite to their rational framework.

The relationship between these companies' originating rationality and their opposite which they could envisage and which could have been taken on board by their originating rationality is shown below in Figure 3.10. In this figure, these companies' preferences, wills, desires and purposes of being the leading manufacturers of mainframe computers and minicomputers are their originating rationality and those opposite preferences, wills, desires and purposes of being the leading manufacturers of workstations and personal computers are their opposite which they could envisage and which could have been taken on board by their originating rationality; both of them

could have been addressed by their rational framework. Therefore, taking on board opposition might have enabled these companies to change their original preferences, wills, desires, and purposes to those opposite ones which they could envisage when their situation did not allow their originating rationality anymore.

The originating rationality of some mainframe computer or minicomputer manufacturers to be the leading manufacturers of mainframe computers or minicomputers.	The opposite which could be envisaged and taken on board by their originating rationality: to be the leading manufacturers of workstations or personal computers.
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Figure 3.10: The relationship between the originating rationality of some mainframe computer or minicomputer manufacturers and the opposite which they could envisage and which could have been taken on board by their originating rationality; both of them could have been addressed by their rational framework.

Having shown that opposites are linked to each other, this thesis argues that it is impossible to take all the opposition on board. Therefore, this thesis suggests that one may have a reserve for the opposite irrelevant or unknown, which is to keep a reserve of one's resources, for instance, energy, time, money, ..., etc., available for the irrelevant or unknown. By taking on board the opposition which one could envisage, one would have more opportunities to see what one's preference, desire, will, or purpose would have otherwise concealed and excluded from oneself. When we become successful, we should be more cautious because we may have neglected the opposite of our knack to our success if we fail to take them on board. In the meantime, taking on board the opposition which we could envisage is to remind us that there is always an alternative available and that there is always a possibility when we might need to adopt opposite ways and values of doing things. In addition, by having a reserve for the opposite irrelevant or unknown, one would be all right when one has taken on board the opposite of one's preference, desire, will, or purpose, which one could envisage and one's situation still does not allow one's rational framework to work. This is because one still

has this reserve when all the rationality of one's rational framework, including the opposition, having been taken on board, is not allowed by one's situation for whatever reason.

By taking on board the opposition which one could envisage and by having a reserve for the opposite irrelevant or unknown, one may have preferences, desires, wills, or purposes which are not necessarily to be achieved and one is able to change them according to what one believes one's situation allows. For instance, IBM and other mainframe computer and minicomputer manufacturers might have the originating preferences, wills, desires, and purposes of being the leading manufacturers of mainframe computers and minicomputers. If these companies had taken on board the opposition of their originating preferences, wills, desires, and purposes of being, for instance, the leading manufacturers of workstations and personal computers, they might have had more opportunities to change their originating preferences, wills, desires, and purposes when their originating preferences, wills, desires, and purposes were not allowed by their situation. Furthermore, if these companies had had a reserve for the opposite irrelevant or unknown to their originating rationality and to their rational framework - which could have addressed both their originating preferences, wills, desires, and purposes and their opposition taken on board - they might have had a reserve to confront the situation in which their rational framework was not workable anymore. For instance, they might have had a reserve for the initiation of the business for the business computer software which is a large business today and which was not quite relevant or known to these companies' originating rationality and to their rational framework.

The relationship between these companies' originating rationality, their opposite which they could envisage and which could have been taken on board by their originating rationality, and their opposite irrelevant or unknown to their originating rationality is shown below in Figure 3.11. In this figure, these companies' preferences,

wills, desires, and purposes of being the leading manufacturers of mainframe computers and minicomputers are their originating rationality and those opposite preferences, wills, desires, and purposes of being, for instance, the leading manufacturers of workstations or personal computers are their opposite which they could envisage and which could have been taken on board by their originating rationality; both of them could have been addressed by their rational framework. Those opposite preferences, wills, desires, and purposes of being, for instance, the leading companies of business computer software were the opposite still irrelevant or unknown to their originating rationality and they were still opposite to their rational framework. By taking on board the opposition which they could envisage, these companies could have changed their originating preferences, wills, desires, and purposes to those opposite preferences, wills, desires, and purposes which they could envisage. By having a reserve for the opposite irrelevant or unknown, these companies could have had a reserve for the situation in which all the rationality of their rational framework was not allowed to work. In this way, these companies would have had preferences, wills, desires, and purposes which were not necessarily to be achieved, and these companies might have been able to change their preferences, wills, desires, and purposes according to what their situation allowed.

<p>The originating rationality of some mainframe computer or minicomputer manufacturers to be the leading manufacturers of mainframe computers or minicomputers.</p>	<p>The opposite which could be envisaged and taken on board by their originating rationality: to be the leading manufacturers of workstations or personal computers.</p>
<p>The opposite irrelevant or unknown to their originating rationality.</p> <p>Such as the rationality of being the leading companies of business computer software.</p>	

Figure 3.11: The relationship between the originating rationality of some mainframe computer and minicomputer manufacturers, the opposite which they could envisage and which could have been taken on board by their originating rationality, and the opposite irrelevant or unknown to their originating rationality. This relationship shows that these companies would have had preferences, wills, desires, and purposes which were not necessarily to be achieved and that these companies might have been able to change them according to what their situation allowed.

The following two subsections are directed to addressing the concepts of systems thinking and to showing why the link between opposites is systemic.

3.4. THE CONCEPTS OF SYSTEMS THINKING

A system addressed in this thesis can be regarded as inter-related parts organised by a structure where these parts or the structure could be physical or conceptual. A system consists of several inter-related parts. These parts may affect the behaviour of one another and the behaviour of the system. The behaviour of the system may also affect the behaviour of its parts. The organising structure defines the interactions between parts of a system and between parts of a system and the system itself. Therefore, from a system's point of view, the behaviour of each part of a system

is not definite; the behaviour of a part of a system depends on the behaviour of other parts of the system and on the behaviour of the system itself. Thus, from a system's point of view, it becomes meaningless to study each part of a system separately in order to know the behaviour of each part. This is because the behaviour of each part taken apart from a system will not be the same as when it is in the system. Similarly, it becomes also meaningless to study a system by studying each part of it and then putting the knowledge of these parts together. This is because the behaviour of a system will not be the same as when the system has been taken apart and is not holistic anymore.

The emergence of systems thinking in the recent years took off from the 1950s. Systems thinking argues the behaviour of a part of a system will not be the same as when it is in the system and the behaviour of a system will not be the same when it is taken apart (Bertalanffy, 1968; Mason, 1969; Mason and Mitroff, 1981; Ackoff, 1974, 1978, 1981, 1994; Churchman, 1971, 1979a,b; Checkland, 1981, 1985, 1989a,b; Checkland and Scholes, 1990; Ulrich, 1983, 1988, 1996; Jackson, 1982, 1991; Jackson and Keys, 1984; Keys, 1991; Gregory, 1996a,b; Flood and Jackson, 1991; Flood, 1995a,b; Flood and Romm, 1995; Midgley, 1996a,b). Systems thinking is therefore distinctive from mechanical thinking where the behaviour of a part of a mechanism will be the same when it is within or without the mechanism and the behaviour of the mechanism is the aggregation of the behaviour of its parts. Since 1950s, the mechanical thinking had been confronted with severe difficulties in many disciplines. Ackoff (1981, p. 15) tells a story about the coming of the Systems Age. He says that:

[d]oubts about a prevailing world view usually begin with the appearances of dilemmas. A dilemma is a problem or question that cannot be solved or answered within the prevailing world view and therefore calls it into question. ... By the mid-1950s it was generally recognized that the source of similarities of the interdisciplines was their shared preoccupation with the behavior of systems. ... [The concept of system] revealed the fundamental dilemma of the Machine Age and suggested how its

world view might be modified to escape the horns of that dilemma. It is for this reason that I refer to the emerging era as the System Age.

From the metaphorical point of view (Morgan, 1986), systems can be used as a lens for looking at things from a perspective distinctive from the mechanical point of view. Ackoff regards systems as a conceptual framework. He says a system can be defined as a set of two or more elements that satisfy the following three conditions:

1. The behavior of each element has an effect on the behavior of the whole. ...
2. The behavior of the elements and their effects on the whole are interdependent. ...
3. However subgroups of the elements are formed, each has an effect on the behavior of the whole and none has an independent effect on it (Ackoff, 1981, p. 15).

The concepts of systems thinking, Ackoff argues, focus on the interaction between each part of a system and between each part of the system and the system itself. The behaviour of each part of a system is inter-dependent on each other and the behaviour of each part of the system and the behaviour of the system are also inter-dependent. Therefore, each part of a system cannot be separated from the system and the system cannot be taken apart when one would like to study the behaviour of a system and of its parts. That is, a system should be treated as a whole which cannot be taken apart. As Ackoff (1981, p. 15-16) says:

[a] system ... is a whole that cannot be divided into independent parts. From this, two of its most important properties derive: every part of a system has properties that it loses when separated from the system, and every system has some properties - its essential ones - that none of its parts do. ... [F]or example, ... [t]he eye detached from the body cannot see. ... [and] [n]o part of human being is human; only the whole is. ... [Therefore,] ... [t]he essential properties of a system taken as a whole derive from the interactions of its parts, not their actions taken separately.

There is a need for new methods to address the behaviour of a system and of its parts. Since a system cannot be taken apart, the mechanical thinking which is to take things apart can no longer be used. Therefore, synthesis, which is to put things together, rather than analysis, which is to take things apart, should be used to address the behaviour of a system and of its parts. As Ackoff (1981, p. 16) says:

Synthesis, or putting things together, is the key to systems thinking just as analysis, or taking them apart, was the key to Machine-Age thinking. ... Synthesis and analysis are complementary processes. ... [T]he differences between Systems-Age and Machine-Age thinking derives not from the fact that one synthesizes and the other analyses, but from the fact that systems thinking combines the two in a new way.

According to Ackoff (1981, p. 16), the three steps of Machine-Age thinking are: firstly, taking apart whatever has to be explained; secondly, providing separate explanations for the behaviour or properties of each part identified in stage one; and thirdly, pulling these separate explanations into an over-arching explanation of the whole thing. It is the third phase that Ackoff terms *synthesis*. On the other hand, the systems approach also has three steps which appear to be an inversion of Machine-Age thinking. Systems thinking begins by identifying the whole in which the unexplained thing is a contained part; secondly, systems thinking sets out to explain the behaviour or properties of that containing whole rather than the parts within it; and finally, systems thinking considers the behaviour or properties of the unexplained thing in terms of its role(s) and function(s) within the system. In this sequence, synthesis precedes analysis. As Ackoff (1981, pp. 16-17) argues “In analytical thinking the thing to be explained is treated as a whole to be taken apart. In synthetic thinking the thing to be explained is treated as a part of a containing whole. The former reduces the focus of the investigator; the latter expands it”.

Therefore, we can know that systems thinking focuses not only on the behaviour, or properties of, and interactions between the parts of the thing to be explained, but also on the interactions between the thing to be explained, a conceptually identified containing whole (system) which contains it as a part, and other parts of the containing whole. Hence:

[a]nalysis looks into things; synthesis looks out of things. Machine-Age thinking was concerned only with the interactions of the parts of the thing to be explained; systems thinking is similarly concerned, but it is additionally occupied with the interactions of that thing with other things in its environment and with its environment itself (Ackoff, 1981, p. 17).

Systems thinking not only enables us to understand the behaviour and properties of systems, but also guides our way towards design, redesign and management of systems. Systems thinking also brings us new insights into the functional interactions of the parts of a system.

In systems design, parts identified by analysis of the function(s) to be performed by the whole are not put together like unchangeable pieces of jigsaw puzzle; they are designed to fit each other so as to work together harmoniously Harmony has to do not only with the effect of the interactions of the parts on the whole, but also with the effects of the functioning of the whole and interactions of the parts on the parts themselves. It is also concerned with the effects of the functioning of the parts and the whole on the containing system and other systems in its environment. This concern with harmony has important implications in the management of systems (Ackoff, 1981, pp. 17-18).

For example, if we want to obtain the best automobile in the world, can our attempt be achieved by assembling the best parts chosen from each of the leading makes? The answer is no. As Ackoff (1981, p. 18) says: "We would not even obtain an automobile

because the parts would not fit together, even if they did, they would not work well together. The performance of a system depends more on how its parts interact than on how they act independently of each other”.

3.5. THE LINK BETWEEN OPPOSITES BEING SYSTEMIC

The link between opposites is systemic. As mentioned above in this chapter, opposites - one's rational framework and the opposite of one's rational framework - present each other and contrast each other in terms of description. Opposites are linked and they affect each other in terms of the consequences of our purposeful actions too. This is because they try to conceal and exclude from us each other so that we seldom consider the opposites of our purpose and purposeful action. Therefore, opposites cannot be addressed separately and then the result of addressing them put together. For instance, the opposite of our purpose cannot be dealt with separately, and be cut off, and thrown away from our purpose.

Opposites are linked and are within the structure of a system whose behaviour is not any of the opposites. That is, the system has some properties which none of the opposites has individually. One's originating rationality, one's opposite which one could envisage, and one's opposite irrelevant or unknown to one's originating rationality - i.e., one's rational framework and the opposite of one's rational framework - are linked with one another. This is because one's opposite which one could envisage, and one's opposite irrelevant or unknown to one's originating rationality cannot be produced without one having an originating rationality in the first place. When one's originating rationality, one's opposite which one could envisage and take on board, one's opposite irrelevant or unknown to one's originating rationality are addressed alone, they try to conceal and exclude one another. The behaviour of the system of these opposites is such that these opposites may then become aware that none of them is complete and that

these opposites may learn from one another rather than try to exclude and conceal one another. This system of opposites will be called a “purposeless system” and will be addressed in more detail in Chapter Six.

3.6. CONCLUSION

In this chapter, I have shown that there is a link between opposites and the link between opposites is systemic.

In this chapter, I regard one's opposite as something beyond one's own rational framework. Therefore, one's opposite addressed in this thesis could be, but not necessarily, something apparently opposite which one could envisage, or it could be something irrelevant or unknown to one's originating rationality. I argue that when one's originating rationality does not envisage and take on board the opposite which one could envisage, one's rational framework addresses only one's originating rationality. At that time, both the opposite which one could envisage and take on board and the opposite irrelevant or unknown to one's originating rationality are seen as the opposite of one's rational framework. I also argue that when one's originating rationality addresses the opposite which one could envisage by taking it on board, the latter is not opposite to one's rational framework. It is because at that time one's rational framework addresses both one's originating rationality and the opposite envisaged and taken on board. However, the opposite irrelevant or unknown to one's originating rationality is still beyond what one's rational framework can address and it is still the opposite of one's rational framework at that time.

In this chapter, I also have shown that opposites - i.e., one's originating rationality, the opposite envisaged and taken on board by one's originating rationality and the opposite irrelevant or unknown to one's originating rationality - are linked in

terms of description. I show, for instance, that to begin to identify one's originating rationality as to be subjective produces the link between one's originating rationality and the opposite which could be envisaged by one's originating rationality - such as to be objective - and the link between one's originating rationality and the opposite irrelevant or unknown to one's originating rationality - such as to be radical, conservative, tall, short, man or woman. I also show that to begin to identify the little swan as a duck rather than a swan, a chicken, a cat, or something else, produces the link between an ugly duckling, a beautiful swan, an ugly chicken, an ugly cat, or some other ugly creature.

I continue to argue that opposites are also linked in terms of consequences of purposeful actions. I show, for instance, that to begin to identify one's originating rationality as to be successful at work rather than to have some recreation, a healthy body, a happy family or a good relationship with friends, produces the link between a successful person at work, a person with a boring life, an unhealthy person, an uncaring family member and an uncaring friend. Meanwhile, once one or several of these opposite aspects of one's life regarding this important aspect of one's life of being successful at work, break(s) down, one's life may break down all together.

I then argue that describing and achieving something may conceal and exclude from us the description of and our achievement of its opposites. I suggest that one's identity is presented by one's opposite and yet by excluding one's opposite at the same time. I show this mutual definition and exclusion of one and one's opposite by using a picture which might be identified as a glass, as two heads facing each other, or as both a glass and two heads facing each other or as piled hats. Through the picture, I show that to begin to identify one's originating rationality as to see the picture as a glass rather than to see the picture as two heads facing each other or as both a glass and two heads facing each other or as piled hats, produces the link between a glass, two heads facing each other, both a glass and two heads facing each other and piled hats. Through that

picture, I show that when one is identified, there must be something missing, which has become one's "contrast" to present one's identity and which has to be concealed and invisible at the same time. Meanwhile, through the example of the desire satisfaction cycle, I show that to achieve the satisfying of our desires purposefully may conceal and exclude from us that we may suffer more from the process of satisfying our desires; and I suggest that desiring satisfaction may be made easier by attempting to make our desire smaller and smaller.

Having shown that there is a link between opposites, I suggest that one needs to have some preferences, desires, wills, and purposes, but one should also be able to change them according to what one believes one's situation allows. Taking on board opposition enables one to change one's preferences, desires, wills, and purposes to those opposite preferences, desires, wills, and purposes which one could envisage. These are still opposite to one's originating rationality but they are not opposite to one's rational framework, which addresses both one's originating rationality and the opposite envisaged and taken on board by one's originating rationality. However, it is impossible to take all the opposition on board. Therefore, I suggest that one should have a reserve for the opposite irrelevant or unknown, to enable one to cope when all the rationality of one's rational framework, including the opposition having been taken on board, is not allowed by one's situation for whatever reason.

Having shown that there is a link between opposites, I point out that the link between opposites is systemic. A system addressed in this thesis can be regarded as inter-related parts organised by a structure where these parts or the structure could be physical or conceptual. The parts of a system may affect the behaviour of one another and the behaviour of the system. The behaviour of the system may also affect the behaviour of its parts. The organising structure defines the interactions between parts of a system and between parts of a system and the system itself. Therefore, from a system's point of view, the behaviour of each part of a system is not definite. Thus, from a

system's point of view, it becomes meaningless to study each part of a system separately in order to know the behaviour of each part. It becomes also meaningless to study a system by studying each part of it and then putting the knowledge of these parts together. Each system has some essential properties which none of its parts has and each part of a system will lose some essential properties when it is separated from the system.

Taking these concepts of systems thinking, I explore ways in which the link between opposites is systemic. I show that opposites are linked in terms of *description*. Opposites are also linked and they affect one another in terms of the *consequences of our purposeful actions*. Opposites are within the structure of a system where the behaviour of the system is not any of these opposites. The behaviour of the system of these opposites is such that these opposites may then become aware that none of them is complete and that these opposites may learn from one another rather than try to exclude and conceal one another. I call the system of opposites a “purposeless system”, to be addressed in more detail in Chapter Six.

Opposites cannot be addressed separately if the link between them is systemic. In the managerial context, the conventional way to address one's originating rationality of adopting ways to achieve what we want and to cut off the opposites of one's originating rationality, will be reconsidered. To illustrate the way in which the systemic link between opposites may be addressed in the managerial context, I will offer details of this account through discussing the practice of the Viable System Model (Beer, 1959a,b, 1979, 1981, 1985, 1989a; Espejo and Harnden, 1989) in the next chapter - Chapter Four.

Endnotes to Chapter Three

¹ In military history, many famous examples also show how our preferences may conceal and exclude their opposites from us. One is given below. In World War Two, a French front called the Maginot Line, was very famous (Falls, 1972; Frankland and Dowling, 1976; Fuller, 1970; Jacobsen, Stuttgart and Rohwer, 1965). It was claimed there was no possibility to cross it. However, the strength of the front was produced by absorbing nearly all available military resources in France. That is, its strength might weaken the other fronts of France at the same time. Meanwhile, the preference to that Germany must attack France through the Maginot Line concealed and excluded its opposite such as that Germany might attack from the other fronts of France. In the end, France was defeated by Germany in forty two days, not because of the failure of the Maginot Line, but of the weakness of the other fronts of France. Therefore, the success of our preferences such as the strength of the Maginot Line may conceal and exclude their opposites such as that Germany might attack from the other fronts of France other than the Maginot Line. In the military context, the opposites concealed and excluded by the success of our preferences may be fatal. This is because in the military context, the success of our preference to either of our van, rear, left or right position may weaken the rest of them and enemy attacks our weakness rather than the success of our preferences. As Sun Tzu says:

By discovering the enemy's dispositions and remaining invisible ourselves, we can keep our forces concentrated, while the enemy's must be divided. ... The spot where we intend to fight must not be made known, for then the enemy will have to prepare against a possible attack at several different points. ... [S]hould the enemy strengthen his van, he will weaken his rear; should he strengthen his rear, he will weaken his van; should he strengthen his left, he will weaken his right; should he strengthen his right, he will weaken his left. If he sends reinforcements everywhere, he will everywhere be weak. (Sun Tzu, 6th century. BC, p.27-28)

² It is not unusual for successful people, after being successful for a period of time, to suffer from a broken marriage, badly behaved children, cancers or bad health conditions. Similar to those successful companies, the success of these successful people was so huge - what they wanted was so successfully achieved - that their partners' complaint, their children's cry for parents, or their bodies' illness were concealed and excluded. The breakdown of the less important - compared with their success - such as their family or their health seems to be the cause of breakdown of their life in the conventional view. Their body or family seem far too soft to follow their strong preferences, desires, wills, and purposes. If only their body or family could have been stronger! It is, however, seldom considered that their success may conceal and exclude the importance of their body or family and suppress them in the first place.

Chapter Four: Addressing the Systemic Link between Opposites in Viable System Model (VSM)

4.1. INTRODUCTION

This chapter aims to address the systemic link between opposites by revisiting Beer's (1979, 1981, 1985, 1989a,b) Viable System Model (VSM). I proceed to express some concepts and theories as follows. Firstly, I give an account of the cybernetic concepts of the black box technique and negative feedback, which are at the core of Beer's VSM. I address these concepts of cybernetics in terms of the systemic link between opposites - i.e., the systemic link between the organisation's originating rationality which seeks to achieve the purpose of the organisation by adopting these cybernetic concepts, the opposite envisaged and taken on board by its originating rationality, and the opposite irrelevant or unknown to its originating rationality - developed in Chapter Three. Secondly, I offer an account regarding the mechanism and the consisting components of Beer's VSM and I also address them in terms of the systemic link between opposites. Based on the above, I suggest accordingly that there is a need for the practitioners of VSM to take on board the opposite of their originating rationality envisaged to remind themselves that their originating rationality to achieve their purpose by adopting VSM may conceal and exclude the opposite of their originating rationality from them. I suggest that the practitioners of VSM be aware of the concealment and exclusion. This may also remind them that there is always an alternative purpose available for them and planned - the cost and benefit of the plan estimated and the resources needed by the plan made available. I argue furthermore that there is a need for the practitioners of VSM to keep a reserve of their resources available for the opposite irrelevant or unknown to their originating rationality to remind themselves that there is still something beyond their whole rational framework - i.e., the

whole of their originating rationality and the opposite envisaged and taken on board by their originating rationality. This may also remind them that there are still resources reserved when their situation affirms some purpose which is beyond their rational framework.

4.2. THE MECHANISM OF CYBERNETICS

In this section, the cybernetic concepts of the black box technique and the negative feedback, which are at the core of Beer's (1979, 1981, 1985, 1989a,b) Viable System Model (VSM) will be introduced and they will be addressed in terms of the systemic link between opposites developed in Chapter Three.

The term *cybernetics* originates from the Greek word *kybernetes* which means the art of steersmanship (Jackson, 1991, p. 92). In 1948, a famous definition of it was presented by Wiener (1948) as the "science of communication and control in the animal and machine" (Beer, 1985, p. ix). Ashby (1956), however, suggests that cybernetics shows many parallels among machine, brain, and society and therefore that it also works in human affairs. Later on, Beer (1959a) applies the concept of cybernetics to management and defines it as "the science of effective organization" (Beer, 1985, p. ix).

Two concepts from cybernetics may be adopted by an organisation to deal with the problem of extreme complexity exhibited by its environment; these two concepts are: "the black box technique" and "the negative feedback". Management is, as Beer (1985, p. x) says: "the *profession* of regulation" and what a manager regulates in an organisation is "the management of complexity" (p. 21). The problem of extreme complexity, the black box technique, and the negative feedback will be discussed in turn in the following three subsections.

4.2.1. The problem of extreme complexity

To deal with the complexity of its environment, an organisation needs to know what complexity is. The measure of complexity is called variety. Beer (1979, p. 32) defines the variety of something as “the number of possible states of whatever it is whose complexity we want to measure”. For instance, a bulb may have two possible states - on or off - in terms of its functioning as an on-off bulb; it may have ten possible states - from off, one, two, three, ..., till nine - in terms of its functioning as an adjustable bulb; it may have a different number of possible states in terms of its functioning as a heater to warm little animals or plants.

The complexity an organisation can generate at a particular point in time has to catch up with the complexity its environment can exhibit at that point in time, otherwise its environment is out of its control. A bulb may exhibit infinite possible states. For instance, it can be at any degree of brightness between its lowest brightness and its highest brightness under a certain voltage set for it. If one would simply like a bulb to exhibit an “on” and an “off” states, then a regulator (or a switch) which can generate these two states can match what one would like the bulb to exhibit. The regulator of the bulb can be regarded as an organisation, the bulb can be regarded as its environment, and one’s purpose of having an “on” and an “off” states can be regarded as the purpose of the organisation. Having a switch (an organisation) which can generate an “on” and an “off” states seems to match the possible “on” and “off” states the bulb (the environment of the organisation) exhibits at the moment. Then what if one would like the bulb to exhibit ten possible states ranging from off, one, two, ..., till nine? The state “off” means the bulb does not produce light, the state “nine” means the bulb produces its maximum light under a certain voltage and states “one” to “eight” represent intermediate levels of lightness. The previous on-off regulator is not enough because it can generate only two possible states and it does not have requisite variety to catch up

with the number of possible states the bulb may exhibit. At that moment, one needs a more advanced regulator (switch) to catch up with the ten possible states one would like the bulb to exhibit. This means that if one would like the bulb (the environment of an organisation) to exhibit ten states rather than two states (a more complicated organisational purpose which demands more control over the environment of the organisation), one would need a more advanced regulator (a more advanced organisation) to catch up with what one would like the bulb (its environment) to exhibit. Therefore, a more complicated organisational purpose demands a more complicated organisation to regulate a more complicated environment.

Besides, an organisation needs to generate some extra variety to catch up with the number of undesired possible states exhibited by its environment which may “affect” the purpose of the organisation. Just as a bulb might be broken, or it might be loose and disconnected from the bulb stand, the environment of an organisation might generate some undesired states which may affect the organisational purpose. At that moment, the regulator (the organisation) needs to generate solutions to deal with these two undesired possible states exhibited by the bulb (its environment), otherwise the bulb (its environment) is out of one’s control (out of its control). This is because either of these two states stops oneself (the organisational purpose) from getting the desired states one (the organisational purpose) would like the bulb (the environment of the organisation) to exhibit. However, the regulator of the bulb (the organisation) does not need to generate solutions for the states where an insect is on the bulb or the wind is blowing the bulb as long as those two states do not affect what one would like the bulb to exhibit (the organisational purpose). As Beer (1985, p. 98) says: “What matters in discriminating one ‘state of the system’ from other states is whether the resulting change of state serves, or has no bearing on, the purposes of the system”.

The number of possible states of the environment of an organisation is potentially infinite. To define the variety of the environment of an organisation as the

possible states which its environment may exhibit means the organisation has to generate solutions for the infinite possible states in order to have control over its environment. This is not a practical definition. Cybernetics recognises that the environment of an organisation has potentially infinite possible states and focuses on those which may affect the purpose of the organisation. In this way, cybernetics agrees that its understanding of the environment of an organisation may be incomplete, but the environment can be managed by focusing on those possible states which have consequences for the purpose of the organisation. That is, the environment of an organisation may not be transparent to the organisation because the organisation cannot or need not understand it completely; yet it can be managed by focusing on its consequences for the purpose of the organisation, rather than on the environment itself. This is the cybernetic way of dealing with extreme complexity - the black box technique - to which I now turn.

4.2.2. The black box technique

The black box technique plays an important role in the cybernetic way of dealing with the problem of extreme complexity. The complexity of the environment of an organisation can be significantly reduced if the organisation treats its environment as a black box and considers only those possible states of its environment desired by the purpose of the organisation rather than all the possible states its environment may exhibit. To use the bulb mentioned before as an example, it has potentially infinite possible states ranging from its lowest to its highest brightness under a certain voltage. Now one would like this bulb to exhibit two states - i.e., on and off. To treat the bulb as a black box means that one does not need to know what the bulb is made of - such as the air within the bulb, the resistors used, or the circuit within the bulb. Nor does one need to know how all the components within the bulb are going to function together in order to exhibit the two possible states. The bulb is a black box; one cannot see through it and

one cannot know what is inside of it. However, one can manage the bulb even though it is a black box. All that one needs to know is what one wants the bulb to exhibit and what is needed for the bulb to exhibit what one wants. What one wants the bulb to output is the on and the off states and what one needs to input into the bulb in order to get the outputs from the bulb - the on and off states - are an on-off regulator (switch) and the voltage needed. By focusing on the outputs from the bulb and the inputs needed by the bulb to produce the outputs desired, one manages to regulate the bulb without knowing what is going on within it and without finding out all the other possible states the bulb may exhibit. The complexity of the bulb is significantly reduced.

Therefore, in the black box technique, what matters is not to find out what really happens in the black box, but to find out the relationship between the inputs into it and the outputs from it, which are the consequences of the black box. The way in which a manager can deal with a black box, as Beer (1979, pp. 40-41) says, is that:

it is not necessary to enter the black box to understand the nature of the function it performs. Managers in general ... know that they gave almost no causal theory at all to underwrite their actions. ... And the cybernetic explanation is that they treat systems as black boxes, for which they gave reliable notions of the relationships between input and output schemata.

In the managerial context, an organisation may treat its environment as a black box. The organisation is not required to enter its environment to know what its environment consists of and how the consisting components of its environment function together to produce outputs. Given an organisational purpose, the point is to find out what the desired states of the environment of the organisation are and what are the needed inputs for its environment to exhibit these desired states.

However, as mentioned above, the environment of an organisation may itself produce undesired states which may affect the purpose of the organisation. To address this, a second cybernetic concept - negative feedback - is needed and will be introduced in the next subsection.

4.2.3. Negative feedback

Also known as *goal-seeking* (Coyle, 1996), *balancing* (Senge, 1990) feedback, negative feedback seeks deviation counteracting, eliminating the difference between the actual state of a process of concern and its desired state. A conventional negative feedback is shown below in Figure 4.1. In this figure, the process of concern is to provide inputs for the black box in order for the black box to exhibit certain desired states (outputs). The actual state of the black box will be compared by a comparator with the desired state of the black box, which is defined by the purpose of an organisation. Whenever a difference between the actual state and the desired state of the black box is detected by the comparator, an error signal will be generated and the input corrector will correct the inputs into the black box and the desired outputs of the black box will be established again. There is no need to enter a black box to know what the black box consists of and how its consisting components function together to produce the desired outputs, in order to correct the undesired states exhibited by the black box. The technique of the negative feedback is, as Beer (1989a, p. 356) says “If something is going wrong, modifying the input to the process that is producing the unpleasing output, so that the output comes back into a satisfactory state”.

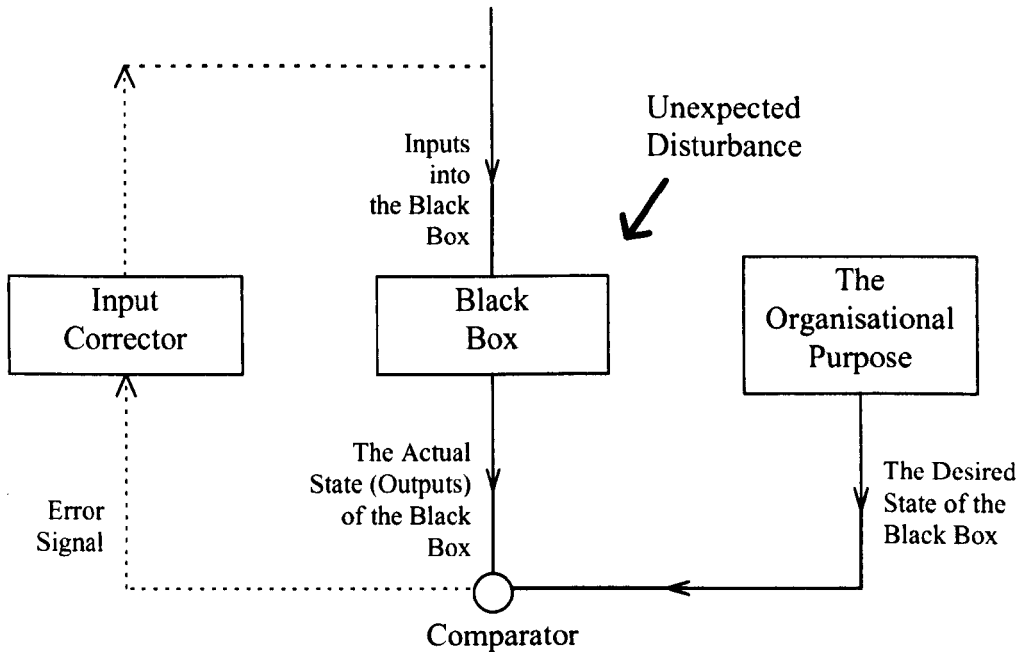


Figure 4.1: A conventional negative feedback in conjunction with a black box.
Source: Adapted from Beer, 1979, p. 63.

Therefore, the way in which the negative feedback in conjunction with the black box technique deals with those undesired states exhibited by the environment of an organisation is to manipulate the organisational inputs into its environment in order to regulate the undesired outputs from its environment. To use the bulb mentioned previously as an example. Now one still would like the bulb to exhibit two states - on and off. One has those necessary inputs at hand - an on-off regulator (switch) and a certain voltage needed. However, the bulb exhibits only the off state this time. At that moment, does one need to enter the bulb - to study what it consists of and how all its consisting components function together to produce the on state? The answer is “no”. The technique of the negative feedback would suggest that one checks the inputs and corrects them. Therefore, one needs to check if a correct on-off regulator (switch) is provided or a correct voltage is provided or if some new inputs are needed. In this way, a faulty regulator may need correction or replacement. If the bulb still exhibits only the off state, a faulty voltage might need correction where the power is not supplied or

where the bulb is loose and is disconnected from the bulb stand. If the bulb still exhibits only the off state, some new inputs might be needed when the bulb itself is broken and needs replacement, and the necessary inputs provided for the bulb to exhibit the on-off states amount up to three - a correct on-off regulator (switch), a correct voltage, and a correct bulb. With the technique of the negative feedback, the desired state of the bulb may be re-established by manipulating the inputs into the bulb rather than by examining inside the bulb.

Thus, the extreme complexity of the environment of an organisation can be dealt with by the cybernetic concept of the black box technique in conjunction with the cybernetic concept of the negative feedback. The purpose of an organisation can be achieved by providing necessary inputs into its environment in order to obtain the desired outputs from its environment. If the purpose of the organisation cannot be achieved, there is no need to be in a hurry to enter its environment to study what its environment consists of and how the consisting components of its environment function together to produce the undesired outputs. What the organisation needs to do is to manipulate its inputs into its environment until the desired outputs from its environment are re-established. In this way, the extreme complexity of the environment of an organisation is considerably reduced.

However, using the terms developed in Chapter Three, I argue that the rationality of an organisation to achieve its organisational purpose of adopting the cybernetic black box technique and negative feedback may also conceal and exclude the opposite of its organisational purpose. In the following subsection, the rationality of an organisation to achieve its organisational purpose by adopting the cybernetic black box technique and negative feedback will be discussed in terms of the systemic link between opposites developed in Chapter Three - i.e., the organisation's originating rationality, the opposite envisaged by that rationality, and the opposite irrelevant or unknown to it - to which I now turn.

4.2.4. Addressing the systemic link between opposites in the cybernetic black box technique and negative feedback

When an organisation adopts the concepts of cybernetics mentioned in the previous subsections to deal with the complexity of its environment, its originating rationality is to achieve its organisational purpose by adopting the cybernetic black box technique and negative feedback, i.e. to manipulate its inputs into its environment to regulate the outputs from its environment and to establish a schemata between its inputs into and the outputs from its environment. The originating rationality of an organisation to achieve its organisational purpose by adopting the cybernetic black box technique and negative feedback, is shown below in Figure 4.2.

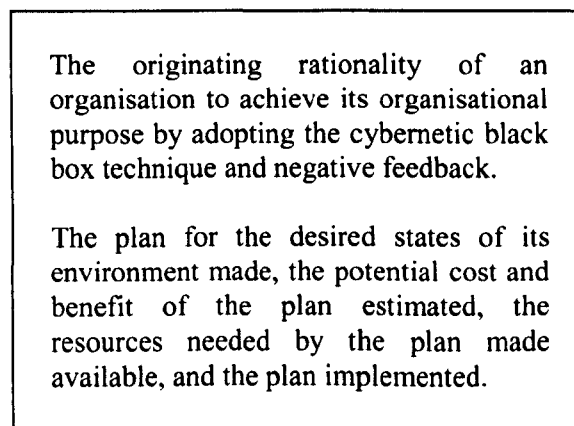


Figure 4.2: The originating rationality of an organisation to achieve its organisational purpose by adopting the cybernetic black box technique and negative feedback.

An opposite which could be envisaged by the originating rationality of the organisation, may be to consider what is being excluded from the very purpose of the organisation. As mentioned above, the complexity the environment of an organisation can exhibit is not purely externally defined by its environment, but internally defined by

the purpose of the organisation. As shown in the example of a bulb in the previous subsections, one sees the complexity of the bulb in terms of what states one would like the bulb to exhibit, i.e., what one would like from the bulb. Those states which do not affect what one wants from the bulb are not regarded as the variety of the bulb. This is because the bulb will have infinite possible states otherwise. Therefore, paradoxically, the definition of the complexity of a bulb is not originated from the bulb itself, but from what one would like the bulb to exhibit. That is, what one would like from the bulb originates the definition of the complexity of it, then the bulb itself contributes to its own complexity by exhibiting the undesired states which may affect what one wants from it. Similarly, the environment of an organisation has infinite possible states. The purpose of the organisation originates the definition of the complexity of its environment. Then its environment contributes to its own complexity by exhibiting undesired states in terms of the purpose of the organisation. The purpose of an organisation excludes and conceals from the organisation many more states of its environment than the purpose of the organisation reveals. The rationality of an organisation to achieve its organisational purpose by adopting the cybernetic black box technique and negative feedback, does not consider the possibility of affirming those undesired states of its environment. This is because they are supposed to be changed to the desired states. Nor does its originating rationality consider the possibility of affirming those irrelevant or unknown states of its environment which do not seem to affect the purpose of the organisation. The thesis will discuss in turn the possibility of affirming the opposite (states) which could be envisaged by the originating rationality of the organisation and the opposite (states) irrelevant or unknown to its originating rationality.

To take on board the opposite which could be envisaged by its originating rationality, an organisation may consider affirming those states undesired by its organisational purpose, and planning for them, estimating if the benefit from the plan is acceptable and its cost affordable, and making available the resources needed by the

plan. To use the bulb mentioned previously as an example, when one would like the bulb to exhibit the on and the off states, those states of the bulb, for instance, when it is always on or when it is always off, are undesired states which may affect one's purpose. According to one's originating rationality alone - i.e., one does not take on board one's opposite which could be envisaged by one's originating rationality - these undesired states should be corrected and changed to the desired states. However, one may also takes on board these opposite (states) which could be envisaged by one's originating rationality.

To affirm the being-always-on state of the bulb, one now adopts the cybernetic black box technique and negative feedback to achieve the opposite of one's purpose envisaged. At that time, the bulb is expected to exhibit only the on state and one needs to plan for this situation, estimate the potential benefit from and cost of the plan to see if it is acceptable and affordable, and make available the resources needed in the plan. One's plan may consider to develop or make available a long-life and energy-saving bulb and its corresponding regulator; the potential cost of the plan should be estimated and so should its potential benefit. This state would become a desired state of a bulb where one's situation does not allow one to switch off the bulb, such as the bulb used in a tunnel or an underground car park.

To affirm the being-always-off state, one now adopts the cybernetic black box technique and negative feedback to achieve this opposite of its originating rationality envisaged. At that time, one would like the bulb to exhibit the off state only and one needs to plan for this situation, estimate its potential cost and benefit, and make available the resources needed in the plan. One's plan may consider whether or not the bulb is really necessary or is simply a waste of energy and it should be removed. One's plan may also consider making available a torch, some candles, or a rechargeable lantern, or another more permanent sort of lighting if necessary. The potential cost of and benefit from this plan should be estimated too. This being-always-off state is

paradoxically a desired state when one's situation does not allow one to turn on the bulb, for instance, when the electricity is considered a waste of energy.

Taking on board the opposite envisaged by one's originating rationality by affirming the undesired states, which are defined by one's purpose, and by planning for them, estimating if the benefit from the plan is acceptable and if the cost of the plan is affordable, and making available the resources needed in the plans, one's originating rationality becomes a rationality which is not necessarily to be realised. Similarly, the rationality of an organisation to achieve its organisational purpose by adopting the cybernetic black box technique and negative feedback could take on board the opposite of its originating rationality envisaged by affirming the undesired states defined by its organisational purpose and by planning for them, estimating if the potential benefit from the plan is acceptable and its cost affordable, and making available the resources needed by the plan. The potential cost and benefit of the plan should be estimated because, just like the organisation's originating rationality, the organisation needs to prepare for the situation in which the opposite envisaged by the organisation's originating rationality may not be allowed by the organisation's situation either. In the meantime, the plan for the opposite of the organisation's originating rationality envisaged is not implemented, although the resources needed by the plan are made available. The organisation's originating rationality to achieve its organisational purpose by adopting the cybernetic black box technique and negative feedback and the opposite envisaged and taken on board by its originating rationality are shown below in Figure 4.3. Below, we turn to the example of IBM to illustrate in cybernetics terms the need for an organisation to take on board the opposite of its originating rationality envisaged.

<p>The originating rationality of an organisation to achieve its organisational purpose by adopting the cybernetic black box technique and negative feedback.</p> <p>The plan for the desired states of its environment made, the potential cost and benefit of the plan estimated, the resources needed by the plan made available, and the plan implemented.</p>	<p>The opposite envisaged and taken on board by its originating rationality.</p> <p>The plan for the undesired states of its environment made, the potential cost and benefit of the plan estimated, and the resources needed by the plan available despite the plan not being implemented.</p>
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Figure 4.3: The originating rationality of an organisation to achieve its organisational purpose by adopting the cybernetic black box technique and negative feedback and its opposite envisaged and taken on board.

As mentioned in Chapter Three, IBM had an organisational purpose to be the leading manufacturer of the mainframe computers and minicomputers. When its customers exhibited their demand on workstations or personal computers, IBM perceived this as an undesired state of its customers - i.e., of its black box. Then IBM tried to recommend its customers to consider a wide range of its mainframe computers and minicomputers - to manipulate its inputs into its customers - in order to change its customers' mind - to regulate the outputs from its customers. All its efforts were made to change the undesired state of its customers as defined by its organisational purpose and no attempt was made to take on board the opposite of its originating rationality envisaged - i.e., to affirm the undesired states as defined by its organisational purpose and to plan for them, estimate if the potential cost of and benefits from the plan were affordable and acceptable, and make available the resources needed by the plan. Its customers in the end gave the orders to the competitor of IBM. This is a typical story about how the sales team of IBM dealt with the *undesired* state of its customers regarding their need for workstations or personal computers:

[A] customer ... asked the IBM account team for a Unix platform for a client-server application. The team studied the application and came back with a recommendation for

upgrading the mainframe. The customer said no, maybe we weren't clear - we *want* a Unix solution, please propose us a *Unix* solution. So the team studied the problem some more and came back with a new proposal, this time for an AS/400. No, said the customer, we do not want a *proprietary* platform, thank you, we want an *open* one, like the IBM RS/6000 - please propose a solution on that platform. So the team studied the problem again - not knowing that by this time the customer had invited Hewlett-Packard to propose a Unix solution - and came back with a third proposal, this one based on PS/2's running OS/2. No, thank you, said the customer, we have decided to go with Hewlett-Packard. *Then* the IBM team proposed an RS/6000 solution, but would you believe it, the customer turned them down (Moore, 1998, p. 126)!

This "undesired" state exhibited by IBM's customers was not intrinsically undesired. It became undesired because it was undesired by the originating rationality of IBM to be the leading manufacturer of mainframe computers and minicomputers and it is therefore systemically linked with the originating rationality of IBM to be the leading manufacturer of mainframe computers or minicomputers.

Besides, there is a need for an organisation to have a reserve of its resources for the irrelevant or unknown states of its environment - i.e., the opposite irrelevant or unknown to its originating rationality. As mentioned above, the purpose of an organisation excludes and conceals many more states of its environment than the organisational purpose reveals. An organisation could take on board the opposite which could be envisaged by its originating rationality. However, there are still many more states of its environment which are beyond the whole of the states desired by the organisation and the undesired states envisaged and taken on board by the originating rationality - i.e., beyond the whole rational framework of the organisation. Since these states are beyond the rational framework of the organisation, the organisation cannot know them and plan for them. If the definition of the complexity of the environment of an organisation perceived by the organisation is originated from its organisational

purpose, it needs to understand that it knows only the desired and undesired states of its environment, which are defined by the purpose of the organisation, rather than its entire environment.

Therefore, the environment of an organisation addressed by the originating rationality of the organisation to achieve its organisational purpose by adopting the cybernetic black box technique and negative feedback, is not so independent of and separated from the organisation. Rather, the organisation chooses its own environment. The excluded and concealed states of its environment are not irrelevant purely because of themselves; they become irrelevant because they are not the states desired by the purpose of the organisation or the undesired states which may affect the purpose of the organisation. Despite their seeming irrelevance to the purpose of the organisation as perceived by its originating rationality, they are still systemically linked with those desired and undesired states of its environment and with the purpose of the organisation. Therefore, there is a need to affirm these irrelevant or unknown states and to have a reserve of resources for them just like that an organisation affirms the opposite of its originating rationality envisaged, despite that these irrelevant or unknown opposite of its originating rationality cannot be planned for in advance. More detail regarding how to have a reserve for the opposite irrelevant or unknown to one's originating rationality will be given in Chapter Six. The relationship between the originating rationality of an organisation to achieve its organisational purpose by adopting the cybernetic black box technique and negative feedback, the opposite envisaged and taken on board by its originating rationality, and the opposite irrelevant or unknown to its originating rationality, is shown below in Figure 4.4.

<p>The originating rationality of an organisation to achieve its organisational purpose by adopting the cybernetic black box technique and negative feedback.</p> <p>The plan for the desired states of its environment made, the potential cost and benefit of the plan estimated, the resources needed by the plan made available, and the plan implemented.</p>	<p>The opposite envisaged and taken on board by its originating rationality.</p> <p>The plan for the undesired states of its environment made, the potential cost and benefit of the plan estimated, and the resources needed by the plan available despite the plan not being implemented.</p>
<p>The opposite irrelevant or unknown to its originating rationality.</p> <p>Resources reserved for the irrelevant or unknown states and no plan made for them.</p>	

Figure 4.4: The relationship between the originating rationality of an organisation to achieve its organisational purpose by adopting the cybernetic black box technique and negative feedback, the opposite envisaged and taken on board by its originating rationality, the opposite irrelevant or unknown to its originating rationality.

When the cybernetic black box technique and negative feedback are adopted, the originating rationality of an organisation is to achieve its organisational purpose by adopting the cybernetic black box technique and negative feedback. The desired states of its environment and the undesired states which need correcting to the desired states, will be defined according to the purpose of the organisation. A plan regarding how to obtain the desired states of the environment of the organisation should be made. The potential cost and benefit of the plan should be estimated. The resources needed by the plan should be made available. And the plan will actually be implemented. To take on board the opposite envisaged by the organisation's originating rationality, the organisation could affirm the undesired states of its environment which may affect the purpose of the organisation. The organisation could plan for these undesired states,

estimate if the potential benefit of the plan is acceptable and its cost affordable, and make available the resources needed by the plan. However, the plan will not be actually implemented. To have a reserve for the opposite irrelevant or unknown to its originating rationality, the organisation could have a reserve of resources for these irrelevant or unknown states. No plan for them will be made. In this way, when the organisation's originating rationality and purpose are not allowed by its situation for whatever reason, the organisation will still have an alternative rationality and purpose available - i.e., the opposite envisaged by the organisation's originating rationality. When the organisation's rational framework - i.e., the whole of its originating rationality and the opposite envisaged and taken on board by its originating rationality - is not allowed by its situation for whatever reason, the organisation will still have a reserve available for its situation which affirms those states of its environment that are beyond the rational framework of it. In this way, an organisation may have a rationality which is not necessarily to be realised and a purpose which is not necessarily to be achieved. This is the concept of a purposeless system and it will be given in more detail in Chapter Six.

The following subsection deals with Beer's (1979, 1981, 1985, 1989a,b) Viable System Model (VSM). The mechanism of VSM, in which the cybernetic black box technique and negative feedback are applied to deal with the extreme complexity of the environment of an organisation, and the consisting components of VSM - Systems One, Two, Three, Four, and Five - will be discussed. The systemic link between opposites in VSM will also be addressed.

4.3. THE MECHANISM AND THE CONSISTING COMPONENTS OF VSM

The Viable System Model is a model which applies the concepts of systems thinking to the management of an organisation. According to what Beer says, it should be adhered to by an organisation if the organisation is to be viable. The word *viable* to

which Beer (1979, p. 113) refers means “able to maintain a separate existence”. This separate existence means to an organisation that it can exist separately from its environment and it can achieve its own purpose in its environment. The system of VSM consists of five parts: System One, System Two, System Three, System Four, and System Five. The concepts of systems thinking are applied where Systems One, Two, Three, Four, and Five, are designed to work inter-dependently on one another rather than independently of one another. The function of Systems One, Two, Three, Four, and Five, are inter-dependent on one another and are organised by the purpose of an organisation.

In addition to the concepts of systems thinking, how the cybernetic concepts of black box technique and negative feedback are applied to deal with the extreme complexity of an organisation is also the focus of Beer’s VSM. The cybernetic concepts of black box technique and negative feedback are designed into the mechanism of Beer’s VSM and the functional roles carried out by Systems One, Two, Three, Four, and Five, of VSM.

Besides, the cybernetic concepts of black box technique and negative feedback and the functional roles of Systems One, Two, Three, Four, and Five, of VSM have to be adopted at each level of recursion of an organisation if it is to be viable. The concept of recursion means that “the structure of the whole model is replicated in each of its parts” (Jackson, 1991, p. 111) and that “In a recursive organizational structure, any viable system contains, and is contained in, a viable system” (Beer, 1979, p. 118).

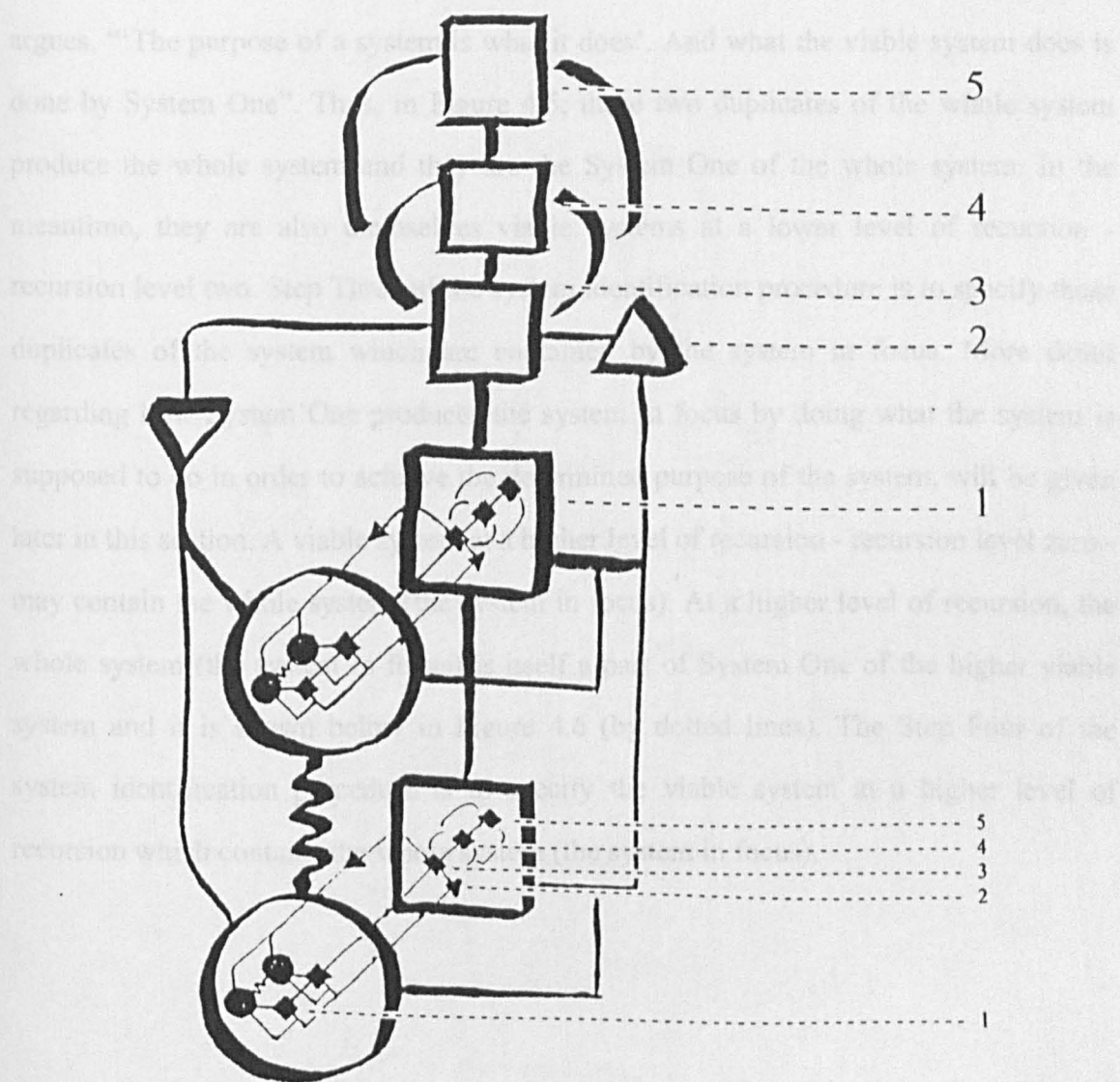
Applying Beer’s VSM to dealing with the extreme complexity of the environment of an organisation can be roughly divided into two parts: the first part is system identification which determines a purpose for the organisation and specifies appropriate levels of recursion; and the second part is system diagnosis which examines if the cybernetic concepts of black box technique and negative feedback and the

functional roles of Systems One, Two, Three, Four, and Five, of VSM are adopted at each level of recursion (Jackson, 1991, p. 113).

In the first part - system identification - the procedure is shown below (from Jackson, 1991, p. 114):

- Identify or determine the purpose(s) to be pursued
- Taking the purpose as given, determine the relevant system for achieving the purpose - this is called the 'system in focus' and is said to be at recursion level 1
- Specify the viable parts of the System 1 of the system in focus - these are the parts that 'produce' the system in focus and are at recursion level 2
- Specify the viable system of which the system in focus is part. ... this is at recursion level 0

Step One and Step Two of the system identification procedure mean that an organisation has to determine its organisational purpose to be pursued and to determine the relevant system - the system in focus at recursion level one - for achieving the organisational purpose determined. The system in focus at recursion level one for achieving the organisational purpose determined is shown in Figure 4.5 (see below).

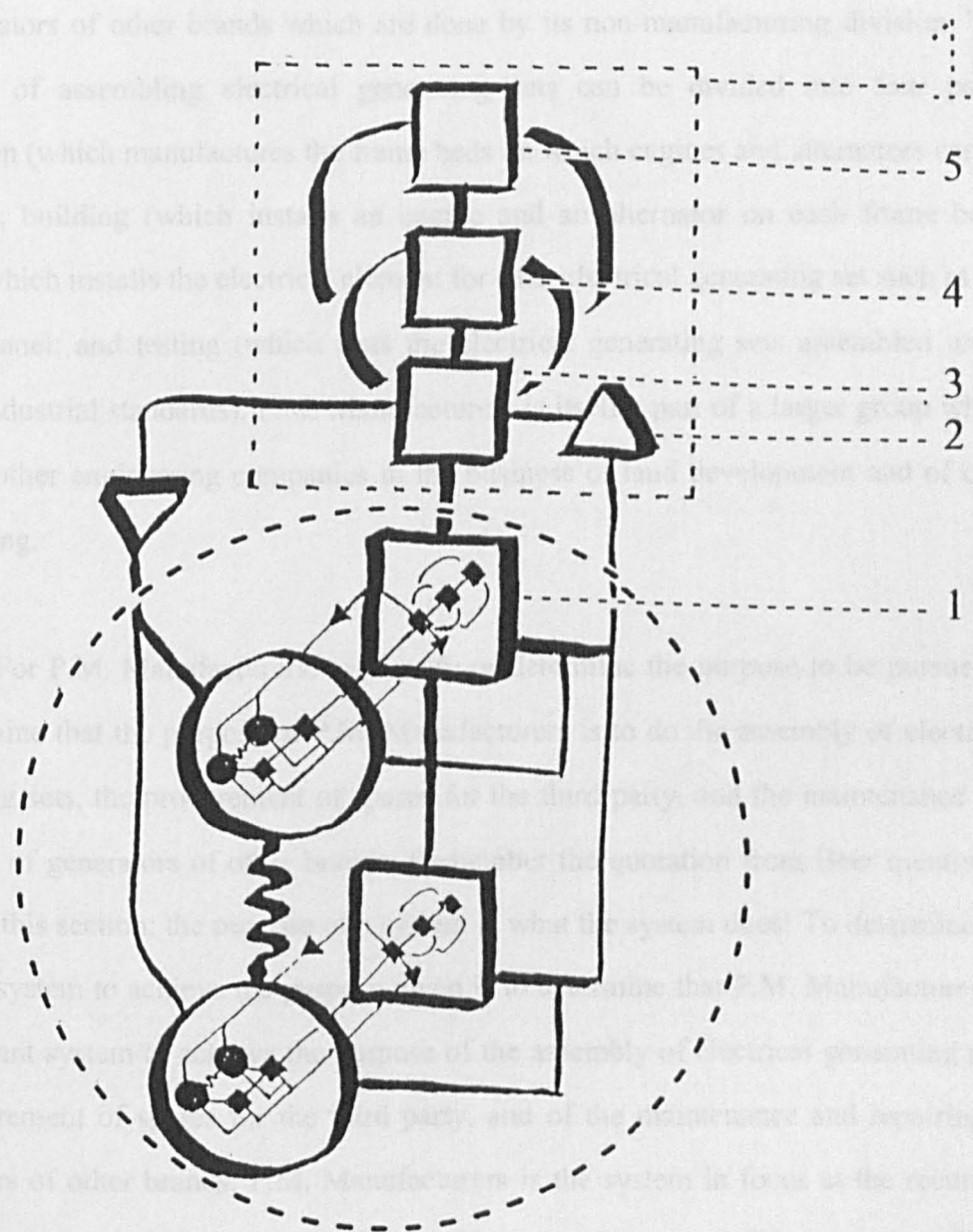


1 .. 5 Beer's Systems 1-5

Figure 4.5: A viable system which contains viable systems.
Source: Adapted from Beer, 1985, p. 3.

Step Three of the system identification procedure is to specify the viable systems contained by the viable system in focus and Step Four is to specify the viable system which contains the viable system in focus. In Figure 4.5, the whole system (the system in focus) contains two systems which are its duplicates. Beer (1985, p. 128)

argues, “‘The purpose of a system is what it does’. And what the viable system does is done by System One”. Thus, in Figure 4.5, these two duplicates of the whole system produce the whole system and they are the System One of the whole system. In the meantime, they are also themselves viable systems at a lower level of recursion - recursion level two. Step Three of the system identification procedure is to specify these duplicates of the system which are contained by the system in focus. More detail regarding how System One produces the system in focus by doing what the system is supposed to do in order to achieve the determined purpose of the system, will be given later in this section. A viable system at a higher level of recursion - recursion level zero - may contain the whole system (the system in focus). At a higher level of recursion, the whole system (the system in focus) is itself a part of System One of the higher viable system and it is shown below in Figure 4.6 (by dotted lines). The Step Four of the system identification procedure is to specify the viable system at a higher level of recursion which contains the whole system (the system in focus).



1 .. 5 Beer's Systems 1-5

Figure 4.6: A viable system contains viable systems and is itself contained by a viable system.

Source: Adapted from Beer, 1985, p. 3.

The example of P.M. Manufacturers (Espejo, 1989) may be used to illustrate the system identification procedure mentioned above. P.M. Manufacturers is in the business of assembling electrical generating sets which is done by its manufacturing division and the business of procuring spares for the third party and providing services

for generators of other brands which are done by its non-manufacturing division. The activities of assembling electrical generating sets can be divided into four parts: fabrication (which manufactures the frame beds on which engines and alternators can be installed); building (which installs an engine and an alternator on each frame bed); wiring (which installs the electrical element for each electrical generating set such as the control panel; and testing (which tests the electrical generating sets assembled under certain industrial standards). P.M. Manufacturers is itself a part of a larger group which has two other engineering companies in the business of land development and of civil engineering.

For P.M. Manufacturers, to identify or determine the purpose to be pursued is to determine that the purpose of P.M. Manufacturers is to do the assembly of electrical generating sets, the procurement of spares for the third party, and the maintenance and repairing of generators of other brands. Remember the quotation from Beer mentioned above in this section: the purpose of a system is what the system does! To determine the relevant system to achieve the purpose given is to determine that P.M. Manufacturers is the relevant system to achieve the purpose of the assembly of electrical generating sets, of procurement of spares for the third party, and of the maintenance and repairing of generators of other brands. P.M. Manufacturers is the system in focus at the recursion level one (see Figure 4.7 below). To specify the viable parts of System One of the system in focus which produce the system in focus is to specify that the manufacturing division and the non-manufacturing division of P.M. Manufacturers produce P.M. Manufacturers by doing what P.M. Manufacturers is supposed to do to achieve its purpose. The manufacturing division and the non-manufacturing division are at recursion level two (see Figure 4.7). To specify the viable system of which the system in focus is part, is to specify that P.M. Manufacturers is a part of a larger group which has two other viable parts - a land development company and a civil engineering one. The larger group is a viable system at recursion level zero (see Figure 4.7).

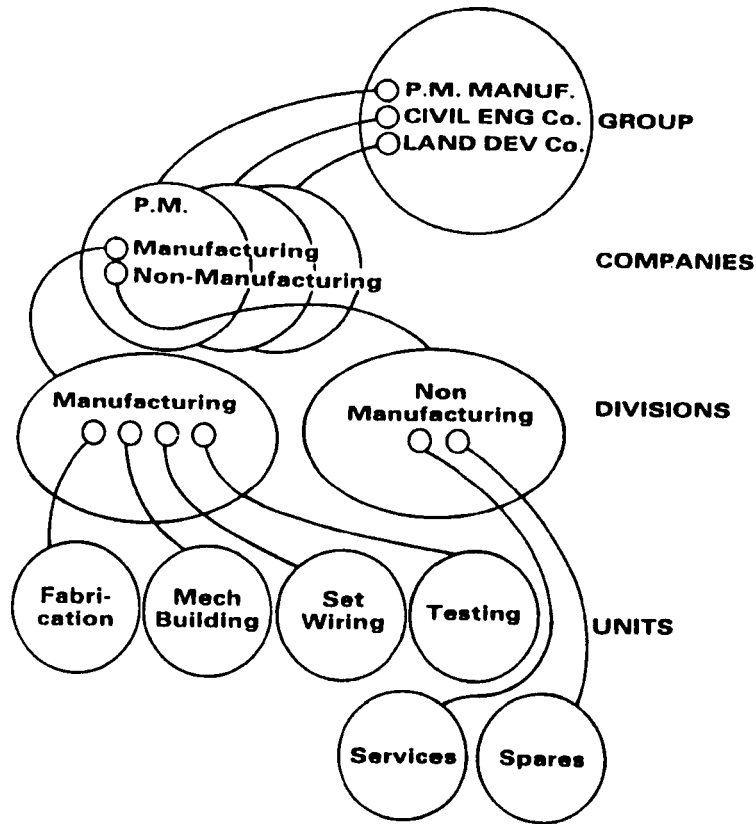


Figure 4.7: An illustration of the system identification procedure by using the example of P.M. Manufacturers.
Source: Espejo, 1989, p. 111.

Having determined a purpose for the system in focus and specified the levels of recursion of concern, an organisation may consider system diagnosis - the second part of dealing with the extreme complexity of its environment by applying VSM. System diagnosis is to examine at each level of recursion whether or not the cybernetic black box technique and negative feedback and the functional roles of Systems One to Five of VSM are being adopted. The following part of this section discusses how the cybernetic black box technique and negative feedback and the functional roles of Systems One to Five of VSM could be adopted at each level of recursion of an organisation.

There are five consisting components in Beer's VSM: Systems One, Two, Three, Four, and Five, at one level and each level of recursion. The system in focus at recursion level one is shown in Figure 4.8 (see below) and its Systems One, Two, Three, Four, and Five, will be introduced below.

4.3.1. System One

System One is an operation function which serves to implement the purpose of the system in focus and to deal with the extreme complexity of the local environment of System One which is much of the overall extreme complexity of the environment of the system in focus (Flood and Jackson, 1991, p. 90). As mentioned above in this section, Beer (1985, p. 128) argues that “‘The purpose of a system is what it does’. And what the viable system does is done by System One”. Therefore, in Beer’s VSM, System One is designed to implement the purpose of the system in focus and the rest of the system in focus - Systems Two, Three, Four, and Five - are designed to take care of the collection of System One and to make the system in focus a coherent whole.

The cybernetic concept of black box technique and negative feedback are applied by System One to dealing with the extreme complexity of its local environment. System One treats its local environment as a black box. There is no need for System One to enter its local environment in order to achieve the purpose of the system in focus. What System One needs to do is to manipulate its inputs into its local environment in order to get the desired outputs from its local environment. When the outputs from its local environment are not what is desired by System One, the concept of negative feedback is applied. The difference between the desired outputs and actual outputs from the local environment of System One is corrected by manipulating the inputs into the local environment of System One. There is still no need for System One to enter its local environment to know what its local environment consists of and how the consisting components of its local environment function together to produce these undesired outputs.

Similarly, the cybernetic black box technique and negative feedback are applied by the rest of the system in focus - Systems Two, Three, Four, and Five - to deal with the extreme complexity of System One and to regulate System One. System One is

treated as a black box by Systems Two, Three, Four, and Five. As mentioned above, System One is an operation function which serves to implement the purpose of the system in focus. System One consists of several viable parts called operational elements. These operational elements carry out the operation function of System One to implement the purpose of the system in focus. There is no need for Systems Two, Three, Four, and Five, to enter System One and its operational elements to know what they consist of and how their consisting components function together to produce the desired outputs. Rather Systems Two, Three, Four, and Five, manipulate their inputs - their managerial inputs - into System One and its operational elements in order to get desired outputs from System One and its operational elements. The managerial inputs of Systems Two, Three, Four, and Five, - co-ordination, control, intelligence, and policy respectively - are something beyond the operation function of System One to implement the purpose of the system in focus. Therefore, Beer (1979, p. 289) suggests that “the managerial control is indeed operated metasystemically since it does not deal with the *stuff* of the system at all - it deals only with the managerial consequences of what the system does”. That is, the cybernetic black box technique logically separates the operational part of a viable system (System One) from its managerial part (Systems Two, Three, Four, and Five). Since what a viable system does has been done by all the operational elements of its System One, what is left to its Systems Two, Three, Four, and Five, is to look after the collection of the operational elements of its System One and to make Systems One, Two, Three, Four, and Five, coherent as a viable system. As Beer (1979, p. 116) argues:

The basic device is to divide the notion of the viable system into two, and to form a logical hierarchy of these two parts. One part consists essentially of the *operational elements* [i.e., System One] ... of the viable system. An operational element exists to undertake one of the system’s basic activities. ... The *collection* of all the operational elements in the viable system exhausts its basic activities. What is left? It is collection of subsystems that exists to look after the collection of operational elements,

so they cohere in that totality which we called a viable system. ... [Therefore,]
[w]hatever else needed to manage the *collection* of operational elements is
METASYSTEMIC to ... something logically beyond (that is, meta) the logic of the
operational elements.

The concept of negative feedback is applied when there is a difference between the desired outputs and the actual outputs from System One. There is still no need for Systems Two, Three, Four, and Five, to enter System One and its operational elements to know what they consist of and how their consisting components function together to produce these undesired outputs. What Systems Two, Three, Four, and Five, need to do is to correct their managerial inputs into System One and its operational elements in order to re-establish the desired outputs from them. For instance, a correct timetable for the utilisation of limited facilities by different operational elements of System One or a sufficient allocation of resources needed to different operational elements of System One might correct the undesired outputs of System One to the desired ones.

As Beer (1985, p. 128) argues, “‘The purpose of a system is what it does’. And what the viable system does is done by System One”. Thus, these parts consisting of the System One of the system in focus, are also the parts that “produce” the system in focus and are themselves viable systems at a next lower level of recursion (recursion level two). The fourth step, a viable system, at recursion level zero, of which the system in focus is part, is also shown in Figure 4.6 (by dotted lines).

[T]he subsidiaries of an organisation should be treated as viable systems in their own right and must, therefore, possess their own Systems 1 to 5. The organisation, which is itself a viable system, might well at a higher level of recursion simply be an implementation subsystem or System 1 part of another viable system (Jackson, 1991, pp. 111-112).

The discussion above has drawn a distinctive line between the operational function of a viable system, which is carried out by System One and the managerial function of a viable system which is carried out by Systems Two, Three, Four, and Five, to take care of the collection of System One and to make the whole viable system a coherent whole. The managerial function carried out by Systems Two to Five - co-ordination, control, intelligence, and policy respectively - will be introduced below.

4.3.2. System Two

System Two is a co-ordination function which serves to damp the operational oscillations among the viable parts of System One (Flood and Jackson, 1991, p. 92). The function of a timetable is a typical function carried out by System Two. Beer (1979, pp. 178-179) provides an example of a school timetable keeper for the function of System Two. There are many classes in a large school and there are limited facilities and resources. Without a school timetable keeper a school gym, for instance, might be fully occupied by some classes and other classes have to wait outside the gym for the availability of the gym, while at some other periods of time, the school gym is completely empty. Therefore, with a school timetable keeper, the operational oscillations - an overloaded school gym at some periods of time and an empty school gym at some other time - can be damped. It becomes convenient for different classes to switch their time of utilising the limited resources and facilities of the school. As this example shows, the viability of System One will be severely damaged without the function carried out by System Two.

4.3.3. System Three

System Three is a control function which serves to interpret the purpose given from higher management (System Four or System Five), to allocate resources for the implementation of the given purpose, to define the measurement of and to conduct audits against the implementation of the given purpose (Flood and Jackson, 1991, p. 92). System Three serves to achieve the purpose given from System Four or System Five. The functions carried out by directors of production, of personnel, or of finance, are typical functions of System Three. The production capacity, the number of staff, or the budget, can be regarded as resources to be allocated for System One to implement the purpose given from System Four or System Five. System Three also needs to determine the measurement of the implementation of the given purpose. For instance, how are the cost and the profit to be calculated for each viable parts of System One. In the meantime, System Three needs to audit the utilisation of the resources allocated to System One.

System Three does not have a direct contact with the environment of the system in focus and it is involved in the change of purpose given from System Four or System Five, only when the given purpose affects the stability of System One - i.e., the internal stability of the system in focus. System Three also needs to sustain the stability of System One.

4.3.4. System Four

System Four is an intelligence function which serves to gather the relevant environmental information of the system in focus as a whole, to provide a model of the environment of the whole system in focus for System Five and System Three, and to bring together the information from System Three (internal information) and the

information from System Four itself (the external and environmental information) (Flood and Jackson, 1991, p. 92). However, System Four does not and cannot gather all the environmental information of the whole system in focus. Rather, it gathers information which is relevant to the purpose of the system in focus. The criteria of relevance is given by System Five. Information which is irrelevant to the purpose of the system in focus is excluded and concealed. The functions of marketing research, technology research and design, and the organisational planning are typical functions of System Four.

4.3.5. System Five

System Five is a policy function which serves to represent the purpose of the whole system in focus to wider systems, to determine the policies for and create an atmosphere within the system in focus, to balance the internal stability and demands represented by System Three and the external environmental changes and demands represented by System Four, and to respond to important information which passes from Systems One, Two, Three, and Four (Flood and Jackson, 1991, p. 92).

The function carried out by the board of an organisation is a typical function of System Five. The board of an organisation determines the purpose of its organisation and the board represents the purpose of its organisation to wider systems. The board determines the policies for and creates an atmosphere in its organisation. For instance, people in an organisation know how the board will react to some really way-out ideas which are far away from the purpose of the organisation (Beer, 1985, p. 125). The policies determined and atmosphere created by the board also guide the criteria of relevance in accordance with which System Four gathers the environmental information of the whole organisation. The board also needs to balance the function of System Three and the function of System Four of its organisation according to the purpose of its

organisation it represents. For instance, if the board emphasises too much on the function of System Four, the function of System Three of the organisation will not work properly and the board will have the organisation collapse ahead of it. Conversely, if the board emphasises too much on the function of System Three, the function of System Four will not work properly and the board will have an organisation which is similar to the one which manufactures the world's best buggy whips and has no future (Beer, 1985, p. 118). The board also has to respond to the important information passed from Systems One, Two, Three, and Four.

System Five is the closure of the system in focus, which means there is no System Six, Seven, ..., etc., and System Five represents the purpose of the system in focus to wider systems. This closure is logical since System Five of the system in focus is also part of a viable part of System One of the viable system at a higher level of recursion. In this way, what System One of a viable system at a higher level of recursion is supposed to do, can be done by the system in focus, where System Five of the system in focus may represent what System One of the viable system at a higher level of recursion is supposed to do. Therefore, the purpose of the viable system at a higher level of recursion can be implemented by System One of the viable system at a higher level of recursion, and what System One of the viable system at a higher level of recursion, of which System Five of the system in focus is a part, is supposed to implement can be done by the system in focus. In this way, the system in focus becomes a viable part of System One of the viable system at a higher level of recursion, and the system diagnosis process may go up to a higher level of recursion. At this higher level of recursion, the viable system which was at a higher level of recursion now becomes the system in focus and the system diagnosis starts from System One again.

Therefore, having determined a purpose for the system in focus and specified the levels of recursion of concern, an organisation may then consider the system diagnosis process to deal with the extreme complexity of its environment by examining

at each level of recursion of the organisation whether or not the cybernetic black box technique and negative feedback and the functional roles of Systems One to Five of VSM mentioned above are being adopted.

4.4. ADDRESSING THE SYSTEMIC LINK BETWEEN OPPOSITES IN BEER'S VSM

When an organisation adopts Beer's VSM to deal with the complexity of its environment, its originating rationality is to achieve its organisational purpose by adopting the VSM. As mentioned above, the cybernetic black box technique and negative feedback are applied by VSM to deal with the extreme complexity of the environment of an organisation. By applying the cybernetic black box technique and negative feedback to the design of VSM, the purpose of an organisation is achieved by System One; and Systems Two, Three, Four, and Five, are to take care of the collection of the consequences of what System One has achieved and to make sure the purpose of the organisation is achieved by System One.

As explained earlier, in VSM, the cybernetic concept of black box technique and negative feedback are applied by System One to deal with the extreme complexity of its local environment. System One treats its local environment as a black box. Similarly, the cybernetic black box technique and negative feedback are applied by Systems Two, Three, Four, and Five, to dealing with the extreme complexity of System One and to making sure that the purpose of the organisation is achieved by System One. System One is treated as a black box by Systems Two, Three, Four, and Five. As also mentioned in the previous section, Systems One, Two, Three, Four, and Five, need to function as a coherent whole. Systems One, Two, Three, Four, and Five, are not designed to function independently of one another. Rather, they are designed to function dependently on one another. System One is an operation function which serves to

achieve the organisational purpose - i.e., to do what the organisation is supposed to do. Systems Two, Three, Four, and Five, - the co-ordination function, the control function, the intelligence function, and the policy function respectively - are to take care of the collection of the consequences of what System One implements, without entering into System One. Therefore, to manipulate the managerial inputs into System One to regulate the outputs from System One, an organisation needs to know that Systems One, Two, Three, Four, and Five, which perform the functions of operation, co-ordination, control, intelligence, and policy respectively, cannot function well independently of one another, although the functions of Systems Two, Three, Four, and Five, are beyond the function of System One.

The concept of negative feedback is applied when there is a difference between the desired and the actual outputs from System One. There is no need for Systems Two, Three, Four, and Five, to enter System One and the operational elements of System One to know what they consist of and how their consisting components function together to produce these undesired outputs. What Systems Two, Three, Four, and Five, need to do is to correct their managerial inputs into System One and the operational elements of System One in order to re-establish the desired outputs from them. For instance, a correct timetable for the utilisation of limited facilities by different operational elements of System One, or a sufficient allocation of resources needed to different operational elements of System One might correct the undesired outputs of System One to the desired ones.

Therefore, by adopting VSM, the purpose of an organisation is supposed to be achieved by System One; and Systems Two, Three, Four, and Five, are supposed to take care of the collection of the consequences of what System One has achieved and to make sure the purpose of the organisation is achieved by System One. The originating rationality of an organisation to achieve its organisational purpose by adopting VSM, is shown in Figure 4.9 (see below).

The originating rationality of an organisation to achieve its organisational purpose by adopting VSM.

The plan for the desired states of its environment made, the potential cost and benefit of the plan estimated, the resources needed by the plan made available, and the plan implemented.

Figure 4.9: The originating rationality of an organisation to achieve its organisational purpose by adopting VSM.

An opposite which could be envisaged by the originating rationality of the organisation, may be to consider what is being excluded from the very purpose of the organisation. As mentioned above, the complexity the environment of an organisation can exhibit is not purely externally defined by its environment, but internally defined by the purpose of the organisation. The environment of an organisation has infinite possible states. The purpose of the organisation originates the definition of the complexity of its environment. Then its environment contributes to its own complexity by exhibiting undesired states which affect the purpose of the organisation. The purpose of an organisation excludes and conceals from the organisation many more states of its environment than the purpose of the organisation reveals. The rationality of an organisation to achieve its organisational purpose by adopting VSM, which applies the cybernetic black box technique and negative feedback to dealing with the extreme complexity of its environment, does not consider the possibility of affirming those undesired states of its environment. This is because they are supposed to be changed to the desired states. Nor does its originating rationality consider the possibility of affirming those irrelevant or unknown states of its environment which do not seem to affect the purpose of the organisation. The thesis will discuss in turn the possibility of

affirming the opposite (states) which could be envisaged by the originating rationality of the organisation and the opposite (states) irrelevant or unknown to its originating rationality.

To take on board the opposite which could be envisaged by its originating rationality, an organisation may consider to affirm those states undesired by its organisational purpose, and to plan for them, estimate if the benefit from the plan is acceptable and its cost affordable, and make available the resources needed by the plan. To use the example of IBM mentioned before, when IBM would like its environment, its customers for instance, to exhibit their interests in its mainframe computers and minicomputers, those states of their customers, for instance, when they show their interests in workstations or personal computers, are undesired states which may affect IBM's purpose. According to IBM's originating rationality alone - i.e., IBM does not take on board its opposite which could be envisaged by its originating rationality - these undesired states should be corrected and changed to the desired states. However, IBM may also take on board these opposite (states) which could be envisaged by its originating rationality.

To affirm undesired states of its environment, an organisation now adopts VSM to achieve the opposite of its organisational purpose envisaged. Let us continue using IBM as an example. To affirm undesired states of its environment means for IBM that, for instance, its customers are then expected to exhibit their interests in workstations or personal computers only and IBM needs to plan for this situation, estimate the potential benefit from and cost of the plan to see if it is acceptable and affordable, and make available the resources needed in the plan. That is, to take on board the opposite of the organisational purpose of IBM envisaged, IBM may then consider adopting VSM to become the leading manufacturer of workstations or personal computers rather than the leading manufacturer of mainframe computers and minicomputers. IBM's plan may consider initiating within or without its company different brands to deal with the

business of manufacturing workstations and personal computers and to make the resources needed by this plan available. Manufacturing workstations and personal computers under different brands would not much affect the originating rationality of adopting VSM (if adopted by IBM) to achieve its organisational purpose of manufacturing mainframe computers and minicomputers. The potential cost of the plan should be estimated and so should its potential benefit. This state would be a desired state of the environment where IBM's situation does not allow it to sell its mainframe computers and minicomputers well, as the market of workstations and personal computers at the moment is much larger.

Taking on board the opposite envisaged by one's originating rationality by affirming the undesired states, which are defined by one's purpose, and by planning for them, estimating if the benefit from the plan is acceptable and if the cost of the plan is affordable, and making available the resources needed in the plans, one's originating rationality becomes a rationality which is not necessarily to be realised. Similarly, the rationality of an organisation to achieve its organisational purpose by adopting VSM could take on board the opposite of its originating rationality envisaged by affirming the undesired states defined by its organisational purpose and by planning for them, estimating if the potential benefit from the plan is acceptable and its cost affordable, and making available the resources needed by the plan. The potential cost and benefit of the plan should be estimated since, just like the organisation's originating rationality, the organisation needs to prepare for the situation in which the opposite envisaged by the organisation's originating rationality may not be allowed by the organisation's situation either. In the meantime, the plan for the opposite of the organisation's originating rationality envisaged is not implemented, although the resources needed by the plan are made available. The organisation's originating rationality to achieve its organisational purpose by adopting VSM and the opposite envisaged and taken on board by its originating rationality are shown below in Figure 4.10.

<p>The originating rationality of an organisation to achieve its organisational purpose by adopting VSM.</p>	<p>The opposite envisaged and taken on board by its originating rationality.</p>
<p>The plan for the desired states of its environment made, the potential cost and benefit of the plan estimated, the resources needed by the plan made available, and the plan implemented.</p>	<p>The plan for the undesired states of its environment made, the potential cost and benefit of the plan estimated, and the resources needed by the plan available despite the plan not being implemented.</p>

Figure 4.10: The originating rationality of an organisation to achieve its organisational purpose by adopting VSM and its opposite envisaged and taken on board.

Besides, there is a need for an organisation to have a reserve of its resources for the irrelevant or unknown states of its environment - i.e., the opposite irrelevant or unknown to its originating rationality. Let us follow through the IBM example. IBM had the originating rationality of adopting VSM, if adopted by IBM, to achieve its organisational purpose of being the leading manufacturer of mainframe computers and minicomputers. IBM may also consider taking on board the opposite of its organisational purpose envisaged by adopting VSM to become, for instance, the leading manufacturers of workstations and personal computers. Nonetheless, there are still many more states which are beyond the desired states of IBM and the undesired states envisaged by the originating rationality of it - i.e., beyond the whole rational framework of IBM. The business of computer software which is a large business nowadays, is an example of a state which was not quite relevant or known to IBM originating rationality and to its whole rational framework.

Despite that the organisation cannot know them and plan for them, these excluded and concealed states of the environment of an organisation are still systemically linked with those desired and undesired states of its environment defined by the purpose of the organisation and linked with the purpose of the organisation. The

environment of an organisation addressed by the originating rationality of the organisation to achieve its organisational purpose by adopting VSM, is not so independent of and separated from the organisation. The excluded and concealed states of the environment have only become irrelevant because of their seeming irrelevance to the purpose of the organisation as perceived by its originating rationality. They are still systemically linked with those desired and undesired states of its environment and with the purpose of the organisation. Therefore, there is a need to affirm these irrelevant or unknown states and to have a reserve of resources for them. More detail regarding how to have a reserve for the opposite irrelevant or unknown to one's originating rationality will be given in Chapter Six. The relationship between the originating rationality of an organisation to achieve its organisational purpose by adopting the VSM, the opposite envisaged and taken on board by its originating rationality, and the opposite irrelevant or unknown to its originating rationality, is shown in Figure 4.11 (see below).

<p>The originating rationality of an organisation to achieve its organisational purpose by adopting VSM.</p> <p>The plan for the desired states of its environment made, the potential cost and benefit of the plan estimated, the resources needed by the plan made available, and the plan implemented.</p>	<p>The opposite envisaged and taken on board by its originating rationality.</p> <p>The plan for the undesired states of its environment made, the potential cost and benefit of the plan estimated, and the resources needed by the plan available despite the plan not being implemented.</p>
<p>The opposite irrelevant or unknown to its originating rationality.</p> <p>Resources reserved for the irrelevant or unknown states and no plan made for them.</p>	

Figure 4.11: The relationship between the originating rationality of an organisation to achieve its organisational purpose by adopting VSM, the opposite envisaged and taken on board by its originating rationality, the opposite irrelevant or unknown to its originating rationality.

Therefore, by taking on board the opposite envisaged by its originating rationality and by having a reserve for the opposite irrelevant or unknown to its originating rationality, an organisation has a rationality which is not necessarily to be realised and a purpose which is not necessarily to be achieved. When VSM is adopted, the originating rationality of an organisation is to achieve its organisational purpose by adopting VSM. The desired states of its environment and the undesired states which need correcting to the desired states, will be defined according to the purpose of the organisation. The plan regarding how to obtain the desired states of the environment of the organisation should be made. The potential cost and benefit of the plan should be estimated. The resources needed by the plan should be made available. And the plan

will actually be implemented. To take on board the opposite envisaged by the organisation's originating rationality, the organisation could affirm the undesired states of its environment which may affect the purpose of the organisation. The organisation could plan for these undesired states, estimate if the potential benefit of the plan is acceptable and its cost affordable, and make available the resources needed by the plan. However, the plan will not be actually implemented. To have a reserve for the opposite irrelevant or unknown to its originating rationality, the organisation could have a reserve of resources for these irrelevant or unknown states. No plan for them will be made. In this way, when the organisation's originating rationality and purpose is not allowed by its situation for whatever reason, the organisation will still have an alternative rationality and purpose available - i.e., the opposite envisaged by the organisation's originating rationality. When the organisation's rational framework - i.e., the whole of its originating rationality and the opposite envisaged and taken on board by its originating rationality - is not allowed by its situation for whatever reason, the organisation will still have a reserve available for its situation which affirms those states of its environment that are beyond the rational framework of it. In this way, an organisation may have a rationality which is not necessarily to be realised and a purpose which is not necessarily to be achieved. This is the concept of a purposeless system and it will be given in more detail in Chapter Six.

Through the discussion above, I have suggested that there is a need for the practitioners of VSM to take on board the opposite of their originating rationality envisaged to remind themselves that their originating rationality to achieve their purpose by adopting VSM may conceal and exclude the opposite of their originating rationality from them - i.e., to make the practitioners of VSM aware of the concealment and exclusion. In the meantime, this may also remind them that there is always an alternative purpose available for them and planned - the cost and benefit of the plan estimated and the resources needed by the plan made available. I have suggested furthermore that there is a need for the practitioners of VSM to keep a reserve of their

resources available for the purpose irrelevant or unknown to their originating rationality to remind themselves that there is still something beyond their whole rational framework - i.e., the whole of their originating rationality and the opposite envisaged and taken on board by their originating rationality. This may also remind them that there are still resources reserved when their situation affirms some purpose which is beyond their rational framework.

4.5. CONCLUSION

This chapter has addressed the systemic link between opposites by using Beer's VSM to organise the discussion. The conventional way of addressing what we want and of cutting off what we do not, has been re-considered. Through the discussion above, I show that opposites cannot be addressed separately because the link between them is systemic.

Two cybernetic concepts - "the black box technique" and "the negative feedback" - may be adopted by an organisation to deal with the problem of extreme complexity exhibited by its environment. Therefore, to deal with the extreme complexity of the environment of an organisation is to deal with "variety" - the many possible states which the environment of it may exhibit.

The complexity an organisation can generate at a particular point in time has to catch up with the complexity which its environment can exhibit at that point in time, otherwise its environment is out of control. Besides, an organisation also needs to generate some extra variety to catch up with the number of undesired possible states exhibited by its environment which may affect the purpose of the organisation. Therefore, the variety an organisation is expected to generate does not have to catch up

with the number of all the possible states its environment may exhibit but with those states which may affect the purpose of the organisation.

The complexity of the environment of an organisation can be significantly reduced if the organisation treats its environment as a black box and considers only those possible states of its environment desired by the purpose of the organisation rather than all the possible states which its environment may exhibit. In the black box technique, what matters is not to find out what really happens in the black box, but to find out the relationship between the inputs into, and the outputs from, the black box, which are the consequences of the black box. In the managerial context, this means that an organisation is not required to enter its environment to know what its environment consists of and how the consisting components of its environment function together to produce outputs. Given an organisational purpose, the point is to find out what the desired states of the environment of the organisation are and what the needed inputs for its environment to exhibit these desired states are.

Also known as “goal-seeking” or “balancing” feedback, the negative feedback seeks deviation counteracting, eliminating the difference between the actual state of a process of concern and its desired state. The negative feedback functions to eliminate the difference between the actual and the desired state of a process of concern whenever the difference is detected.

The extreme complexity of the environment of an organisation can be dealt with by the cybernetic concept of the black box technique in conjunction with the cybernetic concept of the negative feedback. The organisation needs to establish a schemata between its inputs into, and the outputs from, its environment - i.e., a relationship regarding what kinds of outputs will be obtained with respect to what kinds of inputs provided. If the purpose of the organisation cannot be achieved, what the

organisation needs to do is to manipulate its inputs into its environment until the desired outputs from its environment are re-established.

The Viable System Model (VSM) is a model which applies the concepts of systems thinking to the management of an organisation and which Beer (1985) argues has to be obeyed by an organisation if the organisation is to be viable. The word *viable*, to which Beer refers, means *able to maintain a separate existence*.

Application of Beer's VSM to dealing with the extreme complexity of the environment of an organisation can be roughly divided into two parts: the first part is system identification which determines a purpose for the organisation and specifies appropriate levels of recursion and the second part is system diagnosis which examines if the cybernetic concepts of black box technique and negative feedback and the functional roles of Systems One, Two, Three, Four, and Five, of VSM are adopted at each level of recursion.

There are five consisting components in Beer's VSM: Systems One, Two, Three, Four, and Five, at one level and each level of recursion. System One is an operation function which serves to implement the purpose of the system in focus and to deal with the extreme complexity of the local environment of System One, which is much of the overall extreme complexity of the environment of the system in focus. System Two is a co-ordination function which serves to damp the operational oscillations among the viable parts of System One. System Three is a control function which serves to interpret the purpose given from higher management (System Four or System Five), to allocate resources for the implementation of the given purpose, to define the measurement of, and to conduct audits against, the implementation of the given purpose. System Four is an intelligence function which serves to gather the relevant environmental information of the system in focus as a whole, to provide a model of the environment of the whole system in focus for System Five and System

Three, and to bring together the information from System Three (internal information) and the information from System Four itself (the external and environmental information). System Five is a policy function which serves to represent the purpose of the whole system in focus to wider systems, to determine the policies for, and create an atmosphere within, the system in focus, to balance the internal stability and demands represented by System Three and the external environmental changes and demands represented by System Four, to respond to important information which pass from Systems One, Two, Three, and Four. System Five is also a logical closure of the Viable System Model at one level of recursion.

Having determined a purpose for the system in focus and specified the levels of recursion of concern, an organisation may then consider the system diagnosis process to deal with the extreme complexity of its environment by examining at each level of recursion of the organisation whether or not the cybernetic black box technique and negative feedback and the functional roles of Systems One to Five of VSM, mentioned above, are being adopted.

By adopting VSM, the purpose of an organisation is supposed to be achieved by System One; and Systems Two, Three, Four, and Five, are supposed to take care of the collection of the consequences of what System One has achieved and to make sure the purpose of the organisation is achieved by System One.

However, the originating rationality of an organisation to achieve its organisational purpose by adopting VSM, which applies the cybernetic black box technique and negative feedback to dealing with the extreme complexity of its environment, does not consider the possibility of affirming those undesired states of its environment. This is because they are supposed to be changed to the desired states as defined by the purpose of the organisation. Nor does the originating rationality of the

organisation consider the possibility of affirming those irrelevant or unknown states of its environment which do not seem to affect the purpose of the organisation.

To take on board the opposite which could be envisaged by its originating rationality, an organisation may adopt VSM to affirm those states undesired by its organisational purpose, and to plan for them, estimate if the benefit from the plan is acceptable and its cost affordable, and make available the resources needed by the plan. The plan for the opposite of the organisation's originating rationality envisaged is not necessarily implemented, although the resources needed by the plan are made available.

However, there are still many more states of its environment which are beyond the rational framework of the organisation, so the organisation cannot know them and plan for them. These states of its environment are not irrelevant purely because of themselves; they become irrelevant because they are not the states desired by the purpose of the organisation or the undesired states which may affect the purpose of it, i.e. they are seemingly irrelevant to the purpose of the organisation as perceived by its originating rationality. They are still systemically linked with those desired and undesired states of its environment and with the purpose of the organisation. Therefore, there is a need to affirm these irrelevant or unknown states and to have a reserve of resources for them just like that an organisation affirms the opposite of its originating rationality envisaged, despite that these irrelevant or unknown opposite of its originating rationality cannot be planned for in advance.

By taking on board the opposite envisaged by its originating rationality and by having a reserve for the opposite irrelevant or unknown to its originating rationality, an organisation has a rationality which is not necessarily to be realised and a purpose which is not necessarily to be achieved. When VSM is adopted, the originating rationality of an organisation is to achieve its organisational purpose by adopting VSM. The desired states of its environment and the undesired states which need correcting to the desired

states, will be defined according to the purpose of the organisation. The plan regarding how to obtain the desired states of the environment of the organisation should be made. The potential cost and benefit of the plan should be estimated. The resources needed by the plan should be made available. And the plan will be implemented. To take on board the opposite envisaged by the organisation's originating rationality, the organisation may affirm the undesired states of its environment which may affect the purpose of the organisation, plan for these undesired states, estimate if the potential benefit of the plan is acceptable and its cost affordable, and make available the resources needed by the plan. However, the plan might not be actually implemented. The organisation may also have a reserve of resources for irrelevant or unknown states, but no plan for them will be made. In this way, when the organisation's originating rationality and purpose is not allowed by its situation for whatever reason, the organisation will still have an alternative rationality and purpose available - i.e., the opposite envisaged and taken on board by the organisation's originating rationality. When the organisation's rational framework - i.e., the whole of its originating rationality and the opposite envisaged and taken on board by its originating rationality - is not allowed by its situation for whatever reason, the organisation will still have a reserve available for its situation which affirms those states of its environment that are beyond the rational framework of it. In this way, an organisation may have a rationality which is not necessarily to be realised and a purpose which is not necessarily to be achieved.

It may be argued that the systemic link between opposites is addressed by System Dynamics (Forrester, 1961, 1969a; Coyle, 1977; Meadows, 1980; Roberts *et al.*, 1983). System Dynamics is particularly concerned with counter-intuitive actions and with the long-term unforeseen impact of intuitive actions. Therefore, System Dynamics seems able to deal with the concealed and excluded opposites of intuitive actions (such as the long-term unforeseen impact of intuitive actions). In the next chapter - Chapter Four - I will show how System Dynamics may deal with the long-term unforeseen impact of intuitive actions. I will also show what is still concealed and excluded by the

rationality of an organisation to achieve the purpose of the organisation by adopting System Dynamics. System Dynamics will be used as another example of how the systemic link between opposites may be addressed in the managerial context. Chapter Five - “Addressing the Systemic Link between Opposites in System Dynamics” - turns to this.

Chapter Five: Addressing the systemic link between opposites in System Dynamics

5.1. INTRODUCTION

This chapter aims to address the systemic link between opposites by revisiting another approach - System Dynamics (SD) (Forrester, 1961, 1969a; Coyle, 1977; Meadows, 1980; Roberts *et al.*, 1983). To address the systemic link between opposites in another approach - SD - may facilitate me to explore the concept of a purposeless system and to show that one can arrive at the concept of a purposeless system in a variety of ways. SD is particularly concerned with the long-term unforeseen impact of intuitive actions and with providing counter-intuitive solutions for them. Therefore, SD will be used as an example to show how long-term unforeseen impact of intuitive actions may be dealt with. I explore also what is still concealed and excluded by the rationality of an organisation to achieve the purpose of the organisation by adopting SD.

In this chapter, I build up concepts and theories as follows. Firstly, I show how some concepts of systems thinking mentioned in Chapter Three may relate to intuitive actions and to the way in which SD deals with the long-term unforeseen impact of intuitive actions. Secondly, I introduce further concepts and theories of SD and show how these concepts and theories of SD may deal with intuitive actions further. Thirdly, I offer an example of how SD may be applied to the managerial context. Fourthly, I show that the systemic link between opposites is not addressed in SD. Finally, I conclude that there is a need to address the systemic link between opposites in SD and that there is a need for a new concept of systems thinking, named a purposeless system, to address the systemic relationship between opposites.

5.2. THE CONCEPTS AND THEORIES OF SYSTEM DYNAMICS

System Dynamics (SD) is considered as inter-disciplinary (Meadows, 1980; Forrester, 1981; Paulre, 1981). SD has been considerably developed since Jay Forrester first presented it (Richardson, 1985; Scholl, 1992). It has been widely applied to different contexts. Such as its application to public education known as learner centred learning (Roberts, 1978; Brown, 1992; Draper, 1993; Forrester, 1993); to policy analysis (Mashayekhi, 1993); to project management (Scott, 1993; Cooper, 1994; Rodrigues and Williams, 1996a,b); to organisational learning (Graham and Senge, 1990); to military planning (Coyle, 1992); and to the testing of the internal consistence of theories proposed (Mass, 1975, 1980; Low, 1980; Wittenberg, 1992). As Forrester (1981, p. v) once commented on the papers presented in one single conference on SD:

Applications of system dynamics have been made to many fields. Even within this one conference there are papers on inflation, corporate planning, mining, transportation, national economics, medicine, and ecological systems.

5.2.1. Systems thinking and counter-intuitive actions

Intuitive actions may be dealt with if one tries to employ systems thinking. As mentioned in Chapter Three, the concepts of systems thinking suggest that different parts of a system inter-act with each other and that the behaviour of a part of the system may be affected by the behaviour of another part of the system. Nevertheless, when the behaviour of a part of the system can be affected by the behaviour of another part of the system, these two parts of the system are not necessarily close to each other, especially in complicated systems. That is, to deal with the behaviour of a part of the system, one may need to deal with another part of the system which is far way from the part whose

behaviour one would like to deal with. However, intuitively people may deal with a part of a system when the part of a system is believed to have some problems. For instance, people intuitively look for direct causes in the production department when there are some problems with production. However, Ackoff points out that when the production does not go well, the fault might come not from the production department itself, but from the large amount of small orders which have been used to maintain its relationships with customers by the sales department (Ackoff, 1981). In this situation, intuitive actions to deal with the production department rather than the sales department do not work. Therefore, intuitive actions may be produced due to the lack in the concept of systems thinking that different parts of a system may inter-act with each other and the behaviours of different parts of a system may affect each other.

Intuitive actions may also be produced by the inability of having a holistic view of a system. Without the concept of systems thinking, parts of a system are intuitively dealt with separately rather than as a whole. In addition, best results are also intuitively supposed to be obtained from the aggregation of all the best individual parts. However, an example mentioned in Chapter Three given by Ackoff (1981) may be used to show what the result of intuitive actions produced by the lack of a holistic view of a system may be. The example is what Ackoff (1981, p. 18) calls as *the assembly of a best car by using all the best parts from the best makes*. The result of this intuitive action is that the car cannot even run because the parts do not fit one another without modification according to a suitable framework.

The concepts of systems thinking mentioned above are applied by SD thinkers to dealing with intuitive actions. Forrester (1975a) argues that the close and obvious relationship between causes and effects we experience every day is very misleading while we deal with complicated systems where causes are away from symptoms in time and space. For instance, people normally apply incentives or sanctions to sales people when sales do not go well. However, Senge (1990, pp. 114-135) argues that when sales

do not go well, the fault might come not from the sales department itself, but from the insufficient investment on increasing the capacity of production. In the meantime, without a holistic view of a system, people are evaluated by their own performance and not by the effects of their performance on others. For instance, Scott (1993) argues that the management of a project has been done by taking apart a whole project and managing individual elements separately. Cooper (1994) also argues that under the conventional decompositional project management, managers are neither able, nor necessary, to know how their actions can have a strong impact on the performance of other managers and that of a whole project.

5.2.2. The structure and building blocks of SD

In addition to systems thinking, SD applies feedback loops and time delay to dealing with intuitive actions further. SD deals with the lack of a holistic view by adopting a structure of circular causality and with the interactions among the parts of a system by adopting feedback loops and time delay. SD is a modelling process which deals with particular behaviour patterns of a system of concern by modelling what the system consists of and how the consisting components of the system function together - through feedback loops, time delay, and a structure of circular causality - to produce these particular behaviour patterns. SD is a modelling process which adopts the concepts of systems thinking and the cybernetic feedback loops. SD is defined by Forrester in his Industrial Dynamics (1961, p. 13) as “the investigation of the information-feedback character of industrial systems and the use of models for the design of improved organization form and guiding policy”. Arguing the factor of time, information feedback, and types of models needing consideration, Coyle (1996, p. 10) defines SD as:

System dynamics deals with the time-dependent behaviour of managed systems with the aim of describing the system and understanding, through qualitative and quantitative models, how information feedback governs its behaviour, and designing robust information feedback structures, and control policies through simulation and optimization.

Circular causality is considered as distinct from one-way linear causality (Senge, 1990, pp. 73-79; Richardson and Pugh, 1981, p. 268). In the one-way linear causality, the point is to find out what the cause is and what its effect is, i.e., to find out that A may cause B. The circular causality, on the other hand, emphasises both that A may cause B and that, through certain feedback loops, B may cause A as well, i.e., A and B may be the cause-effect of each other. For instance, does poverty cause population growth or does population growth cause poverty or do they cause each other (Meadows, 1987)? Under the structure of circular causality, each part of a system is the cause-effect of another and the behaviour patterns of their interaction may be described and represented by feedback loops and time delay. Therefore, circular causality may provide a holistic view of, and a structural view, for the system of concern. In the following, circular causality will be used as a framework to organise feedback loops and time delay in the modelling process of SD. They will be introduced below.

There are two different types of feedback loops adopted by SD: negative feedback loops and positive feedback (Maruyama, 1968; Goodman, 1974; Roberts, 1975). As mentioned in Chapter Four, the negative feedback, which is also known as *goal-seeking* feedback (Coyle, 1996) or *balancing* feedback (Senge, 1990), seeks to counteract deviation - i.e., to eliminate the difference between the actual state of a system and its desired state. On the other hand, positive feedback, which is also known as *growth generating* feedback (Coyle, 1996) or *reinforcing* feedback (Senge, 1990), seeks to amplify deviation - i.e., to amplify a small growth or decline into a larger and larger growth or decline. These two types of feedback are quite commonly seen in many

contexts. Positive feedback, for instance, can be seen in the ecological context. When the population of foxes increases, their birth rate will be increased; when their birth rate is increased, their population will be increased even further. In the educational context, when a better performance of a student increases the attention of the teacher to the student which in turn results in a even better performance of the student. In the managerial context, a increase in sales may increase the reputation of the product which in turn increases the sales of the product. Negative feedback, for example, can be seen in the political context. When a government is achieving its objective, the objective of the government now becomes the desired state of its country. To achieve its objective, the government uses all its resources available, including money, policies, human resources, ..., etc., to counteract the deviation of the actual state of its country from the state of the country desired by the objective of the government. That is, the government uses all its resources to eliminate the difference between the desired and the actual states of its country. This deviation-counteracting process will continue until the actual state of the country is no deviation from the state of the country desired by the objective of the government.

Negative feedback may also be seen in the physical context. The temperature in a room will gradually be the same as the temperature outside. The temperature outside is now the desired state of the temperature of the room and any deviation of the temperature of the room from the temperature outside will be counteracted. That is, when the room temperature is higher than the temperature outside, warm air will flow out of the room and cool air will flow into the room to reduce the temperature of the room (to counteract the deviation of the temperature of the room from the temperature outside). Similarly, when the room temperature is lower than the temperature outside, cool air will flow out of the room and warm air will flow into the room to increase the temperature of the room (to counteract the deviation of the temperature of the room from the temperature outside). Negative feedback may also be seen in the managerial context. As mentioned in Chapter Four, negative feedback is adopted by VSM to

counteract the deviation of the actual state of the environment of an organisation from the desired state of the environment of it.

Time delay plays an important role in producing intuitive actions. Time delay means there is a delay in time for the effects of actions to come out. In a negative feedback, for instance, medicine may be used to ease the symptom of coldness. However, one does not keep on taking medicine until the symptom is completely eliminated because it takes time for the effects of the medicine to come out. However, it is not seldom that people build more-than-necessary houses, make more-than-necessary products, and invest more-than-necessary facilities to eliminate the difference between the supply and the demand of the market. This is because the delay in time for the effects of actions to come out makes people intuitively believe that the difference still exists. That is, when more-than-necessary supply has already been attracted to fulfil the demand of market, people still believe that the demand of market is still strong due to the delay in time for the effects of supply to come out. Time delay may also be seen in a positive feedback. For example, the growing tension between business competitors, husband and wife, or neighbours, could result from the delay in time for the effects of their actions to come out. When people intuitively believe they should take even more aggressive action towards their counter part, they believe their actions are to protect themselves because their counter part has taken more aggressive action against them. They are unable to regard the more aggressive action of their counter part as the result of their own previous aggressive action against their counter part. The effects of their own previous aggressive action against their counter part takes some time to come out. Therefore, when they see the more aggressive action of their counter part, they have forgotten that this is a result of their previous aggressive action against their counter part. Rather, they believe that the more aggressive action of their counter part is a single event, and that they need to be even more aggressive against their counter part to protect themselves.

Another concept known as *dominant feedback loops* (Richardson and Pugh, 1981) or *leverage* (Senge, 1990) also needs introducing. Dominant feedback loops are those feedback loops which dominate the current behaviour of a system. At that moment, the effects of loops other than the dominant loops, do not significantly affect the behaviour of a system. For instance, in a prey system in the ecological context where animals are dependent on their prey for survival, the population of foxes increases gradually and steadily when their population is small (Coyle, 1996, pp. 62-67). At that moment, the number of rabbits killed as food for foxes is not an important factor which may dominate the behaviour of the prey system. The behaviour of the prey system at that moment is dominated by a positive feedback in which the increase in the foxes' population increases the foxes' birth rate which in turn increases the foxes' population. That is, at that moment, one can see in the prey system that the population of foxes is growing larger and larger. However, the domination will shift from some feedback loop to another in a system from time to time. The positive feedback loop mentioned above in the prey system will shift its dominance later on to a negative feedback loop in the prey system in which the population of foxes surviving will be consonant to their requirements for the number of rabbits available as food for foxes. That is, if the population of foxes is larger than the amount of rabbits available as their food, foxes will die of starvation and the population of foxes will get smaller. The population of rabbits will get smaller and smaller when more rabbits are killed as food for foxes than rabbits born. When the population of foxes get too large, the population of rabbits will get smaller and smaller. At that moment, the dominant behaviour of the prey system is no longer that the population of foxes grows larger and larger due to the increase of the birth rate of foxes. Rather, the dominant behaviour of the system is the decrease of the population of foxes due to starvation - i.e., due to the lack of rabbits as their food. This is because the population of rabbits has become too small at that time to feed a large population of foxes and foxes start to die of starvation. However, the dominance of the negative feedback loop in the prey system will shift to the positive feedback loop in the prey system. When a lot of foxes die of starvation due to the lack of rabbits as their food

and the population of foxes has decreased significantly, the population of rabbit starts to grow because more rabbits are born than killed as food. That is, at that time, a small number of rabbits is killed to feed a small population of foxes and a larger number of rabbits are born. Therefore, when the population of foxes decreases to a certain amount, the number of rabbits available as their food will start to increase and the population of foxes will start to increase as well.

In the next section, I will give an example to illustrate how SD adopts feedback loops, time delay, and a structure of circular causality - which is used as an organising framework to organise feedback loops and time delay - to deal with particular behaviour patterns of a company (WonderTech).

5.3. AN EXAMPLE OF THE APPLICATION OF SD (TO WONDERTECH)

In this section, an example in the managerial context will be used to illustrate the modelling process of SD. WonderTech as Senge (1990, pp. 115-126) explains and models it, was a rapid-growing company in the USA in the 1960s. The computers WonderTech manufactured adopted advanced technologies which made its computers distinct from those of its competitors. Without strong competitors, the sales of WonderTech's computers grew rapidly and its computers were sold out very soon after being manufactured. Orders were piling up. The delivery time of computers was extended but the sales of computers still continued to grow. Two years after the establishment of WonderTech, the plan for the construction of a new factory was approved and it would take one year for the construction to be completed. At the end of the third year of the establishment of WonderTech, the construction of the new factory was completed as scheduled. However, the sales of WonderTech's computers started to fall. At that point, there were still no strong competitors in the market against

WonderTech's computers and therefore there were no external competitors to blame for the falling sales.

Since it was the sales that fell, the intuitive action was to promote the falling sales. WonderTech had been historically finance-and-marketing-orientated since its establishment. Direct sales was its marketing strategy. Under this circumstance, financial and marketing pressure went linked directly to the sales department of WonderTech. Sales people who did not sell enough computers were dismissed and more successful ones were recruited. There was only one tone in the sales department: "sell, sell, and sell". After the efforts made by the sales department, the sales of WonderTech's computers did go up and the head of the sales department became a hero.

However, the sales of WonderTech's computers continued to fluctuate sharply until its closing down. The efforts made by the sales department significantly increased the sales of WonderTech's computers. The increased sales of WonderTech's computers soon exhausted the increased production capability of the factory newly constructed. The orders of computers were piling up again. The delivery time of computers was extended again but the sales of computers continued to grow. Nonetheless, one year later, the sales of WonderTech's computers fell again and the head of the sales department was dismissed. A new head for the sales department was appointed and a familiar cry was heard again - i.e., "sell, sell, and sell". The sales and marketing strategy adopted by WonderTech to promote the sales of computers worked again and then failed again. Similar themes continued to happen for several times and the sales of WonderTech's computers continued to fluctuate sharply until WonderTech closed down ten years after its establishment.

To apply SD to a system of concern, one needs to know that the modelling process of SD does not model the whole system of concern but particular behaviour patterns of the system of concern with respect to one's purpose. As mentioned in the

previous section, SD is a modelling process which deals with particular behaviour patterns of a system of concern by modelling what the system consists of and how the consisting components of the system function together to produce the particular behaviour patterns through feedback loops, time delay, and a structure of circular causality. An SD model of a system of concern is to facilitate one to understand particular behaviour patterns of the system which can be exhibited as desirable or undesirable with respect to one's purpose. In the meantime, SD will generate counter-intuitive solutions for the behaviour patterns which are regarded as undesirable, through the holistic and structural view of the behaviour patterns of the system, that SD provides, and through the analysis of the character of feedback loops, of time delay, and of the structure of circular causality in the model. Therefore, one's purpose is also achieved when one adopts SD to model the behaviour patterns undesirable of a system. Therefore, in a way these undesirable behaviour patterns of the system can be changed to desired ones because the counter-intuitive solutions for them may be proposed by SD. An SD model of a system is not supposed to represent the whole system because this may imply that this model needs to include every detail of the system. Let us use the bulb lamp mentioned in Chapter Four as an example. To represent the whole system of a bulb lamp in an SD model, one might need to include in the model the length of the wire from the bulb lamp to the power supply, the shape of the plug, the weight of the bulb, the colour of the switch of the bulb lamp, or even the smell of the wire, of the plug, of the bulb, and of the switch. This is because they are all part of the system of a bulb lamp. Therefore, an SD model can never represent the whole system one would like to model. Rather, an SD model is supposed to be used to model particular behaviour patterns of a system of concern which can be exhibited as desirable and undesirable with respect to a purpose. With one's purpose in one's mind, one then chooses what particular behaviour patterns of the system of concern are to be modelled, and what parts of the system of concern are to be included in the SD model. Those behaviour patterns of the system of concern and those parts of the system of concern which do not affect one's purpose, are excluded from the SD model of the system of concern.

Let us use the bulb lamp as an example again. One would like the bulb lamp to exhibit the on and off states. At that time, an SD model is to model what the system of the bulb lamp consists of and how these consisting components of the system of the bulb lamp function together to exhibit the on and off states. These two desired states of the bulb lamp are the behaviour pattern of the bulb lamp which one would like the system of the bulb lamp to exhibit and which is to be modelled. At that time, one does not need to include in the SD model of the bulb lamp the length of wire from the bulb lamp to the power supply, the shape of the plug, the weight of the bulb, the colour of the switch of the bulb lamp, and the smell of the wire, of the bulb, of the plug, and of the switch. This is because they do not affect the on and off states of the bulb lamp - i.e., what one would like the bulb lamp to exhibit - although they all are parts of the system of the bulb lamp. Therefore, applying SD to a system of concern needs to be regarded as modelling specific behaviour patterns of the system of concern with respect to a purpose rather than modelling the whole system.

Similarly, the representation of WonderTech in terms of SD given by Senge shown in more detail later, should also be regarded as modelling a specific behaviour pattern of WonderTech with respect to the purpose of WonderTech to grow continuously, rather than the whole WonderTech. As will be shown, Senge does not set out to represent every details of WonderTech. Rather, he sets out to capture and model a specific behaviour pattern which WonderTech would regard as undesirable. The purpose of WonderTech was to make WonderTech grow continuously. The behaviour pattern of WonderTech was termed by Senge (1990, pp. 115-126) as *the limits to growth*, which with little doubt WonderTech would regard as undesirable. In the meantime, through the modelling process of SD, Senge also proposes counter-intuitive solutions for the behaviour pattern of WonderTech which WonderTech would regard as undesirable, through a holistic and structural view of the behaviour pattern of WonderTech, that SD provides, and the analysis of the character of feedback loops, of time delay, and of the

structure of circular causality in the model. Therefore, the following example of applying SD to WonderTech given by Senge should be regarded as modelling a specific behaviour pattern of WonderTech, which it would regard as undesirable, rather than modelling the whole WonderTech. The representation of WonderTech in terms of SD given by Senge is shown below in Figure 5.1 and further details will be given below.

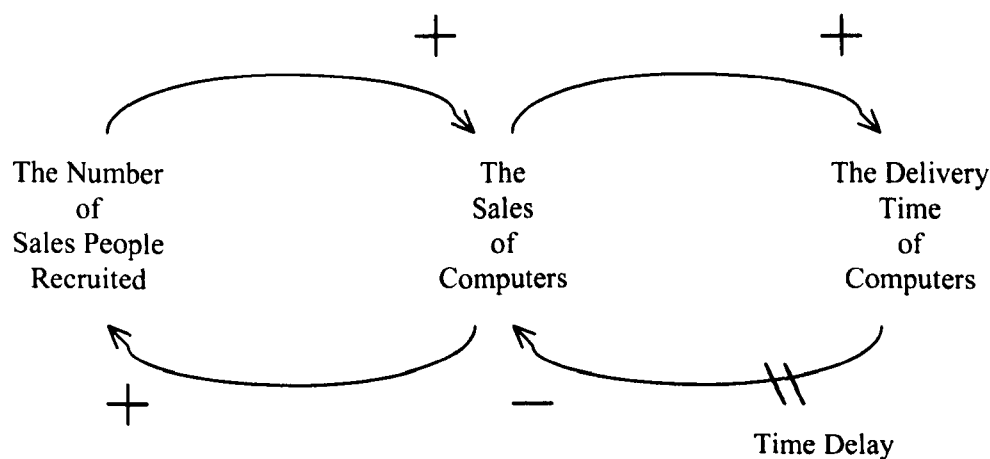


Figure 5.1: The representation of WonderTech in terms of SD given by Senge with respect to the purpose of WonderTech to grow continuously.
 Source: Adapted from Senge, 1990, p. 118.

With respect to the purpose of WonderTech to grow continuously as pictured above, one may also identify in the situation of WonderTech feedback loops, time delay, and circular causality as a structure to organise feedback loops and time delay in the SD model of the behaviour pattern of WonderTech. In the meantime, the shift of dominance among different feedback loops may also be identified. Senge suggests that the continuous growth of sales of WonderTech’s computers meant that there was a positive feedback loop in the behaviour pattern of WonderTech. The marketing strategy of WonderTech - direct sales - increased the sales of WonderTech’s computers by recruiting sales people to do the direct sales of computers. When the sales of computers

were increased, more sales people were recruited and when more sales people were recruited, the sales of computers were further increased. The positive feedback in which the sales of computers and the number of sales people recruited increased each other, in the behaviour pattern of WonderTech, is shown in Figure 5.2 below.

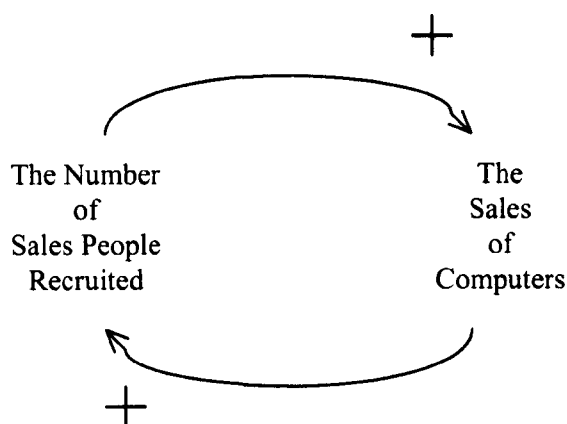


Figure 5.2: Positive feedback in which the sales of computers and the number of sales people recruited increased each other, in the behaviour pattern of WonderTech with respect to the purpose of WonderTech to grow continuously.
Source: Adapted from Senge, 1990, p. 118.

The later-on decrease in the sales of computers in the situation of WonderTech means that there was also a negative feedback at work in the behaviour pattern of WonderTech. In WonderTech's situation, the decrease in sales was not a result of strong competitors in the market. As mentioned above, due to the advanced technologies WonderTech had, there were not strong competitors in the market who might threaten the sales of its computers. The decrease in the sales of WonderTech's computers was because of the long delivery time. Senge suggests that in WonderTech's situation the increase in the sales of computers increased the delivery time which in turn decreased the sales of computers. Customers became unwilling to buy WonderTech's computers because they had to wait a long time before they could receive their computers. The

negative feedback in WonderTech’s behaviour pattern is that the increase in the sales of computers increased the delivery time of computers and the increase in the delivery time of computers decreased the sales of computers. This negative feedback in the behaviour pattern of WonderTech is shown in Figure 5.3 (see below).

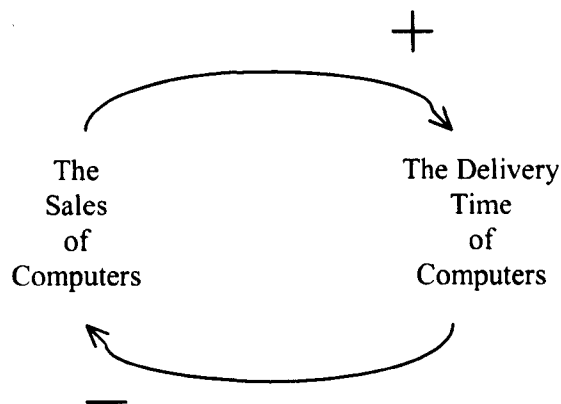


Figure 5.3: The negative feedback in which the increase in the sales of computers increased the delivery time of computers and the increase in the delivery time of computers decreased the sales of computers in WonderTech’s behaviour pattern with respect to the purpose of WonderTech to grow continuously.
Source: Adapted from Senge, 1990, p. 118.

The combination of the positive feedback in Figure 5.2 and the negative feedback in Figure 5.3 is shown below in Figure 5.4.

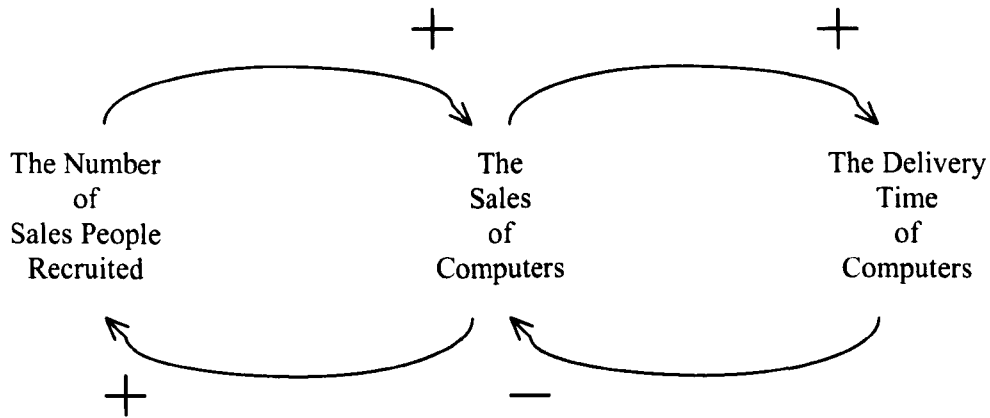


Figure 5.4: The combination of the positive feedback and the negative feedback in WonderTech's behaviour pattern.
Source: Adapted from Senge, 1990, p. 118.

There is also a delay in time in WonderTech's situation which made the delivery time of computers not be considered as an important factor by the management of WonderTech. Senge suggests that a time delay in the negative feedback mentioned above made the management of WonderTech unaware of the negative feedback (see Figure 5.5 below). WonderTech's bad name of a long delivery time of computers did not decrease the sales of its computers immediately. Therefore, the positive feedback mentioned above was given some time to dominate the behaviour pattern of WonderTech. That is, one may see WonderTech's behaviour pattern be that more sales people were recruited to increase the sales of computers and the increase in the sales of computers enabled the recruitment of even more sales people. However, after a delay of a period of time, the effects of the long delivery time of computers started to come out. As mentioned above, at the third year of the establishment of WonderTech, it experienced for the first time a decrease in the sales of its computers.

However, the management of WonderTech was unaware that it was the long delivery time which prevented the sales of its computers from going continuously. The management of WonderTech intuitively looked for the cause of the decrease in the sales of computers in the sales department and decided to reinforce its market strategy of direct sales. After the efforts made by the sales department, the sales of computers started to go well again and the delivery time increased again. Due to the delay in time for the effects of the long delivery time to come out, the positive feedback was again given some time to dominate the behaviour pattern of WonderTech. As mentioned above, the sales of computers went up to a higher level and the head of the sales department became a hero. However, after a delay of a period of time, the effects of the long delivery time started to come out again. As mentioned above, one year later, the sales of computers started to go down again and the head of the sales department was dismissed. Also as mentioned above, the management of WonderTech looked for the cause of the decrease in the sales of computers in the sales department again. This is because it seemed intuitively reasonable to look for the cause of the symptom in the place when the symptom was demonstrated. That is, when the sales of computers did not go well, one should attribute the faults to and look for the cause in the sales department. In the meantime, the strategy did work because the sales of computers did go up to a higher level when the sales department made some improvement. Also as mentioned above, the sales of computers then went up again when the improvement was made in the sales department and the sales of computers went down again a period of time later. This theme continued to repeat until the closing down of WonderTech.

The several times of increase in the sales of computers intuitively suggested that WonderTech may increase the sales of its computers by making some improvements in its sales department. In addition, this also intuitively suggested that the customers of WonderTech did not care about the long delivery time. This is because its customers started to buy its computers again when sales promotion was given to its customers. Therefore, the management of WonderTech was unable to identify the long

delivery time as the cause of the decrease in the sales of their computers due to the delay in time for the effects of the long delivery time to come out. The time delay in the negative feedback in the situation of WonderTech is shown in Figure 5.5. The diagram shown is a structure termed *the limits to growth* by Senge in the model of the behaviour pattern of WonderTech.

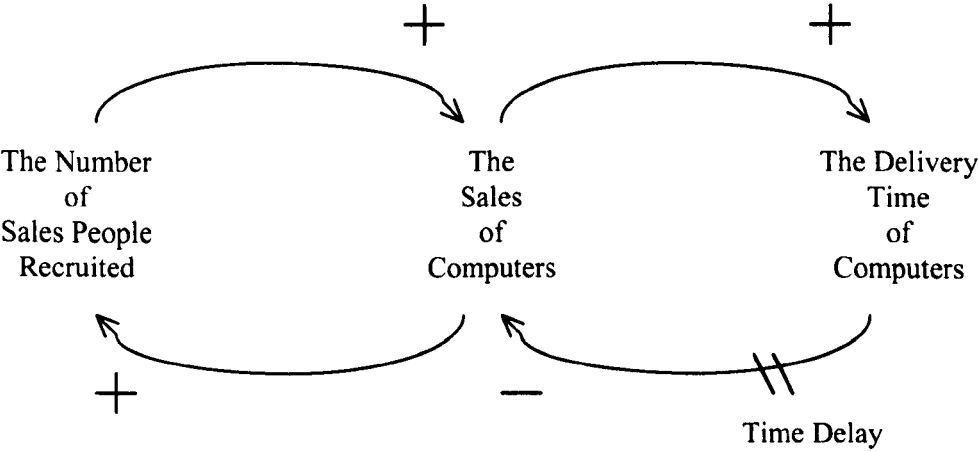


Figure 5.5: The behaviour pattern of WonderTech modelled by SD in terms of feedback, time delay, and a structure of circular causality.
 Source: Adapted from Senge, 1990, p. 118.

SD suggests that intuitive actions be significantly improved if people see fragmented events in terms of the whole structure. Having a holistic and structural view of a system is an important concern of SD (Senge, 1990; Machuca, 1992; Forrester, 1993). Forrester (1993, p. 189) argues that “[p]art of the educational emphasis focuses on ... structures”. Machuca (1992, p. 175) also suggests that:

[W]hen dealing with complex systems it is essential to look for the causes of the behavior of the main system variables rather than focusing on symptoms. For this

reason, the most critical aspect of building a model of social system is to determine its structure, represented, for example, by a causal diagram.

In WonderTech's example, the management of it intuitively focused on the symptoms - i.e., the decrease in the sales of computers. The management of WonderTech did not have a holistic and structural view of the behaviour pattern of the company and they were unaware of an underling structure at work - i.e., *the limits to growth* structure termed by Senge. Senge argues that the sharp fluctuation of the sales of computers is a behaviour caused by the whole structure of circular causality, not by the sales department. As he says (1990. p. 77):

[T]he structure causes the behavior. This distinction is important because seeing only individual actions and missing the structure underlying the actions ... lies at the root of our powerlessness in complex situations.

Having a holistic and structural view is very important for improving intuitive actions and generating counter-intuitive solutions (Forrester, 1969b, 1975b; Roberts, 1964, 1978b; Alfeld and Graham, 1976; Lyneis, 1980; Senge, 1990). Under the structure of *the limits to growth* in the example of WonderTech, the counter-intuitive solution did not lie in the place where the symptoms of the decrease in sales of computers exhibited. Rather, it lay in keeping the delivery time of computers short. Senge argues that in the example of WonderTech the intuitive solution of working in the place where the symptom was exhibited - i.e., the positive feedback - was the worst thing to do under the structure of *the limits to growth*. As mentioned above, parts of a system may interact with one another and the symptom and the cause of symptom may not be close in time and space. Therefore, intuitive actions may be significantly improved if people have a holistic and structural view of the behaviour pattern of the system of concern provided by SD. In the meantime, the analysis of the character of feedback loops, of time delay, and of the structure of the circular causality SD provides are also very important for

improving intuitive actions, as have shown in the modelling process of the behaviour pattern of WonderTech.

5.4. THE VALIDATION OF AN SD MODEL

Validation in the SD literature refers to knowledge justification. There are many articles presented on the validation of SD's modelling process in the literature (Ansoff and Slevin, 1968; Forrester, 1968; Nordhaus, 1973; Forrester, Low and Mass, 1974; Andersen, 1980; Bell and Bell, 1980; Meadows, 1980; Richardson and Pugh, 1981; Barlas and Carpenter, 1990). Most of this validation literature in SD could be regarded as a justification of SD's implication to pragmatism with respect to a purpose.

Pragmatism with respect to a purpose is implied by SD. Agreement rather than empirical evidence is used to justify an SD model with respect to a purpose. Forrester (1961) argues that validation is beyond discussion without relating to a purpose and without resting some of the fundamental issues, such as procedures used or purposes to be achieved, on human agreement. He also argues an SD model may be validated by an agreement among the people within the system modelled on the usefulness of the SD model with respect to the problems confronting the system and to the purpose to be achieved by the system. As mentioned above, the building blocks of SD are a structure of circular causality, feedback loops, and time delay. Therefore, according to Forrester, feedback loops and time delay within a structure of circular causality and the structure of circular causality itself may be derived from a discussion with and an agreement among people within the system modelled rather than from empirical evidence. Similarly, Coyle (1977, p. 5) says: "Basically, a model is simply a means by which we attempt to represent some aspect of the external world, in order to be able to influence, control or understand it more effectively". That is, an SD model should be evaluated by

its usefulness regarding if the purpose of the system is achieved through the SD model rather than if the model is right or wrong.

A quotation of Deming by an SD organisational author can be used to express what the implication of SD to pragmatism with respect to a purpose means: Deming says: “All models are wrong. Some models are useful” (High Performance Systems Inc., 1992, p. 8-2). Despite that SD looks for causality in how causes may have some effects in a system modelled, the causes included in the SD model of the system are not definite causes. Through the causality included in the model of SD, SD sets out to explain how the system modelled exhibits particular behaviour patterns. However, SD does not set out to test causality included in the model of the system in other situations. That is, SD does not set out to test if the causes included in the system modelled will produce the same effects in other situations. As mentioned above, feedback loops, time delay, and a structure of circular causality may be derived from a discussion with or an agreement among people within the system modelled. Without testing causes included in one system modelled, in another system to see if they can produce the same effects in another system, SD has problems to argue that the causes included in an SD model of a system are the definite causes which will produce the same effects in another system. Nonetheless, it does not matter so much whether or not the causes included in an SD model are definite causes which will produce definite effects in all situations. The point for SD is to build a model of particular behaviour patterns of a system of concern which may explain to people within the system the behaviours of the system to an extent which is useful enough for them to achieve their purpose.

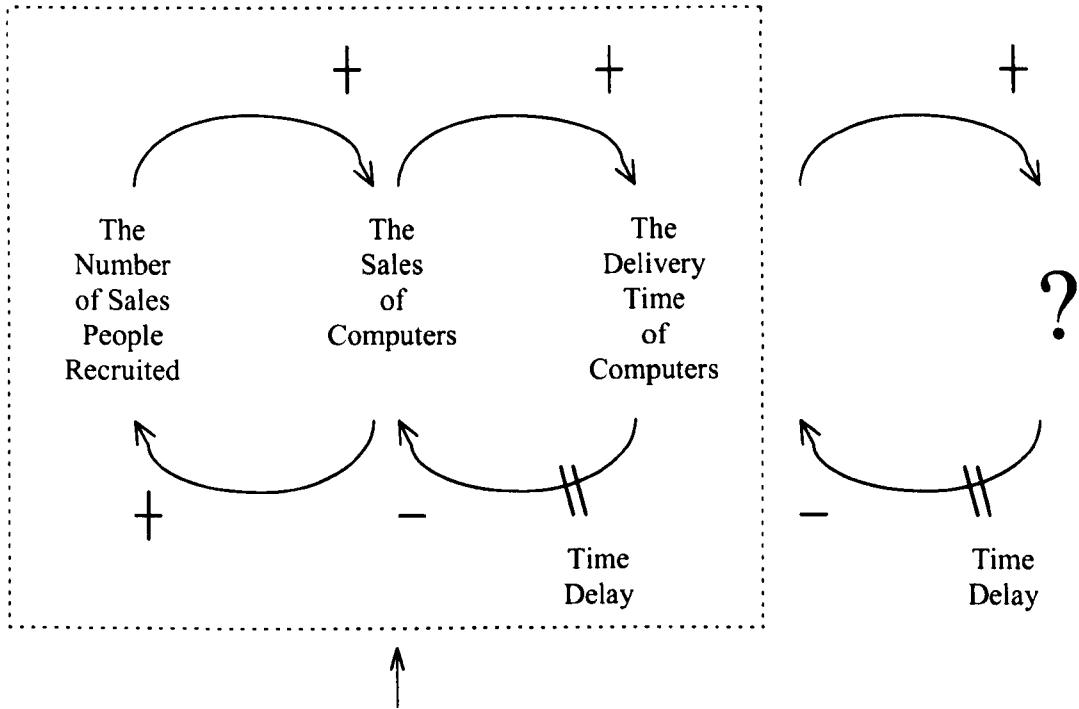
Under the implication of SD to pragmatism with respect to a purpose, the answer to the question whether a model built by SD for a system means “the model” of the system or the model is a part of a modelling process, is clear. SD does not set out to build an absolutely right model for the system modelled and finish its modelling process at that point in time. Rather SD sets out to build a model which is useful enough for

dealing with the problems confronting the system modelled and for facilitating people in the system modelled to achieve their purpose. When the system modelled evolves over time, the model which was built for the system should be adapted or changed. Therefore, SD should be regarded as *a modelling process* which improves our understanding of an evolving system continuously rather than a conceptualisation of *the model* of the system which stops our further understanding of the evolving system at one time (Greenberger, Crensen and Crissey, 1976; Weizenbaum, 1976; Roberts, 1978a; Meadows, Richardson and Bruckmann, 1982; Forrester, 1985).

However, what about an SD model's relative usefulness with respect to the opposite of the agreed purpose of the system modelled. In the examples of IBM mentioned in previous chapters, a validated SD model, if adopted by IBM, would aim to facilitate IBM to achieve the purpose of it - i.e., to sell mainframe computers and minicomputers well - rather than to achieve the opposite of its purpose such as to sell workstations and personal computers well. This is because this model could not be agreed otherwise. Then the SD model would set out to model how IBM might sell mainframe computers and minicomputers. Or the SD model may set out to model how IBM did not sell them well - similar to modelling why WonderTech did not sell its computers well - and how the counter-intuitive solutions may be generated to remove the obstructions of selling them well - such as to deal with the negative feedback rather than the positive feedback in the example of WonderTech. The more an SD model became useful and validated with respect to an agreed purpose such as to sell well mainframe computers and minicomputers in the example of IBM, the more it conceals the opposite of the agreed purpose such as to sell well workstations or personal computers. That is, the more valid an SD model becomes with respect to an agreed purpose, the more invalid it becomes with respect to the opposite of the agreed purpose. This is because the opposite of the agreed purpose is further concealed by this SD model.

Besides, can a structure of circular causality be comprehensive enough to include everything within the system modelled in the structure or are there still something beyond the structure of circular causality? As mentioned above, whether or not a part of a system will be included in an SD model of the system is not dependent on if the part is a part of the system but on if the part will affect the purpose of the system. In addition, despite that SD may model undesirable behaviour patterns of the system, it sets out to generate counter-intuitive solutions for them. In this way, SD may change these undesirable behaviour patterns into desirable behaviour patterns. Therefore, SD does not set out to include and affirm those behaviour patterns of the system which are irrelevant or unknown with respect to the purpose of the system, in an SD model of the system. Nor does it set out to include and affirm those behaviour patterns of the system which are opposite to the purpose of the system.

Senge recognises that there is still something beyond the rationality of an organisation to achieve its purpose by adopting SD but he does not offer further accounts. In WonderTech's example, Senge (1990, p. 119) argues that the worst thing to do is to promote the positive feedback in *the limits to growth* structure. That is, to push hard on the sales of WonderTech's computers. Rather, he argues that WonderTech should have focused on the negative feedback in *the limits to growth* structure. Senge (1990, p. 122) argues that the growth of the sales of WonderTech's computers might have continued if the delivery time had been kept short and not been allowed to be eroded. However, while dealing with the negative feedback and making WonderTech grow continuously in *the limits to growth* structure, WonderTech as a whole has a behaviour pattern which is an equivalence to a positive feedback. That is, the behaviour pattern of WonderTech shown in Figure 5.5 is now an equivalence to a single positive feedback. This is because WonderTech now keep on growing (see Figure 5.6 below).



An Equivalence to a Single Positive Feedback

Figure 5.6: The behaviour pattern of WonderTech shown in Figure 5.5 becomes an equivalence to a single positive feedback and a part of another *limits to growth* structure.
Source: Adapted from Senge, 1990, p. 118.

This positive feedback loop in Figure 5.6 may then be a part of another *limits to growth* structure, where the negative feedback of the structure is still concealed. That is, a *limits to growth* structure may be a part of another *limits to growth* structure where the negative feedback of the later is still concealed. As Senge (1990, p. 102) says:

... there is another lesson from the limits to growth structure as well. There will always be more limiting processes. When one source of limitation is removed or made weaker, growth returns until a new sources of limitation is encountered. ... [T]he fundamental lesson is that growth eventually *will* stop. Efforts to extend the growth by removing

limits can actually be counterproductive, forestalling the eventual day of reckoning, which given the pace of change that reinforcing processes can create ... may be sooner than we think.

Therefore, while dealing with the negative feedback to make an organisation grow continuously in an identified *limits to growth* structure, one may at the same time promote the positive feedback within another *limits to growth* structure where the negative feedback of the structure is still concealed. Therefore, Senge also recognises that there is still something - such as a further *limits to growth* structure - beyond what an identified structure of circular causality - such as the identified *limits to growth* structure - can address.

What is concealed and excluded by one's rationality of adopting SD to achieve one's purpose is what is to be addressed in the next section - addressing the systemic link between opposites in SD - to which I now turn.

5.5. ADDRESSING THE SYSTEMIC LINK BETWEEN OPPOSITES IN SD

As mentioned above, SD is a modelling process which deals with particular behaviour patterns of a system of concern by modelling what the system consists of and how these consisting components of the system function together - through feedback loops, time delay, and a structure of circular causality - to produce the desired or undesired behaviour patterns of the system with respect to a purpose. In the meantime, SD will generate counter-intuitive solutions for the undesired behaviour patterns of the system through the holistic and structural view of the undesired behaviour patterns of the system of concern, that SD provides, and through the analysis of the character of feedback loops, of time delay, and of the structure of circular causality, that SD provides. In this way, the purpose of the system is achieved when SD is adopted to

model the undesired behaviour patterns of the system. Therefore, in a way, these undesired behaviour patterns of the system are changed to desired ones because the counter-intuitive solutions for them may be proposed by SD.

When an organisation adopts SD to deal with particular behaviour patterns of a system of concern, the originating rationality of the organisation is to achieve the purpose of the organisation by adopting SD. To deal with particular behaviour patterns of the system of concern, SD needs to model what the system consists of and how the consisting components of the system function together - through feedback loops, time delay, and a structure of circular causality - to produce the desired or undesired behaviour patterns with respect to the purpose of the organisation. In the example of WonderTech mentioned previously, the components of WonderTech identified were “the number of sales people recruited”, “the sales of computers”, and “the delivery time of computers”. Also as mentioned above, through feedback loops, time delay, and a structure of circular causality among these components identified, these components of WonderTech managed to produce the undesired behaviour pattern of WonderTech. That is, the sales of WonderTech’s computers fluctuated although it tried to increase the sales of its computers by recruiting more sales people.

Through the SD model of a system of concern, SD provides an organisation with a holistic and structural view of the behaviour pattern of the system of concern and with the analysis of the character of feedback loops, of time delay, and of the structure of circular causality in the behaviour pattern. Because of the holistic and structural view and the analysis that SD provides, an organisation will more likely adopt counter-intuitive solutions for the behaviour pattern of the system modelled rather than to find the cause of the undesired behaviour of the system at the place where the undesired behaviour exhibits. For instance, in WonderTech’s example, with the view and the analysis SD provides, the management of WonderTech would have focused on keeping

their delivery time short rather than on pushing hard on increasing the sales of their computers.

Thus, the undesired behaviour patterns of the system are changed to desired ones, and in this way, the purpose of the organisation may also be achieved. The originating rationality of an organisation to achieve its organisational purpose by adopting SD to model particular behaviour patterns of a system of concern, is shown in Figure 5.7 (see below).

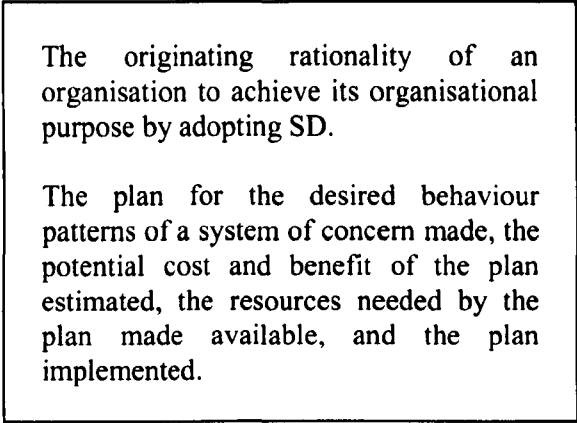


Figure 5.7: The originating rationality of an organisation to achieve its organisational purpose by adopting SD to model particular behaviour patterns of a system of concern.

An opposite which could be envisaged by the originating rationality of the organisation, may be to consider what is being excluded from the very purpose of the organisation. As mentioned above, whether or not a part or a particular behaviour pattern of the system will be included in an SD model of the behaviour pattern of the system depends on whether the part or the behaviour pattern of the system affects the purpose of the system. As shown in the previous subsection in the example of WonderTech, three parts of it were included in the SD model: they are “the number of sales people recruited”, “the sales of computers”, and “the delivery time of computers”. This is because they affect the purpose of WonderTech to grow continuously. Those

parts of WonderTech which do not affect the purpose of WonderTech are not included in the SD model of the behaviour pattern of it.

For instance, the quality control unit, the research and design department, or the technical support unit were all parts of WonderTech but they were not included in the model. The behaviour patterns in which WonderTech controlled the quality of computers manufactured, conducted research and design to maintain its leading position in the industry, or provided its customers with technical support, are all behaviour patterns of WonderTech. And yet, these behaviour patterns were not included in the SD model with respect to the purpose of WonderTech to grow continuously. This is because this SD model of WonderTech's behaviour pattern will need to include every detail and WonderTech's model will have infinite parts and behaviour patterns otherwise. Therefore, whether or not a part or a particular behaviour pattern of WonderTech will be included in an SD model of the behaviour pattern of it, is not originated from if the part is a part of, or the particular behaviour pattern is a behaviour pattern of, WonderTech. The inclusion originates from if the part or the particular behaviour pattern affects the purpose of WonderTech. That is, the purpose of WonderTech originates the choice of what behaviour pattern of WonderTech is to be modelled and what parts of WonderTech are to be included in the SD model. Similarly, a system of concern has infinite possible behaviour patterns. The purpose of the organisation originates the choice of what behaviour pattern of the system of concern is to be modelled and what parts of the system are to be included in the SD model. The purpose of an organisation excludes and conceals from the organisation many more behaviour patterns of the system of concern than the purpose of the organisation reveals. The rationality of an organisation to achieve its organisational purpose by adopting SD, still does not consider the possibility of affirming those undesired behaviour patterns of the system of concern. This is because they are supposed to be changed to the desired behaviour patterns. Nor does its originating rationality consider the possibility of affirming those irrelevant or unknown behaviour patterns of the system of concern which do not seem to

affect the purpose of the organisation. The thesis will discuss in turn the possibility of affirming the opposite (behaviour patterns) which could be envisaged by the originating rationality of the organisation and the opposite (behaviour patterns) irrelevant or unknown to its originating rationality.

To take on board the opposite which could be envisaged by its originating rationality, an organisation may consider to affirm those behaviour patterns of a system of concern undesired by the purpose of the organisation, and to plan for them, estimate if the benefit from the plan is acceptable and its cost affordable, and make available the resources needed by the plan. To use the example of IBM mentioned in previous chapters as an example, SD may be adopted to model particular behaviour patterns of the customers of IBM. When the desired behaviour pattern of IBM's customers, for instance, is that they exhibit interest in its mainframe computers and minicomputers, the behaviour patterns of its customers, in which they show their interests in workstations or personal computers, are undesired behaviour patterns with respect to IBM's purpose. According to IBM's originating rationality alone - i.e., IBM does not take on board its opposite which could be envisaged by its originating rationality - these undesired behaviour patterns of its customers should be modelled and changed to desired behaviour patterns. However, IBM may also take on board these opposite (behaviour patterns) which could be envisaged by its originating rationality.

To affirm undesired behaviour patterns of a system of concern, an organisation now adopts SD to achieve the opposite of its organisational purpose envisaged. An organisation may adopt SD to affirm undesired behaviour patterns of a system of concern by modelling these undesired behaviour patterns without aiming to change them to desired behaviour patterns. Let us use IBM as an example again. To affirm undesired behaviour patterns of IBM's customers means for IBM that, for instance, IBM affirms the behaviour patterns of its customers in which its customers are expected to exhibit their interest only in workstations or personal computers and IBM needs to plan for

these behaviour patterns of its customers, estimate the potential benefit from and cost of the plan to see if it is acceptable and affordable, and make available the resources needed in the plan. That is, to take on board the opposite of the organisational purpose of IBM envisaged, IBM may then consider to adopt SD, if adopted, to model the undesired behaviour patterns of IBM's customers in order to become the leading manufacturer of workstations or personal computers rather than the leading manufacturer of mainframe computers and minicomputers. IBM's plan may consider initiating within or without its company different brands to deal with the business of manufacturing workstations and personal computers and to make the resources needed by this plan available, because manufacturing workstations and personal computers under different brands would not much affect their originating rationality of adopting SD to achieve its organisational purpose of manufacturing mainframe computers and minicomputers. The potential cost of the plan should be estimated and so should its potential benefit. These undesired behaviour patterns of IBM's customers would be the desired behaviour patterns of its customers where IBM's situation does not allow it to sell well its mainframe computers and minicomputers, such as the situation in which the market of workstations and personal computers is much larger than that of mainframe computers and minicomputers at the moment.

Taking on board the opposite envisaged by one's originating rationality by affirming undesired behaviour patterns of a system of concern, which are defined by one's purpose, and by planning for them, estimating if the benefit from the plan is acceptable and if the cost of the plan is affordable, and making available the resources needed in the plans, one's originating rationality becomes a rationality which is not necessarily to be realised. Similarly, the rationality of an organisation to achieve its organisational purpose by adopting SD could take on board the opposite of its originating rationality envisaged by modelling and affirming undesired behaviour patterns of a system of concern, which are defined by its organisational purpose. To take on board the opposite of its originating rationality envisaged, the organisation also need

to plan for these undesired behaviour patterns of the system of concern, estimate if the potential benefit from the plan is acceptable and its cost affordable, and make available the resources needed by the plan. The potential cost and benefit of the plan should be estimated since, just like the organisation's originating rationality, the organisation needs to prepare for the situation in which the opposite envisaged by the organisation's originating rationality may not be allowed by the organisation's situation either. In the meantime, the plan for the opposite of the organisation's originating rationality envisaged is not implemented, although the resources needed by the plan are made available. The organisation's originating rationality to achieve its organisational purpose by adopting SD and the opposite envisaged and taken on board by its originating rationality are shown below in Figure 5.8.

<p>The originating rationality of an organisation to achieve its organisational purpose by adopting SD.</p> <p>The plan for the desired behaviour patterns of a system of concern made, the potential cost and benefit of the plan estimated, the resources needed by the plan made available, and the plan implemented.</p>	<p>The opposite envisaged and taken on board by its originating rationality.</p> <p>The plan for the undesired behaviour patterns of the system of concern made, the potential cost and benefit of the plan estimated, and the resources needed by the plan available despite the plan not being implemented.</p>
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Figure 5.8: The originating rationality of an organisation to achieve its organisational purpose by adopting SD to model particular behaviour patterns of a system of concern and the opposite of the organisation's originating rationality envisaged and taken on board by the organisation's originating rationality by adopting SD to model and affirm undesired behaviour patterns of the system of concern.

Besides, there is a need for an organisation to have a reserve of its resources for the irrelevant or unknown behaviour patterns of the system of concern modelled by SD - i.e., the opposite irrelevant or unknown to its originating rationality. As mentioned above in this section, the purpose of an organisation excludes and conceals many more behaviour patterns of the system of concern than the organisational purpose reveals.

Since these behaviour patterns of the system of concern are beyond the rational framework of the organisation, the organisation cannot know them and plan for them. Let us use IBM as an example again. IBM may have the originating rationality of adopting SD, if adopted by IBM, to model particular behaviour patterns of its customers to achieve its organisational purpose of being the leading manufacturer of mainframe computers and minicomputers. IBM may also consider taking on board the opposite of its organisational purpose envisaged by adopting SD to model and affirm undesired behaviour patterns of its customers to achieve, for instance, the leading manufacturers of workstations and personal computers. Nonetheless, there are still many more behaviour patterns of IBM's customers which are beyond the desired behaviour patterns of IBM's customers and the undesired behaviour patterns of IBM's customers envisaged by the originating rationality of IBM - i.e., beyond the whole rational framework of IBM. The business of computer software is a large business nowadays and people exhibit high interests in computer software. Therefore, to adopt SD to model and affirm the behaviour pattern of IBM's customers that they exhibit high interest in computer software, is an example of that there was still some other behaviour pattern of IBM's customers which was not quite relevant or known to IBM's originating rationality and to its whole rational framework.

Despite that the organisation cannot know them and plan for them, these excluded and concealed irrelevant or unknown behaviour patterns of the system of concern are still systemically linked with those desired and undesired behaviour patterns of the system of concern as defined by the purpose of the organisation and with the purpose of the organisation. If the choice of the behaviour pattern of the system of concern to be modelled by SD is originated from the purpose of the organisation, it needs to understand that it knows only the desired and undesired behaviour patterns of the system of concern as defined by the purpose of the organisation rather than the whole system of concern itself. The organisation does not care about those behaviour patterns of the system of concern which do not affect the purpose of the organisation.

Therefore, an organisation does not deal with the entire behaviour patterns of the system of concern, but only those desired and undesired behaviour patterns of the system of concern as defined by the purpose of the organisation. The system of concern dealt with by the originating rationality of the organisation to achieve its organisational purpose by adopting SD to model particular behaviour patterns of the system of concern, is not so independent of, and separated from, the organisation. Rather, the organisation chooses particular behaviour patterns of the system of concern to be modelled by SD. Those excluded and concealed behaviour patterns of the system of concern are not irrelevant purely because of themselves; they become irrelevant because they are not the behaviour patterns desired by the purpose of the organisation or the undesired behaviour patterns which may affect the purpose of the organisation. Therefore, those excluded and concealed behaviour patterns of the system of concern are not irrelevant purely because of themselves but because of their seeming irrelevance to the purpose of the organisation as perceived by the originating rationality of the organisation, and they are still systemically linked with those desired and undesired behaviour patterns of the system of concern and with the purpose of the organisation. Therefore, there is a need to affirm these irrelevant or unknown behaviour patterns of the system of concern and to have a reserve of resources for them. More detail regarding how to have a reserve for the opposite irrelevant or unknown to one's originating rationality will be given in Chapter Six. The relationship between the originating rationality of an organisation to achieve its organisational purpose by adopting the SD to model particular behaviour patterns of a system of concern, the opposite envisaged and taken on board by its originating rationality by adopting SD to model and affirm undesired behaviour patterns of the system of concern, and the opposite irrelevant or unknown to its originating rationality, is shown in Figure 5.9 (see below).

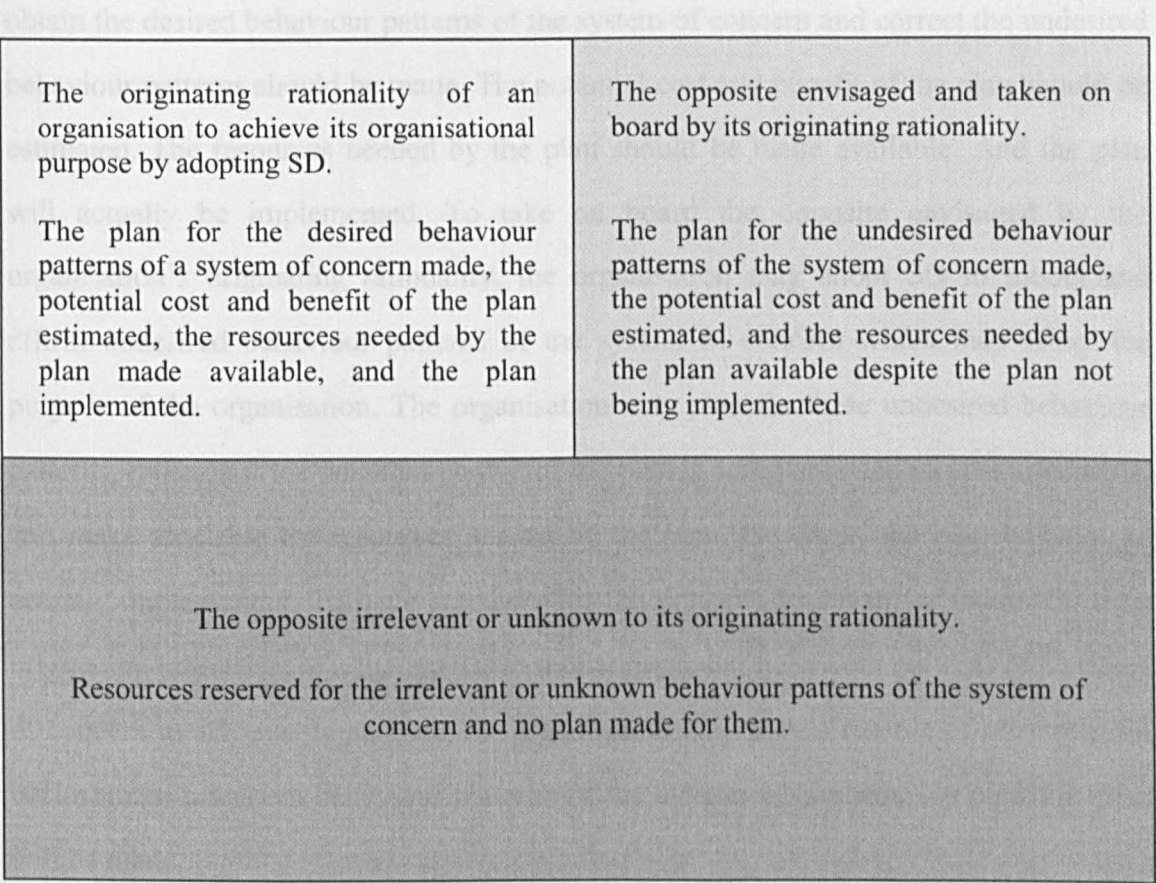


Figure 5.9: The relationship between the originating rationality of an organisation to achieve its organisational purpose by adopting SD to model particular behaviour patterns of a system of concern, the opposite envisaged and taken on board by its originating rationality by adopting SD to model and affirm undesired behaviour patterns of the system of concern, the opposite irrelevant or unknown to its originating rationality.

Therefore, by taking on board the opposite envisaged by its originating rationality and by having a reserve for the opposite irrelevant or unknown to its originating rationality, an organisation has a rationality which is not necessarily to be realised and a purpose which is not necessarily to be achieved. When SD is adopted, the originating rationality of an organisation is to achieve its organisational purpose by adopting SD to model particular behaviour patterns of a system of concern. The desired behaviour patterns of the system of concern and the undesired behaviour patterns of the system of concern which need correcting to the desired behaviour patterns, will be defined with respect to the purpose of the organisation. The plan regarding how to

obtain the desired behaviour patterns of the system of concern and correct the undesired behaviour patterns should be made. The potential cost and benefit of the plan should be estimated. The resources needed by the plan should be made available. And the plan will actually be implemented. To take on board the opposite envisaged by the organisation's originating rationality, the organisation may adopt SD to model and affirm undesired behaviour patterns of the system of concern which may affect the purpose of the organisation. The organisation may plan for these undesired behaviour patterns, estimate if the potential benefit of the plan is acceptable and its cost affordable, and make available the resources needed by the plan. However, the plan will not be actually implemented. To have a reserve for the opposite irrelevant or unknown to its originating rationality of adopting SD to model particular behaviour patterns of a system of concern to achieve its purpose, the organisation may have a reserve of resources for irrelevant or unknown behaviour patterns of the system of concern. No plan for them will be made.

In this way, when the organisation's originating rationality to adopt SD to model particular behaviour patterns of a system of concern to achieve the purpose of the organisation is not allowed by the organisation's situation for whatever reason, the organisation will still have an alternative rationality available, which is to adopt SD to achieve undesired behaviour patterns of the system of concern as defined by the purpose of the organisation. In addition, it is still possible that the organisation's rational framework - i.e., the whole of its originating rationality to adopt SD to model particular behaviour patterns of a system of concern to achieve the purpose of the organisation and the opposite envisaged and taken on board by its originating rationality by adopting SD to model and affirm undesired behaviour patterns of the system of concern - is not allowed by the organisation's situation. When this happens for whatever reason, the organisation will still have a reserve available for its situation which affirms those behaviour patterns of the system of concern that are beyond what the rational framework of the organisation can address. In this way, an organisation may have a rationality

which is not necessarily to be realised and a purpose which is not necessarily to be achieved. This is the concept of a purposeless system and it will be given in more detail in Chapter Six.

5.6. CONCLUSION

Applying the concepts of systems thinking to the managerial context, SD may deal with intuitive actions and generate counter-intuitive solutions for them by providing a holistic and structural view. Without a holistic and structural view, people tend to look intuitively for the cause of problems or of symptoms in the place where the problems or symptoms exhibit. With the concepts of systems thinking, people may know that the behaviour of a part of a system may affect the behaviour of another part of the system. Therefore, the cause of problems or of symptoms may be distant from the problems or symptoms in time and space. Applying the concepts of systems thinking to the managerial context, SD may facilitate people to generate counter-intuitive solutions for their situation.

Applying the concepts of feedback loops and of time delay to the managerial context, SD may further deal with intuitive actions and generate counter-intuitive solutions for them by providing the analysis of the character of time delay, of the feedback loops and of the structure of circular causality in the system of concern modelled. In addition to a structure of circular causality which provides a holistic and structural view, SD also applies the concepts of feedback loops and of time delay to modelling particular behaviour patterns of a system of concern in order to achieve the purpose of an organisation. With respect to the purpose of an organisation, SD may be used to model desired behaviour patterns of a system of concern in order to achieve the purpose of the organisation. By analysing the character of feedback loops, of time delay, and of the structure of circular causality of the system modelled, SD may provide

counter-intuitive solutions for the behaviour patterns of the system of concern in order to achieve the purpose of the organisation. In addition, SD may also be used to model undesired behaviour patterns of a system of concern to achieve the purpose of an organisation. Those undesired behaviour patterns of the system of concern modelled by SD will be corrected to desired behaviour patterns of the system of concern.

However, the rationality of an organisation to achieve the purpose of the organisation by adopting SD to model particular behaviour patterns of a system of concern may conceal and exclude the opposite which could be envisaged by the rationality of the organisation to achieve the purpose of organisation by adopting SD. So it may conceal and exclude the opposite irrelevant or unknown to the rationality of the organisation to achieve the purpose of the organisation by adopting SD. SD does not seek to affirm those behaviour patterns of a system of concern which are undesired by the purpose of an organisation. Nor does it seek to affirm those behaviour patterns of the system of concern which are irrelevant to the purpose of the organisation. These undesired or irrelevant behaviour patterns of the system of concern are not undesired or irrelevant purely because of themselves, they become undesired or irrelevant because they are undesired by or irrelevant to the purpose of the organisation. These undesired behaviour patterns of the system of concern which may be envisaged, and these behaviour patterns of the system of concern irrelevant to the originating rationality of the organisation to achieve the purpose of the organisation by adopting SD, are still systemically linked with the desired behaviour patterns of the system of concern modelled and with the purpose of the organisation, but are concealed and excluded by the originating rationality of the organisation to achieve the purpose of the organisation by adopting SD.

I conclude that the systemic link between opposites is not addressed in SD and that there is a need to address it. I suggest accordingly that there is a need for the practitioners of SD to take on board the opposite envisaged by their originating

rationality to achieve their purpose by adopting SD. To take on board opposition may make the practitioners of SD aware that their originating rationality may conceal and exclude the opposites of their originating rationality. This may also remind them that there is always an alternative available for them and planned - the cost and benefit of the plan estimated and the resources needed by the plan made available. I have suggested furthermore that there is a need for the practitioners of SD to keep a reserve of their resources available for the opposite irrelevant or unknown to their originating rationality to achieve their purpose by adopting SD, to remind themselves that there is still something beyond their whole rational framework. This may also remind them that there are still resources reserved when their situation affirms what is beyond their rational framework.

Chapter Six will address opposites together as a system. In Chapter Six, the system which consists of opposites - i.e., one's originating rationality, one's opposite envisaged and taken on board by one's originating rationality, and one's opposite irrelevant or unknown to one's originating rationality - named a purposeless system - will be introduced and the systemic relationship between opposites will be further discussed with reference to the concept of Deconstruction (Derrida, 1976, 1978, 1980, 1981, 1982, 1984, 1987a,b, 1991, 1993, 1994a,b). I now turn to Chapter Six: A Purposeless System.

Chapter Six: A Purposeless System

6.1. INTRODUCTION

This chapter aims to propose the concept of a purposeless system. I proceed to express some concepts and theories as follows. Firstly, I give some accounts regarding the concept of a purposeless system. Secondly, I address in more depth the systemic relationship between opposites and the concept of a purposeless system with the reference to the concept of Deconstruction. Thirdly, I discuss that there is a danger that the concept of Deconstruction focuses on the significance of some part of a purposeless system by concealing and excluding the significance of other parts of a purposeless system. Fourthly, based on the discussion above, I conclude that one's rational framework and the opposite of one's rational framework have a symmetric relationship in a purposeless system.

6.2. A PURPOSELESS SYSTEM

A purposeless system is a system consisting of opposites, whose purpose is not necessarily to be achieved and whose rationality is not necessarily to be realised.

As mentioned in the previous chapters, one's opposite addressed in this thesis is regarded as something beyond one's rational framework. When one does not take on board one's opposite which one could envisage, one's rational framework addresses one's originating rationality only. At that moment, both one's opposite which one could envisage and one's opposite irrelevant or unknown to one's originating rationality are one's opposite. This is because both of them are beyond what one's rational framework

can address at that moment. One's rational framework which addresses one's originating rationality only and the opposite envisaged by one's originating rationality and the opposite irrelevant or unknown to one's originating rationality which are both one's opposite, are shown below in Figure 6.1.

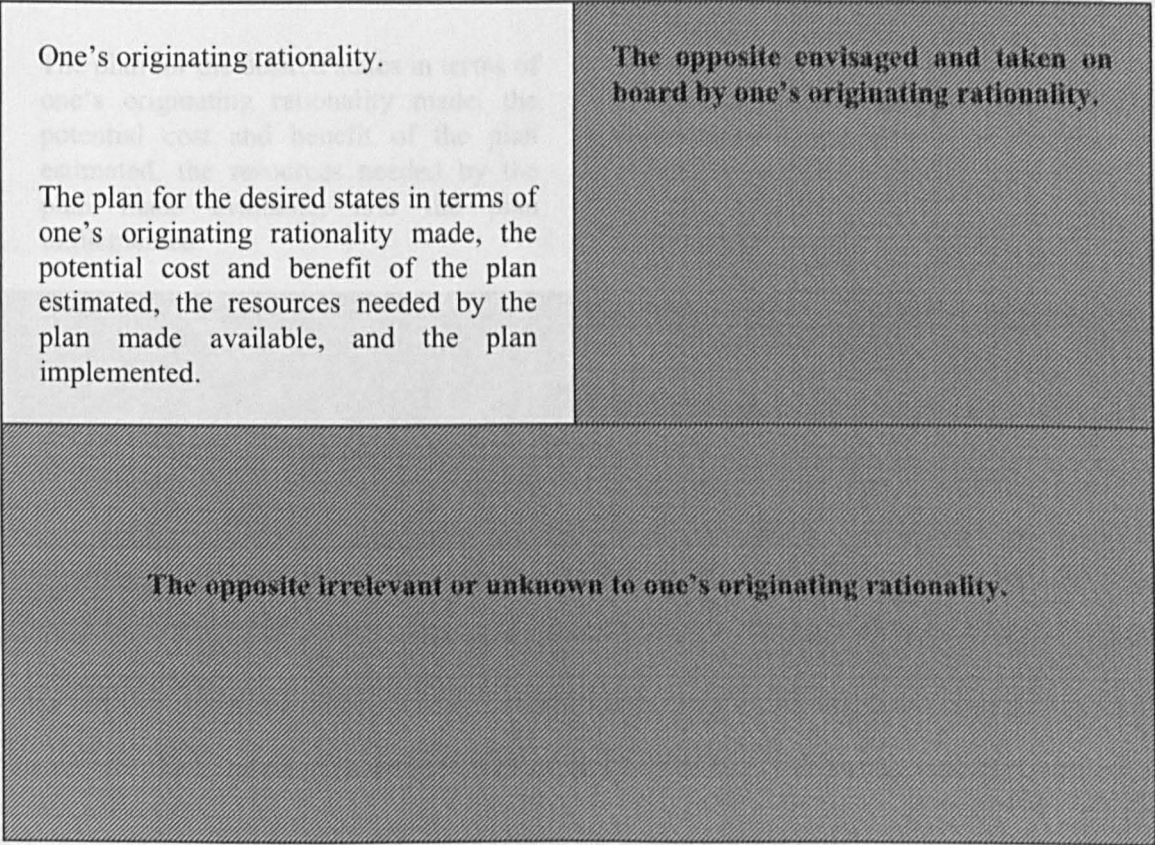


Figure 6.1: One's rational framework which addresses one's originating rationality only (the grid without the stripe-like shadow) and the opposite envisaged by one's originating rationality and the opposite irrelevant or unknown to one's originating rationality which are both one's opposite (the grids with the stripe-like shadow).

When one takes on board one's opposite which one could envisage, one's rational framework may address both one's originating rationality and one's opposite envisaged by one's originating rationality. At that moment, one's opposite irrelevant or unknown to one's originating rationality is still beyond the whole of one's rational framework and it is still one's opposite. One's rational framework which addresses both one's originating rationality and one's opposite envisaged by one's originating rationality, and

one's opposite irrelevant or unknown to one's originating rationality which is still one's opposite are shown below in Figure 6.2.

<p>One's originating rationality.</p> <p>The plan for the desired states in terms of one's originating rationality made, the potential cost and benefit of the plan estimated, the resources needed by the plan made available, and the plan implemented.</p>	<p>The opposite envisaged and taken on board by one's originating rationality.</p> <p>The plan for the undesired states in terms of one's originating rationality made, the potential cost and benefit of the plan estimated, and the resources needed by the plan available despite the plan not being implemented.</p>
<p>The opposite irrelevant or unknown to one's originating rationality.</p>	

Figure 6.2: One's rational framework which addresses both one's originating rationality and one's opposite envisaged by one's originating rationality (the grids without the stripe-like shadow), and one's opposite irrelevant or unknown to one's originating rationality which is still one's opposite (the grid with the stripe-like shadow).

The link between opposites is systemic. As shown in previous chapters, opposites - one's originating rationality, the opposite envisaged and taken on board by one's originating rationality and the opposite irrelevant or unknown to one's originating rationality - present one another and contrast one another in terms of description. In Chapter Three, for instance, I showed that to begin to identify one's originating rationality as to be subjective produces the link between one's originating rationality and the opposite which could be envisaged by one's originating rationality - such as to be objective - and the link between one's originating rationality and the opposite

irrelevant or unknown to one's originating rationality - such as to be, say, radical, conservative, tall, short, man or woman. I also showed that to begin to identify the little swan as a duck rather than a swan, a chicken, a cat, or something else, produces the link between an ugly duckling, a beautiful swan, an ugly chicken, an ugly cat, or some other ugly creature.

As also shown in previous chapters, opposites are also linked and affect one another in terms of the consequences of purposeful actions too. In Chapter Three, for instance, I showed that to begin to identify one's originating rationality as to be successful at work rather than to have some recreation, a healthy body, a happy family, or a good relationship with friends, produces the link between a successful person at work, a person with a boring life, an unhealthy person, an uncaring family member and an uncaring friend. In addition, once one or several of these opposite aspects of one's life regarding this important aspect of one's life of being successful at work, break(s) down, one's life may break down all together. Therefore, opposites cannot be addressed separately and then put together the result of addressing them.

Opposites are linked and are within the structure of a system where the behaviour of the system is not either of the opposites. The system of opposites has some properties which none of opposites has. One's originating rationality, one's opposite which one could envisage and take on board, and one's opposite irrelevant or unknown to one's originating rationality - i.e., one's rational framework and the opposite of one's rational framework no matter that one's rational framework addresses (one's originating rationality only or both one's originating rationality and the opposite envisaged by one's originating rationality) - are systemically linked with one another. This is because one's opposite which one could envisage and take on board, and one's opposite irrelevant or unknown to one's originating rationality cannot be produced without that one has an originating rationality in the first place. Therefore, none of them can be cut off and thrown away from one another. One's originating rationality and one's opposite which

one could envisage, could be addressed by one's rational framework. When one's originating rationality, one's opposite which one could envisage and take on board, one's opposite irrelevant or unknown to one's originating rationality are addressed alone, they try to conceal and exclude one another. Although these opposites try to conceal and exclude one another, the behaviour of the system consisting of these opposites - i.e., one's rational framework and the opposite of one's rational framework - is neither the behaviour of them. The behaviour of the system of these opposites is that these opposites may learn from one another because they become aware that none of them is complete.

In addition, each of one's originating rationality, one's opposite which one could envisage and take on board, and one's opposite irrelevant or unknown to one's originating rationality, has its own rationality and purpose. For instance, in the example of VSM mentioned in Chapter Four, the originating rationality of an organisation adopts VSM to achieve the purpose of the organisation; the opposite envisaged and taken on board by the originating rationality of the organisation adopts VSM to achieve the opposite of the purpose of the organisation envisaged; and the opposite irrelevant or unknown to the originating rationality of the organisation adopts ways to achieve the opposite irrelevant to the purpose of the organisation. However, the system consisting of one's originating rationality, one's opposite envisaged and taken on board by one's originating rationality, and one's opposite irrelevant or unknown to one's originating rationality, does not have a specific rationality and purpose. As mentioned in Chapter Four, the behaviour of the system consisting of them is that the system has a rationality which is not necessarily to be realised and it has a purpose which is not necessarily to be achieved.

In Chapter Four, for instance, revisiting VSM to organise my argument, I suggested that IBM might have the originating rationality of adopting VSM to achieve its organisational purpose of being the leading manufacturer of mainframe computers

and minicomputers. But IBM might also consider to take on board the opposite of its organisational purpose envisaged by adopting VSM to achieve, for instance, the leading manufacturers of workstations and personal computers. In addition, IBM might consider furthermore to have a reserve for the states relevant or unknown to IBM's originating rationality such as to adopt ways to achieve its organisational purpose of being the leading company of business computer software. When the rational framework of IBM - i.e., the whole of its originating rationality and the opposite envisaged and taken on board by its originating rationality - was not allowed by its situation for whatever reason, IBM would still have a reserve available for its situation which affirmed those states of its environment that were beyond its rational framework. In this way, IBM which addressed opposites as a system, might have a rationality which was not necessarily to be realised and a purpose which was not necessarily to be achieved.

Besides, opposites lose some essential properties when they are separated from the system of opposites. When one's originating rationality, the opposite envisaged and taken on board by one's originating rationality, and the opposite irrelevant or unknown to one's originating rationality - i.e., one's rational framework and the opposite of one's rational framework - are addressed separately, each of them has a rationality which must be realised and a purpose which must be achieved. Nonetheless, when one addresses these opposites together as a system, one is aware that each of these opposites is a rationality which is not necessarily to be realised and one has prepared for the situation where one's originating rationality is a rationality which is not necessarily to be realised. Therefore, one's originating rationality, the opposite envisaged and taken on board by one's originating rationality, and the opposite irrelevant or unknown to one's originating rationality lose some essential properties when they are separated from the system consisting of them.

The system which consists of one's originating rationality and one's opposite envisaged and taken on board by one's originating rationality, which are both addressed

by one's rational framework, and one's opposite irrelevant or unknown to one's originating rationality, which is still the opposite of one's rational framework, is named a purposeless system in this thesis. As mentioned above, the system consisting of opposites has some properties or behaviour which none of opposites has and opposites lose some essential properties when they are separated from the system of opposites. Since the system consisting of one's originating rationality, one's opposite which one could envisage and take on board, and one's opposite irrelevant or unknown to one's originating rationality does not have a specific rationality and purpose, this thesis calls the system of them a purposeless system. Considering the need for one to envisage and take on board one's opposite, this thesis argues that one's rational framework should address both one's originating rationality and the opposite envisaged and taken on board by one's originating rationality rather than one's originating rationality only in a purposeless system. A purposeless system which consists of one's originating rationality and one's opposite envisaged and taken on board by one's originating rationality, which are both addressed by one's rational framework, and one's opposite irrelevant or unknown to one's originating rationality, which is still one's opposite, is shown in Figure 6.3 (see below).

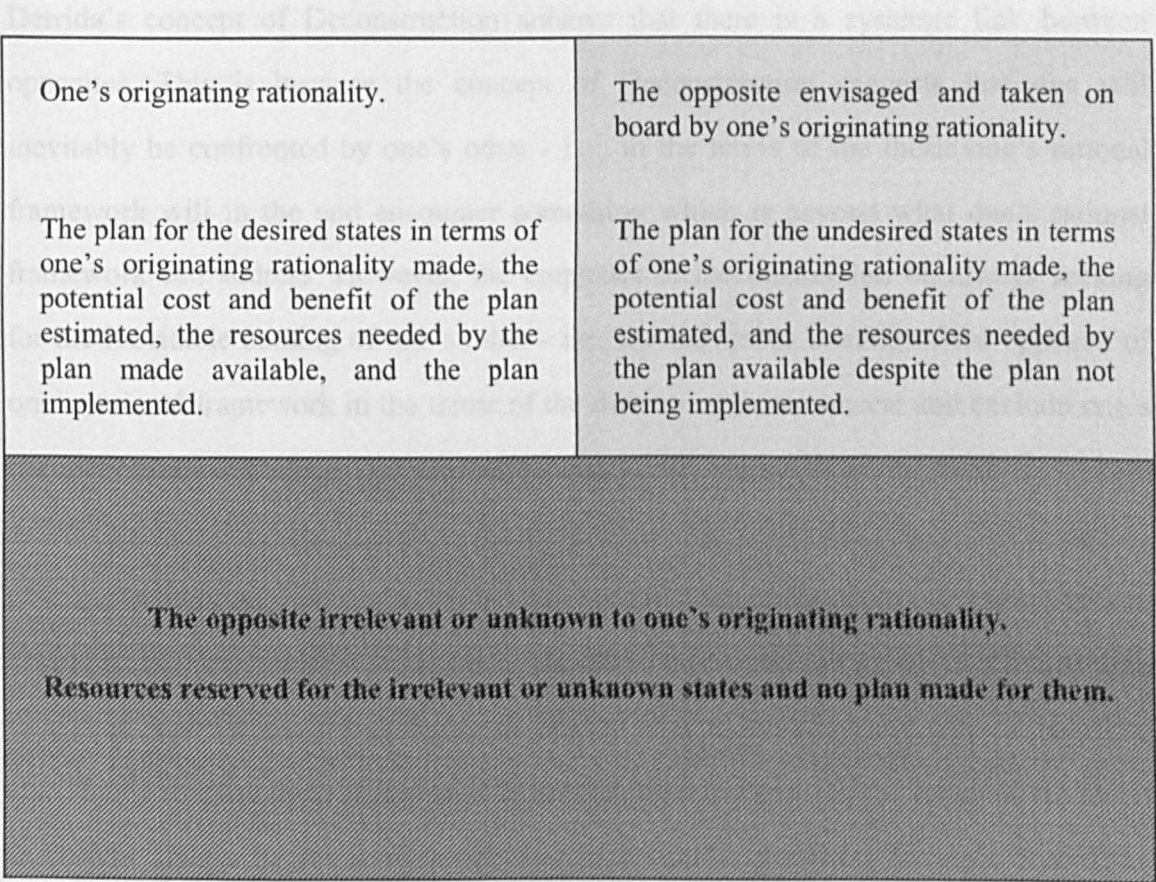


Figure 6.3: A purposeless system consisting of one's originating rationality and one's opposite envisaged and taken on board by one's originating rationality, which are both addressed by one's rational framework (the grids without the stripe-like shadow), and one's opposite irrelevant or unknown to one's originating rationality which is still one's opposite (the grid with the stripe-like shadow).

In the next three sections, I am going to discuss the systemic link between opposites and the concept of a purposeless system in more depth with reference to the concept of Deconstruction (Derrida, 1976, 1978, 1980, 1981, 1982, 1984, 1987a,b, 1991, 1993, 1994a,b; Larner, 1994a,b, 1995). Here, I will briefly indicate what I am going to discuss in the next three sections and I will give pictures and more details there. The concept of Deconstruction sustains the systemic link between one's rational framework and the opposite of one's rational framework (in the terms of the thesis) and yet the concept of Deconstruction decides to search for the opposite of one's rational framework which is so-far concealed and excluded by one's rational framework.

Derrida's concept of Deconstruction adheres that there is a systemic link between opposites. This is because the concept of Deconstruction suggests that one will inevitably be confronted by one's other - i.e., in the terms of the thesis one's rational framework will in the end encounter something which is beyond what one's rational framework can address. However, the emphasis of Deconstruction on always seeking for the inevitable coming of one's other - i.e., the inevitable coming of the opposite of one's rational framework in the terms of the thesis - tends to conceal and exclude one's rational framework which Deconstruction tries to deconstruct at the moment.

In addition, one can never be satisfied with whatever one's other one seeks to encounter at the moment - i.e., in the terms of the thesis one can never be satisfied with whatever opposite one's originating rationality tries to envisage and take on board so far. This is because there will always be something more - i.e., in the terms of the thesis there will always be some more opposite irrelevant or unknown to one's originating rationality. Therefore, this thesis will suggest in the next three sections that the seeking for the inevitable coming of one's other by Deconstruction - i.e., for the inevitable coming of the opposite of one's rational framework in the terms of the thesis - tends to exclude and conceal one's originating rationality and whatever one's originating rationality has envisaged and taken on board so far. Deconstruction does not address one and one's other symmetrically - i.e., in the terms of the thesis Deconstruction does not address one's rational framework and the opposite of one's rational framework symmetrically. The adherence to the systemic link between opposites from the concept of Deconstruction and the concealment and exclusion of one's rational framework by Deconstruction will be discussed below, in the light of the argument of the thesis that opposites have a symmetric relationship in a purposeless system.

6.3. DECONSTRUCTION AND THE SYSTEMIC LINK BETWEEN OPPOSITES

First presented by Derrida, Deconstruction refers to a combination of two verbs - defer and differ - which search for something which is in-so-far absent (defer) and other than oneself (differ) (Derrida, 1976, 1978, 1981, 1982, 1984, 1987a,b, 1991, 1993, 1994a,b). As mentioned in previous chapters regarding the theme of mutual definition and exclusion of one and one's opposite: one is defined and presented by one's opposite and by the exclusion of one's opposite at the same time. One is defined and presented by one's opposite, which acts as a contrast to present oneself, and by the exclusion of one's opposite at the same time where one's opposite has become the background for oneself and is concealed by oneself. Therefore, the search for something which is in-so-far absent and other than oneself by Deconstruction can be regarded as, in the terms of the thesis, the search for the in-so-far concealed and excluded opposite, which has become one's contrast to present oneself, which has to be concealed and excluded at the same time, and therefore which is something so far absent.

This search for one's opposite by Deconstruction is also known as a process of refusing and of contradicting oneself (Derrida, 1973; Hartman, 1981; Kearney, 1984; Smith and Kerrigan, 1984; Gasche, 1986; Sychrava, 1989; Johnson, 1993; Cavell, 1995). Once one has encountered one's opposite through the search suggested by Deconstruction and one knows that one is presented and contrasted by one's opposite, oneself is no longer so special and unique; one becomes simply an alternative to one's opposite. One is refused, contradicted, and deconstructed when one is no longer more significant than one's opposite. Therefore, the search for one's opposite by Deconstruction suggests that, at all times, there must be something which escapes from the framework constructed by a particular rationality and that rationality of whatever kind never unify everything into one single rational and non-contradictive framework

(Megill, 1985; Llewelyn, 1986; Norris, 1987; Silverman, 1989; Boyne, 1990; Kamuf, 1991; Burke, 1992; Schulte and Biguenet, 1992; Wood, 1992).

Deconstruction - differ and defer - also refers to an eventual relationship between one and one's other (opposite). The relationship between one and one's other (opposite) is an event in which one is to encounter the inevitable but deferred coming of one's other (opposite). In this event, one's other has not yet come and therefore the coming of one's other is deferred; one's other is also something other than oneself and therefore one's other differs from oneself. Besides, in the event, one is unable to know for sure in advance what one's other is and when one is going to encounter one's other or in what way this encounter is to happen. As Derrida (1994b, p. 31) says, Deconstruction refers to:

a relationship ... - a relation to what is other, to what differs in the sense of alterity ...
but 'at the same time' it also relates to what is to come, to that which will occur in ways
which are inappropriable, unforeseen, and therefore urgent, beyond anticipation: to
precipitation in fact.

Derrida gives an example to illustrate one's encountering with one's other: a family's encountering with the arrival of a new-born baby. When a family is to welcome the arrival of a new-born baby, the family prepares for it and gives it before the birth already a name as if the arrival will be a scheduled and foreseen event. However, all the preparation cannot prevent the arrival of the baby from the element of chance. The family does not know exactly what kind of baby the family is going to have, and when, where, and how. Maybe, the family will not have the baby this time. There will always be something which cannot be foreseen and prepared by the family in advance and which surprises the family. As Derrida (1994b, p. 32) says:

The family anticipates and forenames its new arrivals [of babies], it prepares the way so that they are caught up in a symbolic space which muffles the novelty of the arrival. But despite all the anticipations and prenominations, the element of chance cannot be eliminated: the child that arrives is always unforeseen. It speaks of itself from the *origin* of a different world, or from a *different* origin of this one.

In this sense, this encountering of the family with its new arrivals is a differed experience because the family is unable to anticipate completely and prepare for them in advance according to whatever experiences it has so far. This encountering is also a deferred experience because the family is still welcoming their coming and the babies have not yet come.

Derrida argues that one presupposes one's other. He indicates that no matter how self-sufficient and self-contained a particular rational framework seems, its self-sufficiency and self-containment are dependent on an oppositional relation with something beyond and other than itself (Megill, 1985; Norris, 1987; Silverman, 1989). That is, one is presented by opposing its other. As mentioned above, one is presented by having one's opposite as one's contrast and by concealing and excluding the contrast at the same time. For instance, being objective is understood through being "not" subjective, i.e., through having "the being subjective" as its contrast and through concealing and excluding the existence of subjectivity. Similarly, being radical is understood through being "not" conservative, i.e., through having "the being conservative" as its contrast and through concealing and excluding the existence of conservativeness. Without one's other acting as a contrast, oneself cannot be identified in the first place. Thus, one presupposes one's other and one's other is part of oneself. For instance, as mentioned in Chapter Three in the example of the ugly duckling, a swan can become an ugly duckling if the basis of comparison or the contrast is made against a group of ducks rather than a group of swans; and a duckling can become an ugly swan if

the basis of comparison or the contrast is made against a group of swans rather than a group of ducks. Therefore, one's other is part of oneself.

Similarly, while considering the question of being "philosophers of the present" or "philosophers who think their time", Derrida rather invites us to consider what the question of the present and the question of the presence of the present signify and conceal. That is, what do these two questions present and conceal at the same time and what is presupposed? As Derrida (1994b, p. 30) says:

Like anyone else who tries to be a philosopher, I do not want to give up either on the present or on thinking the presence of the present. Neither do I want to give up on the experience of what both conceals and exposes them How are we to broach this theme of presence and the present? What are the presuppositions of an inquiry into this subject? What commitments do these questions involve? And this stake, this commitment - is this not the law which ought to govern everything, directly or indirectly? I try to adhere to it myself, but by definition it is always inaccessible, it lies beyond everything.

Therefore, while considering an issue, Derrida would also like us to consider what acts as a contrast to make this issue "an issue" and what this issue has concealed and excluded at the same time. Therefore, Derrida adheres to this commitment of seeking for the presupposition of an issue - the other (opposite) of the issue - which acts as a contrast to signify the issue and which is concealed and excluded by the very issue. Therefore, Derrida adheres that one presupposes one's other and that one is encouraged to seek for the so-far concealed and excluded one's other.

Derrida also argues that the concealment and exclusion of one's other is essential to protect oneself (Kearney, 1984; Boyne, 1990; Kamuf, 1991; Wood, 1992). In the quotation mentioned above, Derrida invites us to seek for the concealed

presupposition which signifies the question of the present and the question of the presence of the present. Some may say the presupposition which signifies these two questions could be that every philosopher talks about them. Therefore the person who would like to be a philosopher needs to talk about them too. Some may say the presupposition which signifies these two questions could be that there is a contemporary attitude against the past or the future. The significance of the question of the present and of the question of the presence of the present are protected when their other (opposite) is concealed and there is no alternative available. As long as the other (opposite) of these two questions, for instance, the will of becoming a philosopher or the contemporary attitude against the past or the future is exposed to and sought by us, the significance of these two questions is dramatically reduced. This is because to consider the will of becoming a philosopher or the contemporary attitude against the past or the future may make these two questions merely one of the many means which may make one a philosopher or one of the many means which may divert away people's unhappiness about the past or the future. Therefore, when one's other (opposite) is exposed to and sought by us, oneself and one's significance are no longer secured and one is deconstructed. Thus, it seems essential for one to conceal and exclude one's other (opposite) in order to protect oneself.

Let us suppose a situation where one's originating rationality is to consider the question of the present and the question of the presence of the present; the concealment and exclusion of one's other (i.e., the opposite of one's rational framework) from oneself (i.e., one's rational framework) in order to protect oneself, is shown in Figure 6.4. below. In this figure, one's originating rationality is to consider the question of the present and the question of the presence of the present. In this supposed situation, one's originating rationality does not take on board one's opposite which could be envisaged by one's originating rationality. Therefore, one's rational framework addresses one's originating rationality only. The opposite which could be envisaged and taken on board by one's originating rationality may be to consider what presupposes these two

questions and what is concealed by these two questions at the same time such as to consider the will of becoming a philosopher or the contemporary attitude against the past or the future. One's originating rationality to consider the question of the present and the question of the presence of the present may make these two questions significant questions.

The opposite which could be envisaged and taken on board by one's originating rationality to consider the will of becoming a philosopher or the contemporary attitude against the past or the future may make these two questions merely one of the many means which may make one a philosopher or one of the many means which may divert away people's unhappiness about the past or the future. In addition, there are still many more rationalities which are beyond one's originating rationality to consider these two questions about the present and the opposite which could be envisaged and taken on board by one's originating rationality to consider the will of becoming a philosopher and the contemporary attitude against the past or the future.

In this supposed situation, one's rational framework is to consider these two questions about the present and it is shown as the grid without stripe-like shadow in Figure 6.4. One's other (i.e., the opposite of one's rational framework) is to consider the will of becoming a philosopher or the contemporary attitude against the past or the future and to consider that there are still many more rationalities which are beyond their consideration. One other is shown as the two grids with stripe-like shadow. In this supposed situation, when one's other (opposite) is exposed and sought, one's significance is no longer secured and one is deconstructed.

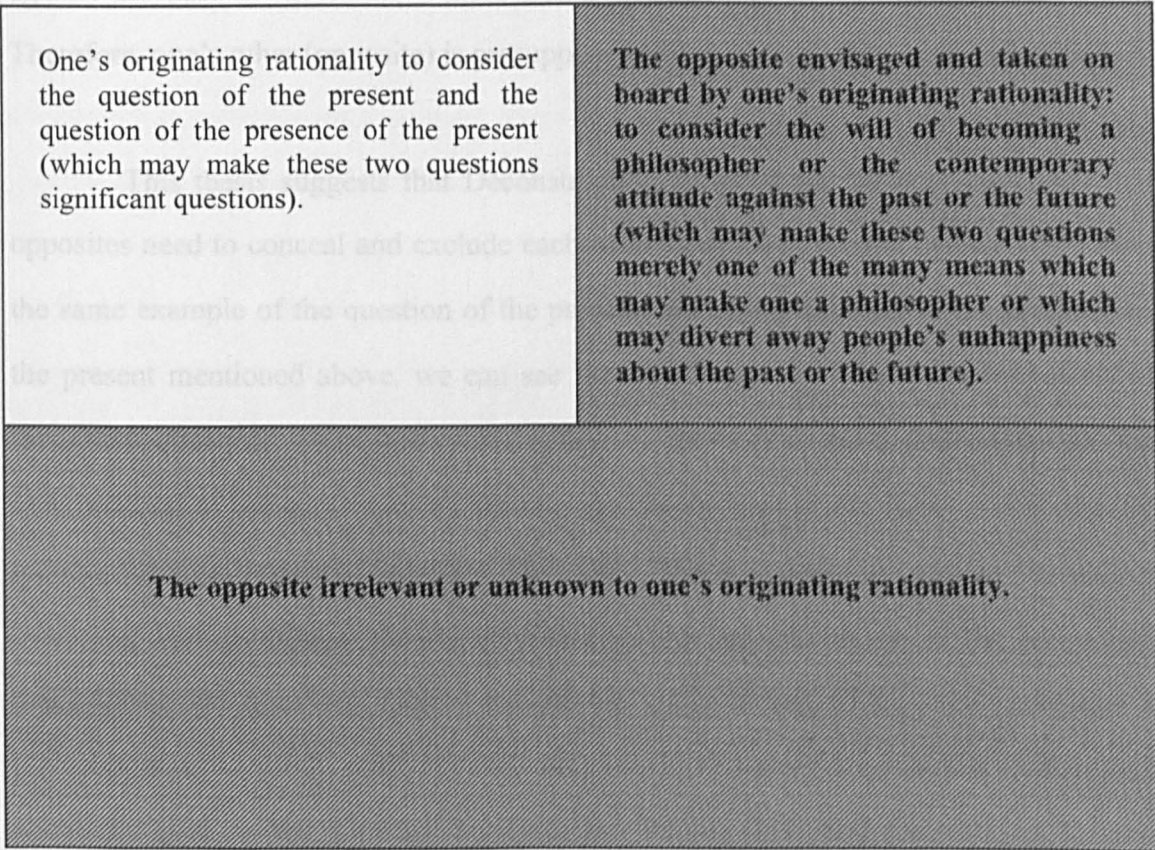


Figure 6.4: The concealment and exclusion of one's other from oneself in order to protect oneself in a supposed situation, where oneself (i.e., one's rational framework - one's originating rationality in this supposed situation) is shown as the grid without stripe-like shadow; and one's other (i.e., the opposite of one's rational framework - one's opposite envisaged and taken on board by one's originating rationality and one's opposite irrelevant or unknown to one's originating rationality in this supposed situation) is shown as the two grids with stripe-like shadow.

Therefore, this thesis suggests that Deconstruction supports the view of the thesis that when one is identified, one's other (opposite) has been simultaneously produced, although one's encountering with one's other (opposite) is deferred and one is unable to recognise what one's other (opposite) is at the moment. As mentioned above, Derrida argues that one presupposes one's other (opposite). In the example of the question of the present and of the question of the presence of the present, the other (opposite) of these two questions signifies them; without the other (opposite) of these two questions - for instance the will to be a philosopher or the contemporary attitude

against the past or the future - these two questions will not arise in the first place. Therefore, one's other (opposite) is presupposed and produced when one is identified.

This thesis suggests that Deconstruction supports the view of the thesis that opposites need to conceal and exclude each other in order to protect themselves. Using the same example of the question of the present and of the question of the presence of the present mentioned above, we can see the identification of the other (opposite) of these two questions - i.e., the identification of the will to be a philosopher or the identification of the contemporary attitude against the past or the future - dramatically reduces the significance of these two questions. This is because to consider the will of becoming a philosopher or the contemporary attitude against the past or the future may make these two questions merely one of the many means which may make one a philosopher or one of the many means which may divert away the people's unhappiness about the past or the future. Therefore, the inquiry into and the seeking for, by Deconstruction, one's other (opposite) damages dramatically oneself and the significance of oneself. Also as mentioned above, Deconstruction - differ and defer - suggests that one's encountering with one's differed other (opposite) - being differed in terms of its alterity - is unavoidable despite that this encountering is deferred. Therefore, one needs to exclude and conceal one's other (opposite) from oneself because once the inevitable encountering happens and the differed and deferred other (opposite) is identified then, oneself and the significance of oneself will be dramatically damaged.

This thesis also suggests that Deconstruction supports the view of the thesis that there is no possibility for one to know at the moment what one's other (opposite) one has simultaneously produced. According to Deconstruction, if one knows at the moment some opposite one has produced, one may bring it into and address it in one's rational framework and there will continue to be something which is beyond one's expanded rational framework. That is, there will always be something which escapes from one's rational framework and there will always be some more deconstructing

processes. In the example of the questions of the present and of the presence of the present, one seems to be able to address these two questions together with the so-far identified other (opposite) of these two questions - for instance, the will to be a philosopher or the contemporary attitude against the past or the future. That is, one may agree that these two questions are significant and one may consider them seriously while at the same time affirming the significance of the will or of the attitude. However, Deconstruction would continue to argue that there is still something beyond considering both these two questions regarding the present and the so-far identified other (opposite) of these two questions.

Deconstructing one's intention to consider these two questions regarding the present and their so-far identified other (opposite) together, Deconstruction may ask why one intends to consider together these two questions and their so-far identified other (opposite) in the first place. That is, why can one not allow that these two questions and their so-far identified other may remain contradictory against each other. The presupposition of one's intention to consider these two questions and their so-far identified other (opposite) together may be, for example, an attitude against contradiction. The question regarding the attitude against contradiction is no less important than one's intention to consider together these two questions regarding the present and their so-far identified other (opposite). Therefore, Deconstruction may keep on the search for and inquiry into the so-far absent other (opposite) of whatever one has considered together and this is an endless process. As Derrida (1994b, p. 30) says: "by definition it [i.e., one's other] is always inaccessible, it lies beyond everything". Therefore, Deconstruction supports the view of the thesis that it is impossible to know at the moment what one's other (opposite) one has simultaneously produced because one's other (opposite) is by definition inaccessible.

Let us continue but amend the supposed situation mentioned above. Now one's rational framework considers together these two questions about the present and the so-

far identified other (opposite) of these two questions; the concealment and exclusion of one's other (i.e., the opposite of one's rational framework) from oneself (i.e., one's rational framework) in order to protect oneself is shown in Figure 6.5. below. In this figure, one's originating rationality is to consider the question of the present and the question of the presence of the present. In this supposed situation, one's originating rationality takes on board one's opposite which could be envisaged by one's originating rationality. Therefore, one's rational framework addresses one's originating rationality and the opposite envisaged and taken on board by one's originating rationality. The opposite which could be envisaged and taken on board by one's originating rationality may be to consider what presupposes these two questions and what is concealed by these two questions at the same time such as to consider the will of becoming a philosopher or the contemporary attitude against the past or the future. One's originating rationality to consider the question of the present and the question of the presence of the present may make these two questions significant questions.

The opposite which could be envisaged and taken on board by one's originating rationality to consider the will of becoming a philosopher or the contemporary attitude against the past or the future may make these two questions merely one of the many means which may make one a philosopher or one of the many means which may divert away people's unhappiness about the past or the future. In the meantime, there are still many more rationalities which are beyond one rational framework which intends to consider together these two questions about the present (i.e., one's originating rationality) and the will of becoming a philosopher and the contemporary attitude against the past or the future (i.e., the opposite envisaged and taken on board by one's originating rationality). For instance, the attitude against contradiction (i.e., the opposite irrelevant or unknown to one's originating rationality) presupposes one's intention to consider these two questions and their so-far identified other (opposite) together. In the meantime, the attitude against contradiction is concealed and excluded by these two questions and their so-far identified other (opposite).

In this supposed situation, shown in Figure 6.5 is the concealment and exclusion of one's other (i.e., the opposite of one's rational framework) from oneself (i.e., one's rational framework) in order to protect oneself. In this situation, one's rational framework is to consider together these two questions about the present (shown as the grid without stripe-like shadow) and to consider the will of becoming a philosopher or the contemporary attitude against the past or the future (shown as the grid with light shadow). One's other (i.e., the opposite of one's rational framework) is to consider that there are still many more rationalities which are beyond their consideration such as the attitude against contradiction. One's other is shown as the grid with stripe-like shadow. In this supposed situation, when one's other (opposite) is exposed and sought, one's significance is no longer secured and one is deconstructed.

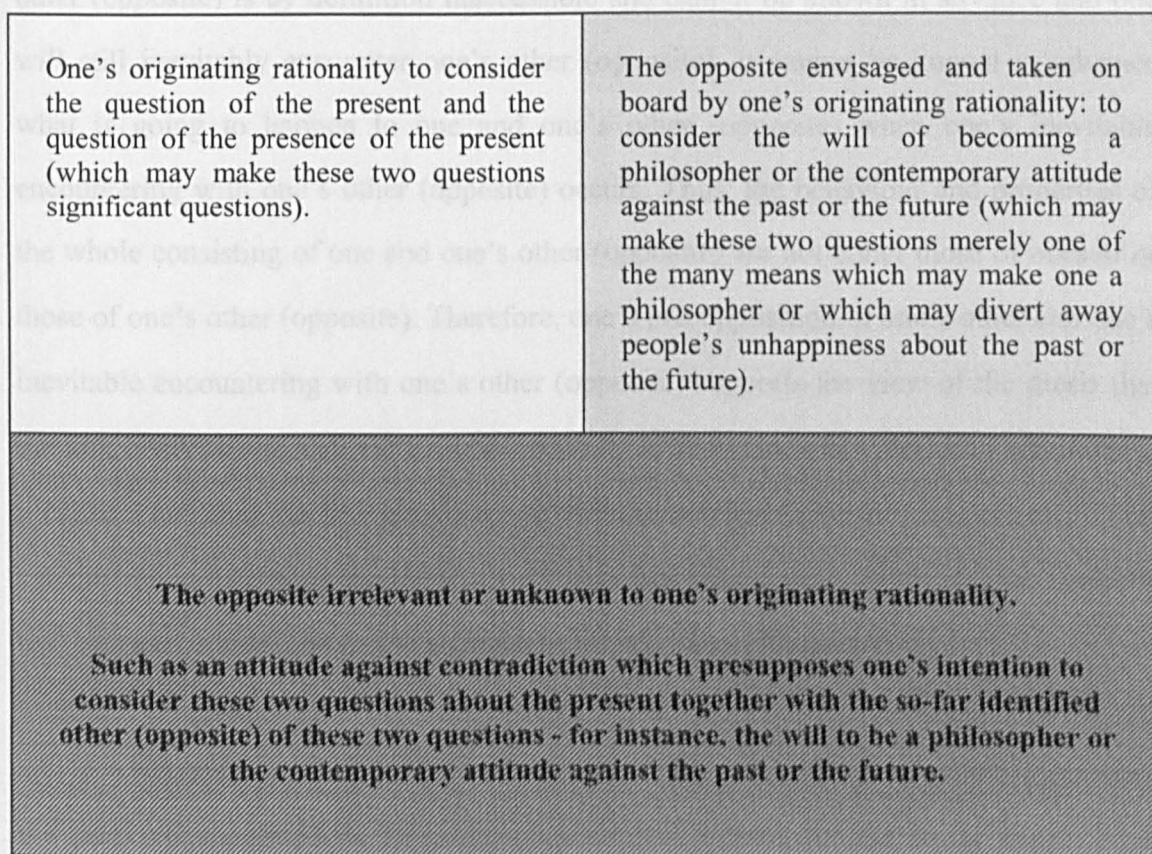


Figure 6.5: The concealment and exclusion of one's other from oneself in order to protect oneself in a supposed situation, where oneself (i.e., one's rational framework - one's originating rationality and one's opposite envisaged and taken on board by one's originating rationality in this supposed situation) is shown as the grid without stripe-like shadow and the grid with light shadow; and one's other (i.e., the opposite of one's rational framework - one's opposite irrelevant or unknown to one's originating rationality in this supposed situation) is shown as the grid with stripe-like shadow.

This thesis suggests that Deconstruction supports the view of the thesis that whenever one is identified, the systemic link between one and one's other (opposite) has been simultaneously produced. As mentioned above, one presupposes one's other (opposite): without one's other (opposite), one will not be identified in the first place. Therefore, Deconstruction supports the view of the thesis that one's other (opposite) cannot be cut off and thrown away from oneself and the link between one and one's other (opposite) is simultaneously produced when one is identified. Also, as mentioned above, one will inevitably encounter one's other (opposite) in the end and one's other (opposite) is by definition inaccessible and cannot be known in advance. Since one's

other (opposite) is by definition inaccessible and cannot be known in advance and one will still inevitably encounter one's other (opposite), it cannot be known in advance what is going to happen to one and one's other (opposite) when one's inevitable encountering with one's other (opposite) occurs. Thus, the behaviour and properties of the whole consisting of one and one's other (opposite) are not either those of oneself or those of one's other (opposite). Therefore, one's presupposition of one's other and one's inevitable encountering with one's other (opposite) supports the view of the thesis that the link between one and one's other (opposite) is simultaneously produced when one is identified and that the link between one and one's other (opposite) is systemic. Thus, Deconstruction supports the view of the thesis that when one is identified, the systemic link between one and one's other (opposite) is produced simultaneously.

Nonetheless, despite that one will inevitably encounter one's other (opposite), the proposal suggested by Deconstruction to seek always for the so-far absent other (opposite) tends to conceal and exclude one's rational framework which Deconstruction is deconstructing. As mentioned above, Deconstruction supports the view of the thesis that one presupposes one's other (opposite); that one needs to conceal and exclude one's other (opposite) to protect oneself; that there is no possibility to know at the moment what one's other one might produce; and that when one is identified, the systemic link between one and one's other (opposite) has been simultaneously produced. However, to seek always for the so-far absent other (opposite) - the opposite of one's rational framework - tends to conceal and exclude one's rational framework. In the next two sections, this thesis argues that some components of a purposeless system are emphasised by Deconstruction and some are not. This thesis will show later that the component of a purposeless system - the opposite irrelevant or unknown to one's originating rationality (i.e., the opposite of one's rational framework) - is emphasised by Deconstruction. The components of a purposeless system that are not emphasised are one's originating rationality and the opposite envisaged and taken on board by one's originating rationality (i.e., one's rational framework).

6.4. THE COMPONENT OF A PURPOSELESS SYSTEM EMPHASISED IN DECONSTRUCTION

In the terms of the thesis the component of a purposeless system referring to the opposite irrelevant or unknown to one's originating rationality (the opposite of one's rational framework) is what is mainly addressed by Deconstruction. When one has a particular rationality and one does not take on board the opposite of this particular rationality envisaged, one's rational framework addresses this particular originating rationality only. However, when one has this particular rational framework, the concept of Deconstruction *invites one to seek for the so-far absent other (opposite) of this particular rational framework*, which addresses one's originating rationality only at the moment. The seeking for the so-far absent other (opposite) of this particular rational framework may be done by, as mentioned in the previous section, asking what presupposes this particular rational framework and what is excluded and concealed by this particular rational framework, which addresses one's originating rationality only at the moment. For instance, as mentioned in the previous section, regarding one's originating rationality to ask the question of the present and the question of the presence of the present, Deconstruction invites one to ask what is presupposed before these two questions being identified and what is concealed and excluded by asking these two questions? The will to be a philosopher or the contemporary attitude against the past or the future may then be identified to presuppose these two questions regarding the present and identified as being concealed and excluded by these two questions at the same time. Meanwhile, there are still many more rationalities which are beyond one's originating rationality to consider these two questions about the present and the opposite which could be envisaged and taken on board by one's originating rationality to consider the will of becoming a philosopher and the contemporary attitude against the past or the future (see also Figure 6.4 shown above).

As also mentioned in the previous section, it is impossible for one to know in advance what one's other (opposite) is. Thus, the seeking for the so-far absent one's other (opposite) may be regarded as, in the terms of the thesis, to seek for the opposite irrelevant or unknown to one's originating rationality - i.e., the opposite of one's rational framework. For instance, as mentioned in the previous section too, when the will to be a philosopher or the contemporary attitude against the past or the future become(s) identified to presuppose these two questions regarding the present and to be concealed and excluded by these two questions, the concept of Deconstruction invites one to continue to seek for what is by then absent and other than (opposite to) considering these two questions regarding the present and the will to be a philosopher or the contemporary attitude against the past or the future. That is, Deconstruction invites one to continue to seek for what is by then absent and other than one's rational framework which not only addresses one's originating rationality, which addresses these two questions regarding the present, but also the opposite envisaged by one's originating rationality, which addresses the will or the attitude. The concept of Deconstruction immediately discards the will or the attitude identified by then. That is, Deconstruction immediately discards the opposite of these two questions regarding the present by then envisaged and identified - i.e., the opposite envisaged by one's originating rationality.

For instance, as mentioned in the previous section, one may intend to address and take on board the will to be a philosopher or the contemporary attitude against the past or the future by affirming the will or the attitude. That is, one may consider seriously these two questions regarding the present while at the same time considering seriously and affirming the significance of the will to be a philosopher or the attitude against the past or the future. Nonetheless, when one envisages, identifies, and takes on board the will or the attitude, Deconstruction immediately invites one to ask what still presupposes the consideration of these two questions and the will or the attitude and what are still concealed and excluded by then. For instance, as also mentioned in the

previous section, Deconstruction may immediately invites one to ask why one intends to consider together these two questions regarding the present and their so-far identified other (opposite) (i.e., the will or the attitude) in the first place (see also Figure 6.5 shown above). That is, Deconstruction immediately invites one to seek for *what is beyond what one can envisage, identify, and take on board so far - i.e., what is still beyond one's rational framework*. Therefore, in the terms of the thesis, the component of a purposeless system referring to the opposite irrelevant or unknown to one's originating rationality (the opposite of one's rational framework) is what is mainly addressed in Deconstruction. This is shown below in Figure 6.6.

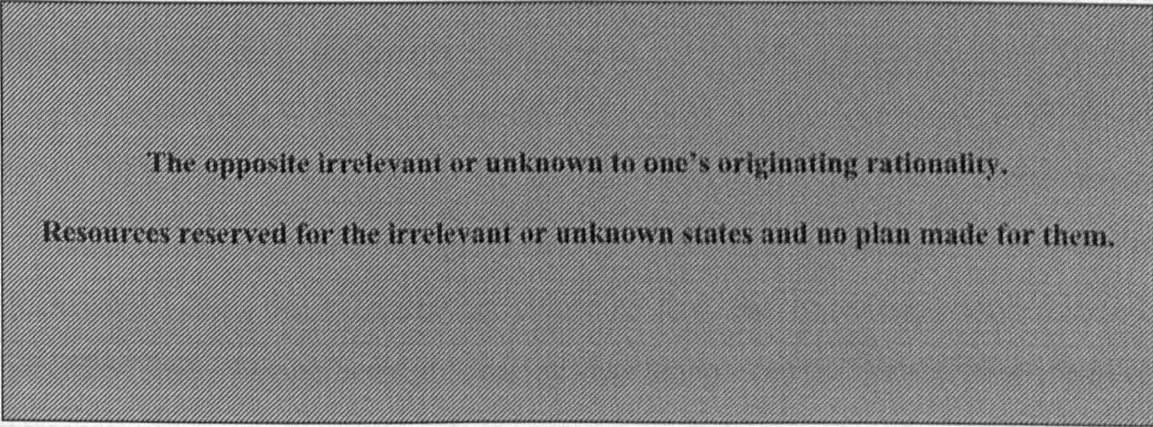


Figure 6.6: The component of a purposeless system - the opposite irrelevant or unknown to one's originating rationality (i.e., the opposite of one's rational framework) - emphasised in Deconstruction.

Therefore, one's rational framework - i.e., one's originating rationality and the opposite of one's rational framework - is the component of a purposeless system which are excluded and are not addressed in Deconstruction. This discussion will be done through applying Derrida's concept of Deconstruction to Deconstruction itself. This application will raise the need for the symmetric relationship of opposites in a purposeless system, which will be addressed in Section Six.

6.5. THE COMPONENTS OF A PURPOSELESS SYSTEM NOT EMPHASISED IN DECONSTRUCTION

One's originating rationality and the opposite envisaged by one's originating rationality - i.e., one's rational framework - are not addressed in Deconstruction. To discuss the components of a purposeless system which are not addressed in Deconstruction may be done through applying the concept of Deconstruction to Deconstruction itself. Applying Derrida's concept of Deconstruction to Deconstruction itself, this thesis asks the question: What presupposes the concept of Deconstruction and what, at the same time, is concealed and excluded by the very concept of Deconstruction? It is "one's rational framework" which the concept of Deconstruction tries to deconstruct. Without that one has a particular rational framework, there would be no one's other of this particular rational framework in the first place. Therefore, the concept of Deconstruction presupposes and is presented and contrasted by one's rational framework - i.e., one's originating rationality and the opposite so-far envisaged, identified, and taken on board by one's originating rationality. That is, the concept of Deconstruction presupposes and is contrasted and presented by one's rational framework which Deconstruction tries to deconstruct. The very concept of Deconstruction thus tends to conceal and exclude them as well.

Therefore, one's rational framework - i.e., one's originating rationality and the opposite envisaged, identified and taken on board by one's originating rationality - is always undesired by the concept of Deconstruction and one's rational framework is always expected to be deconstructed rather than maintained. As mentioned in the previous section, the seeking for the so-far absent other (opposite) by Deconstruction may be regarded as the seeking for the opposite irrelevant or unknown to one's originating rationality. Thus, this thesis suggests that the emphasis of Deconstruction on the seeking for the opposite irrelevant or unknown to one's originating rationality - i.e., the opposite of one's rational framework in a purposeless system - tends to conceal and

exclude one's rational framework which Deconstruction tries to deconstruct. This emphasis implies a somewhat asymmetric relationship between one's rational framework and the opposite of one's rational framework - i.e., between opposites. The components of a purposeless system - one's originating rationality and the opposite envisaged and taken on board by one's originating rationality which are both addressed by one's rational framework in a purposeless system - are not fully attended to in Deconstruction and are shown below in Figure 6.7.

<p>One's originating rationality.</p> <p>The plan for the desired states in terms of one's originating rationality made, the potential cost and benefit of the plan estimated, the resources needed by the plan made available, and the plan implemented.</p>	<p>The opposite envisaged and taken on board by one's originating rationality.</p> <p>The plan for the undesired states in terms of one's originating rationality made, the potential cost and benefit of the plan estimated, and the resources needed by the plan available despite the plan not being implemented.</p>
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Figure 6.7: The components of a purposeless system - one's rational framework which addresses both one's originating rationality and the opposite envisaged by one's originating rationality - not emphasised in Deconstruction.

6.6. THE SYMMETRIC RELATIONSHIP BETWEEN OPPOSITES IN A PURPOSELESS SYSTEM

Since the emphasis on one's rational framework may conceal and exclude the opposite of one's rational framework and the emphasis on the opposite of one's rational framework may conceal and exclude one's rational framework, this thesis proposes instead a symmetric relationship between one's rational framework and the opposite of one's rational framework in a purposeless system. In the light of proposing a symmetric relationship between one's rational framework and the opposite of one's rational

framework - i.e., opposites - in a purposeless system this thesis provides the following two arguments regarding Deconstruction.

Firstly, this thesis suggests that Deconstruction's openness towards one's other implies a tendency towards concealment and exclusion of the rational framework which Deconstruction tries to deconstruct. Deconstruction adheres to a somewhat asymmetric relationship between one's rational framework and the opposite of one's rational framework. Derrida (1984, p. 124) argues Deconstruction is not an enclosure in nothingness, but an openness towards the other. However, when Deconstruction is always seeking for the so-far absent one's other (opposite) of one's rational framework, one's rational framework - i.e., one's originating rationality and the opposite envisaged and taken on board by one's originating rationality - which Deconstruction tries to deconstruct can become concealed and excluded. This is because it is one's other that Deconstruction sets out to seek for rather than one's rational framework, which is being deconstructed by Deconstruction. That is, one's rational framework being deconstructed by Deconstruction is not the point of Deconstruction: it is concealed and excluded in this sense. Therefore, by only seeking for the so-far absent other (opposite), Deconstruction tends to promote an asymmetric relationship between one's rational framework and the other (opposite) of one's rational framework.

Secondly, this thesis suggests that the refusal of one's rational framework is not necessarily achieved by always seeking for the other of one's rational framework whose *eternal* fulfilment and presence is deferred forever; rather, the refusal of one's rational framework may be achieved by a *symmetric relationship* between one's rational framework and the opposite of one's framework. According to the concept of Deconstruction, Deconstruction gives pleasure as it gives desire: a search for the presence and fulfilment of one's other which are deferred forever, a search for something which remains absent and other than itself (Derrida, 1984, p. 126). Deconstruction is an endless search for one's other (opposite). The search will never end

because there will always be more otherness (opposite) which presupposes, presents, and contrasts one's rational framework. As Derrida (1994b, p. 30) says: "it is always inaccessible, it lies beyond everything". Therefore, the *eternality* of the presence and fulfilment of one's other (opposite) will be deferred forever in this sense. In addition, despite that one may try to envisage, identify, and take on board one's other, one's rational framework will keep on being refused and deconstructed. This is because one will still inevitably encounter further otherness (opposite) of one's rational framework which goes beyond what one's rational framework can address and which once identified will be discarded by Deconstruction immediately. This is because Deconstruction will then invite one to continue to seek for some even further otherness (opposite) of one's rational framework. Thus, the refusal of one's rational framework may be achieved by seeking for the forever deferred presence and fulfilment of the other of one's rational framework as suggested by Deconstruction.

However, this thesis suggests the refusal of one's rational framework may rather be addressed by emphasising a symmetric relationship between opposites - i.e., between one's rational framework and the opposite of one's rational framework in a purposeless system - without concealing and excluding one's rational framework. As mentioned in the previous chapters, by taking on board the opposite envisaged by one's originating rationality and by having a reserve for the opposite irrelevant or unknown to one's originating rationality, one's originating rationality is a rationality which is not necessarily to be realised. In this way, when one's originating rationality is not allowed by one's situation for whatever reason - i.e., when one's originating rationality encounters something beyond what it can address and is refused, one will still have an alternative rationality available - i.e., the opposite envisaged and taken on board by one's originating rationality. When one's rational framework - i.e., one's originating rationality and the opposite envisaged and taken on board by one's originating rationality - is not allowed by one's situation for whatever reason, one will still have a reserve available for one's situation which affirms what is beyond what one's rational

framework can address. In this way, one may have a rationality and a rational framework which are not necessarily to be realised and which may be refused.

Thus, the thesis proposes a symmetric relationship between one's rational framework and the opposite of one's rational framework in a purposeless system. The concept of a purposeless system proposed by this thesis agrees with Deconstruction that one will inevitably encounter the so-far absent one's other. Nonetheless, the refusal of one's rational framework by seeking for the so-far absent other of one's framework as proposed by Deconstruction tends to conceal and exclude one's rational framework which Deconstruction is deconstructing. Therefore, this thesis suggests that one's rational framework acknowledges this inevitable encountering with the opposite of one's rational framework and prepares for this inevitable encountering by having a reserve for the opposite of one's rational framework - i.e., by having a reserve for the opposite irrelevant or unknown to one's originating rationality. In addition, since the relationship between one and one's other proposed by Deconstruction (seen in the terms of the thesis as an asymmetric relationship between one's rational framework and the opposite of one's rational framework) tends to exclude and conceal one's rational framework (which Deconstruction is deconstructing), this thesis proposes a symmetric relationship between one and one's other. That is, in the terms of the thesis *a symmetric relationship between one's rational framework and the opposite of one's rational framework in a purposeless system enables one to have a rational framework which may be realised but is not necessarily to be realised and which may be refused but is not necessarily to be refused*. This is because an asymmetric relationship between one's rational framework and the opposite of one's rational framework in a purposeless system may suggest that a rational framework must be realised and cannot be refused in a purposeless system or that a rational framework cannot be realised and must be refused in a purposeless system.

The symmetric relationship between one and one's other (opposite) proposed by this thesis means that they are addressed together symmetrically in a purposeless system. One's rational framework and the opposite (other) of one's rational framework are addressed symmetrically. In a purposeless system, one's rational framework addresses both one's originating rationality and the opposite envisaged and taken on board by one's originating rationality. Therefore, when one's rational framework and the opposite of one's rational framework are addressed symmetrically in a purposeless system, they are allocated what I call a half of "resources" for each. That is, the opposite of one's rational framework (the opposite irrelevant or unknown to one's originating rationality) is reserved a half of resources; and one's rational framework is similarly allocated a half of the resources. However, by allocating *a half* of resources for each of them, I emphasise *the symmetric relationship* between them rather than *the physically equivalent division of resources* for each of them. In the meantime, what a half of resources means in practice is also debatable. Does a half of resources mean a half of tangible resources such as exactly a half of money or of time available or may it mean a half of tangible and intangible resource mixture such as a half of brain power. A certain amount of brain power may mean to one an equivalent to a half of one's money available. Therefore, one may agree to reserve a certain amount of one's brain power for the opposite of one's rational framework rather than to reserve a half of one's money available for the opposite of one's rational framework. Therefore, the symmetric relationship between one's rational framework and the opposite of one's rational framework does not necessarily refer to the equivalent division of tangible resources such as money or time for each of them.

6.7. THE CONCEPT OF A PURPOSELESS SYSTEM AS A CONCEPT TO BE DEBATED RATHER THAN AN IDEALISED STANDARD WHICH IS UTILISED TO EVALUATE AND TO UNIFY PEOPLE'S ACTIONS

Despite that this thesis proposes the concept of a purposeless system, it does not regard the concept of a purposeless system as an idealised standard according to which one must act. Rather, the thesis argues that the concept of a purposeless system is a debatable concept. That is, this thesis argues that after one has considered the concept of a purposeless system, one may take one's own action according to one's own situation. This thesis argues that one's action is what needs to be considered by oneself according to one's own situation.

Therefore, this thesis does not put aside one's action which is taken by oneself according to one's own situation. It does not set up an idealised standard called the concept of a purposeless system according to which one must act. Thus, the concept of a purposeless system is not a concept which is utilised to evaluate and unify one's action. Actions taken by oneself need not be considered to be a perfect copy of the concept of a purposeless system. As Nietzsche (1980, pp. 45-46) says:

Every concept originates through our equating what is unequal. No leaf ever wholly equals another, and the concept 'leaf' is formed through an arbitrary abstraction from these individual differences, through forgetting the distinctions; and now it gives rise to the idea that in nature there might be something besides the leaves which would be 'leaf' - some kind of original form after which all leaves have been woven, marked, copied, colored, curled, and painted, but by unskilled hands, so that no copy turned out to be a correct, reliable, and faithful image of the original form.

Therefore, to set up an idealised standard for one's actions comes from abstracting from people's individual differences regardless of people's situations. It also comes from the

idea that in nature, there might be something besides people's actual actions which should be seen as the ideal actions of people. Thus, this thesis regards the concept of a purposeless system as a debatable concept rather than an idealised standard according to which one must act.

6.8. CONCLUSION

In this chapter, I have presented the concept of a purposeless system which consists of one's originating rationality, the opposite envisaged by one's originating rationality (which are both addressed in one's rational framework) and the opposite irrelevant or unknown to one's originating rationality, which is the opposite of one's rational framework. In a purposeless system, one's rational framework is a rational framework which may be realised but is not necessarily realised and which may be refused but is not necessarily refused. Therefore, the system consisting of one's originating rationality, the opposite envisaged and taken on board by one's originating rationality, and the opposite irrelevant or unknown to one's originating rationality - i.e., one's rational framework and the opposite of one's rational framework - is called a purposeless system.

The concept of Deconstruction is introduced to support the view of the thesis that opposites are systemically linked. Deconstruction supports the views of the thesis that one presupposes one's opposite, that one needs to conceal and exclude one's opposite in order to protect oneself, that there is no possibility to know at the moment what opposite one has simultaneously produced, and that when one is identified, the systemic link between one and one's opposite has been simultaneously produced.

Despite that Deconstruction supports the view of the thesis that opposites are systemically linked, the always seeking for the so-far absent one's opposite tends to

conceal and exclude one's rational framework which Deconstruction is deconstructing. The component of a purposeless system referring to the opposite of one's rational framework (the opposite irrelevant or unknown to one's originating rationality) is addressed in Deconstruction. However, one's rational framework which Deconstruction is deconstructing, presupposes, presents, and contrasts the concept of Deconstruction and can become concealed and excluded by Deconstruction. Thus, this thesis argues that the always seeking for the opposite of one's rational framework as suggested by Deconstruction can conceal and exclude one's rational framework which Deconstruction is deconstructing. Certain components of a purposeless system - one's originating rationality and the opposite envisaged and taken on board by one's originating rationality which are both addressed in one's rational framework - are not fully attended to in Deconstruction. Thus, Deconstruction implies a somewhat asymmetric relationship between one's rational framework and the opposite of one's rational framework - i.e., between opposites. I suggest that an asymmetric relationship between opposites may conceal and exclude one's rational framework - which then makes the system have a rational framework which cannot be realised and which must be refused.

In this chapter, I conclude by proposing that opposites have a symmetric relationship in a purposeless system. The symmetric relationship between opposites proposed by this thesis suggests that a half of the resources be allocated for one's rational framework and a half of the resources may be reserved for the opposite of one's rational framework - i.e., for the opposite irrelevant or unknown to one's originating rationality. However, by allocating *a half* of resources for each of them, I emphasise *the symmetric relationship* between them rather than *the physically equivalent division of resources* for each of them. In the meantime, what a half of resources means is also debatable.

The concept of a purposeless system does not arbitrarily discard people's individual differences and their different situations. Therefore, after considering the concept of a purposeless system, one may take one's own action according to one's own situation. It is for that reason that the concept of a purposeless system does not function as an idealised standard which is utilised to evaluate and to unify one's actions.

In Chapter Seven, I will apply the concept of a purposeless system developed in this and previous chapters to organising a purposeless system approach - Complementary Intervention (CI) - and to organising a debate process in a CI project, which is to debate the concept of a purposeless system among participants. Chapter Seven discusses Complementary Intervention as a purposeless system approach.

Chapter Seven: Complementary Intervention: A Purposeless System Approach

7.1. INTRODUCTION

In this chapter, I apply the concept of a purposeless system developed in previous chapters to organising a purposeless system approach - Complementary Intervention (CI) - and I propose CI as a research alternative to conventional action researches.

Firstly, I explain why Complementary Intervention (CI) is complementary. Secondly, I show how CI applies the concept of a purposeless system to organising a CI project and to organising a debate process in a CI project. Thirdly, I point to a pilot study conducted prior to my CI project in Taiwan, which was aimed at facilitating me to explore what participants might think about a debate organised implicitly by the concept of a purposeless system and what participants might learn through this debate; and to practice the skill of conducting my CI project. Fourthly, I indicate a detailed plan for my CI project. Through that plan, I show how my CI project may facilitate participants to broaden their understanding of the world and to remain cautious about it and about their decision and their further action towards their originating rationality after a CI project. Finally, I show why CI is a research alternative to conventional action researches and how CI addresses some issues of action research.

7.2. COMPLEMENTATION TO OUR INCOMPLETE UNDERSTANDING OF THE WORLD

“Complementary” Intervention (CI) is a purposeless system approach to “complementing” one’s originating rationality with other components of a purposeless system in order to facilitate participants of CI to reconsider their originating rationality and to see what would have otherwise been concealed and excluded by that rationality. The other components of a purposeless system referred to above are the opposite envisaged by one’s originating rationality and the opposite irrelevant or unknown to one’s originating rationality.

By the word “Complementary”, this thesis makes clear the incompleteness of our understanding of the world and that our incomplete understanding of the world needs complementation. As will be shown later, this thesis also argues that after the consideration and the complementation of the components of a purposeless system, our understanding of the world is still incomplete and it still needs further complementation. Therefore, by the word “Complementary”, this thesis makes it clear that our understanding of the world will always need complementation, no matter how broad it has been.

As mentioned in Chapter Two, action research is a research which is not a mere academic work and which sets out also to facilitate participants. Also mentioned was Romm’s (1996a,b,c, 1997, 1998) argument that the crucial issue is whether or not any particular research can facilitate the taking on board of opposition. Romm is one of the social constructivists (Denzin and Lincoln, 1994, 1998a,b,c; Gergen, 1994; Lather, 1993, 1995; Lincoln, 1985, 1995; Shotter, 1993a,b; Shotter and Gergen, 1989), who argue that one’s understanding of the world can never be complete and yet it can be broadened by co-constructing it with its alternatives. That is, one’s understanding of the

world is broadened when one finds out one's assumptions of it by encountering the points of views of others.

An example given by Romm regarding how to take on board opposition is an action research project which was to improve the situation of women facing the problem of inheritance in Southern Africa (Romm, 1996b, 1998). Interdisciplinary practice was introduced to engage consciously the points of view of some participants with those of other participants. In this project, Romm indicates that some participants believed in the beginning that *the* problem was that the general law regarding inheritance was to the disadvantage of women in Southern Africa and that the general law needed changing. And yet, these participants came to temper their point of view during the project when theirs was juxtaposed with the point of view of others. For example, the precedents of court cases might still create uncertainty and pressure on women; or women might feel too obliged to their in-laws to bring them to a court case; or women might feel uneasy about the interactions between themselves and their in-laws during and after the court case; or women might have problems in their community if they bring their in-laws into a court case because of an inheritance problem; or women might feel the pressure of tradition which does not expect them to have too much property (Romm, 1998, pp. 67-69).

Thus, the participants who initially oriented from the legal point of view came to temper their view when their view was engaged and juxtaposed with these socio-cultural perspectives. In this sense, their understanding of the world was broadened by co-constructing it with its alternatives and by encountering the points of view of others. Therefore, taking on board opposition by interdisciplinary practice in this action research project is, as Romm (1998, p. 68) describes it, "a way of preventing unidirectional focusing of the discussion or of suggested options for action". Romm agrees that some participants in the end might still choose the way they used to act. And yet, the point is that these participants become aware that their concern is not the only

concern with which they should be concerned and that their action is not the only action which people should take.

Agreeing with Romm and other social constructivists, CI argues the need to facilitate participants to become aware that their understanding of the world will never be complete. It does so by complementing their originating rationality with taking on board the opposite envisaged by their originating rationality and with considering having a reserve for the opposite irrelevant or unknown to it. In this way, participants can see what would have otherwise been concealed and excluded by their originating rationality.

CI considers the need to take on board opposition. CI complements participants' originating rationality with the opposite envisaged by participants' originating rationality through taking it on board. In the meantime, CI also complements participants' originating rationality with considering to have a reserve for the opposite irrelevant or unknown to it. Thus, CI engages consciously participants' originating rationality with the points of views of the opposite envisaged by theirs and the opposite irrelevant or unknown to theirs.

CI also considers that participants' understanding of the world may be broadened by co-constructing it with its alternatives. CI suggests that the way in which this may be broadened, is through co-constructing their originating rationality with the opposite envisaged and taken on board by theirs and with the opposite irrelevant or unknown to theirs. That is, through the learning process of CI, participants may see what would have otherwise been concealed and excluded by their originating rationality through encountering the points of view of the opposite envisaged and taken on board and of the opposite irrelevant or unknown.

It is important for CI to facilitate participants to become aware that whatever decisions and actions they take regarding their originating rationality is based on incomplete knowledge. By complementing participants' originating rationality as indicated above, CI facilitates them to become aware that there are still many more rationalities which they have not taken into consideration. Therefore, participants may become aware that they can make the best decision according to the knowledge available to them but the knowledge available to them to make that decision is incomplete and may be overrode. In this way, CI facilitates participants to become aware that their decision regarding their further action towards their originating rationality is not absolute and may be overrode. Thus, although participants' understanding of the world may be broadened through CI, CI argues that participants should remain cautious about their decision and their further action towards their originating rationality.

CI argues that to facilitate participants to divert their thoughts about and to reconsider their original purpose and action is a research alternative to conventional action researches which focus on facilitating participants to evaluate their action according to their purpose defined. CI raises the issue of a purposeless system for participants to think about and they can decide what kind of action they would like to take. Through the issue of a purposeless system raised by CI, CI facilitates participants to reconsider their originating rationality and to make their decision regarding their further action towards it. Therefore, this thesis argues that CI is a research alternative to conventional action researches. The "action" element of CI is that it facilitates participants to think about the issue of a purposeless system. They reconsider their originating rationality and see what would have otherwise been concealed and excluded by it. Participants may also come to temper their originating rationality when it is juxtaposed with the points of view of the opposite envisaged and taken on board by it and of the opposite irrelevant or unknown to it. The issues outlined here are discussed in more detail in the following section.

7.3. THE ORGANISATION OF A CI PROJECT

CI is an intervention organised by the concept of a purposeless system, which it applies to organising a CI project and to organising a debate process in a CI project. Details of the organisation of a CI project are given below.

7.3.1. The application of the concept of a purposeless system to organising a CI project

CI applies the concept of a purposeless system to organising a CI project. The originating rationality of the CI project is that the concept of a purposeless system is utilised as an organising framework to *organise a debate* among participants regarding rethinking their purpose and seeing what otherwise would have been concealed and excluded by it. The originating rationality of the CI project does not seek to embody the concept of a purposeless system in the participants' organisation. The opposite envisaged by the originating rationality of the CI project is that CI can affirm the situation in which the concept of a purposeless system is *to be embodied* in the participants' organisation. That is, the opposite envisaged by the originating rationality of the CI project - which is to embody the concept of a purposeless system in the participants' organisation - will be taken on board by planning for the embodiment, evaluating the cost and benefit of the plan, and making resources needed by the plan available.

CI also applies the concept of a purposeless system to organising a CI project in such a way that the CI project also has a *reserve* for the situation in which the concept is neither to be embodied in the participants' organisation, nor to be utilised as a

framework to organise a debate among participants. For instance, participants may come up with some other ideas about the concept of a purposeless system.

In this way, participants of a CI project may learn from the issue of a purposeless system raised by the project and from other participants in the project. In the meantime, I, as a researcher of CI, will reconsider the originating rationality of a CI project to adopt the concept of a purposeless system as a organising framework to organise a debate among participants regarding rethinking their purpose when I do my CI projects in the future. That is, as a researcher of CI, I will also reconsider the originating rationality of their next CI project and re-situate its originating rationality when the concept of a purposeless system is applied to organising my next intervention project.

Thus, when CI applies the concept of a purposeless system to organising a CI project, CI implements the plan for the situation in which the concept will be utilised as a framework to *organise a debate* among participants of an organisation regarding reconsidering their original purpose. CI also plans for the situation in which the concept *will be embodied* in the participants' organisation. CI will also reserve a half of resources for the CI project for the situation which cannot be known in advance. The originating rationality of a CI project to adopt the concept of a purposeless system as a framework to organise a debate among the participants regarding reconsidering their purpose, the opposite envisaged by the originating rationality of the CI project to embody the concept of a purposeless system in the participants' organisation, and the opposite irrelevant or unknown to the originating rationality of the CI project are shown in Figure 7.1 (see below). This is why CI is an intervention organised by the concept of a purposeless system and this is also the way in which CI applies the concept of a purposeless system to organising a CI project.

<p>The originating rationality of a CI project to achieve its purpose of organising a debate among participants regarding reconsidering their purpose by adopting the concept of a purposeless system.</p> <p>The plan for the debate made, the potential cost and benefit of the plan estimated, the resources needed by the plan made available, and the plan implemented.</p>	<p>The opposite envisaged and taken on board by the originating rationality of the CI project: to embody the concept of a purposeless system in the organisation.</p> <p>The plan for the embodiment of the concept of a purposeless system made, the potential cost and benefit of the plan estimated, and the resources needed by the plan available despite the plan not being implemented.</p>
<p>The opposite irrelevant or unknown to the originating rationality of the CI project.</p> <p>Resources reserved for the irrelevant or unknown situations and no plan made for them.</p>	

Figure 7.1: The way in which CI applies the concept of a purposeless system to organising a CI project.

7.3.2. The application of the concept of a purposeless system to organising the debate in a CI project

CI further applies the concept of a purposeless system to organising a debate in a CI project - by discussing the components of a purposeless system in the debate - to facilitate participants to reconsider their purpose and to see what would have been otherwise concealed and excluded by their purpose. The components of a purposeless system which are to be discussed in the debate process of a CI project are shown below in Figure 7.2. These components are the participants' originating rationality, the opposite envisaged and taken on board by that rationality and the opposite irrelevant or unknown to it.

<p>Participants' originating rationality.</p> <p>The plan for the desired states in terms of participants' originating rationality made, the potential cost and benefit of the plan estimated, the resources needed by the plan made available, and the plan implemented.</p>	<p>The opposite envisaged and taken on board by participants' originating rationality.</p> <p>The plan for the undesired states in terms of participants' originating rationality made, the potential cost and benefit of the plan estimated, and the resources needed by the plan available despite the plan not being implemented.</p>
<p>The opposite irrelevant or unknown to participants' originating rationality.</p> <p>Resources reserved for the irrelevant or unknown states and no plan made for them.</p>	

Figure 7.2: The components of a purposeless system - participants' originating rationality, the opposite envisaged and taken on board by participants' originating rationality and the opposite irrelevant or unknown to participants' originating rationality - which are to be discussed in the debate process of a CI project.

Through discussing the components of a purposeless system, participants are invited to envisage and take on board the opposite of their originating rationality and to affirm the opposite envisaged. In addition, through discussing the components of a purposeless system, participants may realise that there are still many more rationalities which are concealed and excluded by their originating rationality and by the opposite envisaged and taken on board by it. At the end of the debate, participants may still insist on their original purpose and their originating rationality of adopting ways to achieve their original purpose. However, at least participants are aware that their originating rationality of adopting ways to achieve their original purpose does conceal and exclude

the opposites thereof, and that their insistence on their originating rationality is made at the cost of the concealment and exclusion.

Participants may decide to adopt the opposite envisaged and taken on board by their originating rationality in the debate process of the CI project or to adopt some rationality other than their original rationality and the opposite envisaged and taken on board by it in the debate. Similarly, participants at least are aware that this particular rationality which they adopt still excludes and conceals the opposites of this particular rationality and that their insistence on it is made at the cost of the concealment and exclusion.

When CI applies the concept of a purposeless system to organising a debate for the debate process of a CI project by discussing the components of a purposeless system, CI will leave the concept of one's "rational framework" an open question. As mentioned in previous chapters, one's rational framework in a purposeless system is considered as addressing both one's originating rationality and the opposite envisaged by one's originating rationality. Through the discussion of the components of a purposeless system in the debate process of the CI project, participants may agree that their originating rationality does conceal and exclude the opposites thereof. However, participants may still hesitate to affirm both their originating rationality and the opposite envisaged by it at the same time.

They may hesitate to think that their original purpose is not going to be achieved and that they need to achieve the opposite of their original purpose envisaged instead. They may also wonder if it is rational to make their organisation go out of their control when their original purpose is not going to be achieved. When this happens, participants may not believe that the framework which addresses both their originating rationality and the opposite envisaged by their originating rationality, is a rational framework. However, they are also invited by the concept of a purposeless system to

reconsider if a rational framework which addresses only their originating rationality without taking on board the opposite envisaged by theirs, is a rational framework. Besides, they may agree they need to affirm both of their originating rationality and the opposite of it envisaged at the same time but they are going to affirm them in a way different from the way suggested by the thesis. Therefore, the concept of one's rational framework is an evolving concept which may be debated among participants in the debate process of a CI project.

When CI applies the concept of a purposeless system to organising the debate process of a CI project by discussing the components of such a system in the debate, CI also leaves the issue of having a reserve of resources for the opposite irrelevant or unknown and the definition of symmetry open questions. When participants agree that the relationship between one's rational framework and the opposite thereof is symmetric, they might have different ideas about the concept of symmetry and about how to deal with this symmetric relationship. In Chapter Six, I mention that a way of addressing this symmetric relationship between one's rational framework and the opposite thereof is to divide resources equally between them. However, what does a half of resources mean to participants? Does a half of resources mean a half of tangible resources such as exactly half of the money or of time available or may it include intangible resources mixture such as brain power? A certain amount of brain power may, to participants, be equivalent to a half of their money available. Therefore, participants may agree to reserve a certain amount of their brain power, rather than a half of the money available, for the irrelevant or unknown opposite. In this way, the symmetric relationship between one's rational framework and the opposite thereof does not necessarily refer to the equivalent division of tangible resources, such as money or time for each of them. The concept of symmetry is therefore an evolving concept which may be debated among participants in the debate process of a CI project.

In addition, VSM will also be selected to facilitate participants to address the problems facing them in the debate process of my CI project. This is because the concept of a purposeless system is developed partly through the discussion of VSM (see Chapter Four). Although the concept of a purposeless system is also developed through the discussion of SD (see Chapter Five), SD is not selected to address the problems facing participants in the debate process of my CI project. This is because an in-depth SD analysis of an organisation would require access to the confidential statistics of the organisation, which are especially sensitive in my country, Taiwan, and may create an entry problem. Since I plan to carry out my CI project in Taiwan, I have to take this into consideration. A plan for my CI project (which will be detailed in Section 7.3.4. later) and the result of my CI project (which will be detailed in Chapter Eight) however, may show that a CI project can be carried out through an in-depth analysis provided by VSM without accessing the sensitive information of an organisation.

7.3.3. An informal pilot study conducted prior to my CI project

A pilot study was carried out prior to my CI project. This pilot study was aimed at facilitating me to explore what participants might think about a debate organised in line with the notion of a purposeless system. It was also aimed at facilitating me to explore what participants might learn through this debate and to practice the skill of conducting my CI project. It was expected that this study would give me some ideas about what could happen when participants debate the concept of a purposeless system in the context of my CI project. The concept of a purposeless system was, however, not explained to participants in the pilot study - but only implicitly introduced as explained below.

This pilot study took an informal form. It was a two-hour workshop which was aimed at improving participants' learning at school. Participants of this workshop

comprised a junior high school teacher teaching in the subject of physics and chemistry, and his students. His students sought for his assistance to improve their grades through private tuition in physics and chemistry after school, at his house. His students did not necessarily come from the same classes which he taught at school. He had 10 students in his private class. The entry to this person's private class was not a problem because of my friendship with him. The only consideration he had was that he had to make sure that the parents of his students, who paid for their children's private class, would think positively about using one of his sessions to conduct my study. This problem was solved when I suggested that my workshop could be conducted in a way aimed at improving his students' learning.

In that workshop, I began by inviting participants to present how they learned the subject of physics and chemistry. Some students said that they would try to understand the textbook on the subject first. Some students said that practising answering questions from the reference books was also very important. This was because they would not have much time to finish all the questions in examinations at school. In addition, they would be able to answer those questions which they did not understand because they had already memorised the answers for these questions. Some students said that they could save a lot of time and concentrate their focus by studying previous examination papers and trying to guess which questions from these papers would appear in their examinations. They said that this method enabled them to pass examinations without spending much time on this subject, although it could not enable them to get high grades.

I then invited participants to consider how they would like their teacher to teach them in order to improve their learning of this subject in his private class. This was to facilitate participants to identify their *originating rationality* of adopting ways to improve their learning of this subject in the private class. However, I did not explain to participants that they were defining a component of a purposeless system, because the

explanation would have complicated this workshop too much. Participants agreed that all the three methods of learning mentioned above could be adopted to improve their learning of this subject in this private class. However, they believed that different students had different needs. Different students would need the teacher to allocate a different proportion of time for each of these methods in his class. Some students said that they had no difficulty in understanding the subject itself and that they needed the teacher to spend more time on practising the questions from the reference books on this subject in his class and on guessing in advance what questions would appear in their examinations. Some students said that this subject was quite difficult for them and they needed the teacher to balance the time spent on explaining it and on practising the questions related to it. In this way, they would have more opportunity to pass the examinations, both by understanding the subject and by memorising the answers to questions which they could not understand. They also said that they hoped their teacher could guess some questions for them before their examinations. The teacher said that he understood that this subject had different degrees of difficulty to different students. He would try to make this subject understandable to every student by explaining it in detail. He would also guide his students through practising as many questions related to this subject as possible in the class. He said that he had not previously put much emphasis on providing previous examination papers and guessing possible examination questions for students. He said that he would do more about it as students had expressed this need.

I then went on to invite participants to think about the situation in which improving the learning of this subject was no longer important. This was a component of a purposeless system referring to the *opposite envisaged and taken on board*, although I did not explain to participants that they were going to consider yet another component of a purposeless system. I gave them an example of such a situation. I said, what about the situation in which their grades in this subject were very high and there was no room for improvement, or their grades were so low that there was little chance to improve their grades? These students said that they basically had a general expectation

of what kind of grades they would get from examinations. One student said that she found this subject extremely difficult for her. There was little chance of further improvement. What she could do, was to listen carefully to what her teacher taught about this subject in class at school and what my friend taught her. She also spent a little time on practising questions of this subject at home every time she finished my friend's class. Then she devoted the rest of her time to other subjects. She said that she could raise her overall average in all subjects at school better by spending more time on other subjects such as Chinese, English, history and geography, than on the subject of physics and chemistry. Other students began to talk about how they allocated their time for this subject and for other subjects. My friend told them that his private class was aimed at improving their learning of the subject of physics and chemistry. However, it was very important for them to allocate appropriate time for other subjects in order to raise the overall average. At the point, I asked participants whether or not they believed that considering the situation in which the improvement of the learning of physics and chemistry was no longer important, could bring up an issue such as allocating appropriate time for other subjects, which was no less important than improving their learning in this subject. Participants agreed.

One student was silent all the time and I asked him what he thought about the situation in which improving the learning of the subject of physics and chemistry was no longer important. He said hesitantly that this was really not very important for him. He said that he did not like studies. Rather, he liked painting. He hoped to become an artist in the future. However, his parents wanted him to study at a senior high school and then go to university. My friend encouraged him by saying that courses in art were provided by senior high schools and universities. This student said that he did not think that this was possible for him because he could not do well in examinations. He said that the education system (in Taiwan) was unfair to students like him. My friend told him that he agreed that the education system was unfair to some students. However, this was the way in which people got a degree in Taiwan. A degree was a necessity for a good job.

His teacher continued to say that without passing the examination(s) required to enter a senior high school and then university, this student would not get a degree. It would be difficult to make a living by becoming a full-time artist unless this student became very famous. It would be safer for this student to be a part-time artist. This meant that he would need to have an ordinary job and he could do his painting in his spare time. However, he would need to study at least the subjects required to pass the examination(s) necessary to enter a senior high school and to graduate from it. I told this student that I basically agreed with what his teacher had said. However, if painting was the only thing that could make him happy, he could consider painting as his primary job and another part-time job as his secondary job. For instance, he could begin as a trainee in an art gallery while studying at a senior high school at night. This would put him under less pressure about his studies. However, I reminded him that he must be sure that he liked painting very much and that he understood that full-time artists were not well-paid in Taiwan. I said that this could be a reason why there were very few internationally or even nationally acknowledged professional artists in Taiwan, because the education system had failed many potential artists. Participants believed that the education system did not help potential artists and they felt sympathetic to that student. At this point, this discussion could be argued to have reached the scope *beyond the implied originating rationality of participants* to adopt ways to improve their learning of the subject of physics and chemistry *and the implied opposite envisaged and taken on board* to allocate appropriate time for other subjects to raise the overall average of all subjects.

At the end of the workshop, I asked participants what they learned from this workshop and what they thought about it. They said that they learned from other participants alternative ways of learning the subject of physics and chemistry; that they had learned the importance of allocating their time appropriately both for this subject and for other subjects; that they believed that the education system should help potential artists rather than failing them; and that some students were the lucky ones who

benefited from the system. They also said that the whole workshop was very interesting. Through this study, I believed that debating the concept of a purposeless system was able to facilitate participants to reconsider their originating rationality through showing them what was beyond their originating rationality, such as the importance of allocating appropriate time for other subjects, and pondering about the education system's unfairness to some students and its benefits to some others. Therefore, this pilot study gave me confidence in debating the concept of a purposeless system also in the context of my CI project. It gave me some ideas about what could happen when participants debated the concept in my CI project too. The plan for my CI project in Taiwan will be detailed in the next subsection. The three implied components of a purposeless system discussed in the pilot study are shown below in Figure 7.3.

<p>The implied originating rationality of participants to improve their learning of the subject of physics and chemistry by the teacher's effort in his private class to make this subject understandable through explaining this subject in detail; to guide his students through practising as many questions related to this subject as possible; and to provide previous examination papers and guess possible examination questions for students.</p>	<p>The implied opposite envisaged and taken on board by participants' originating rationality: to allocate appropriate time for other subjects to raise the overall average of all the subjects at school.</p>
<p>The implied opposite irrelevant or unknown to participants' originating rationality.</p> <p>Such as the education system has been unfair to some students and beneficial for some others.</p>	

Figure 7.3: The three implied components of a purposeless system discussed in the pilot study.

7.3.4. The plan for my CI project

In this section, I will show in detail how my CI project may facilitate participants to broaden their understanding of the world through engaging consciously their originating rationality with the points of view of the opposite envisaged and taken on board by participants' originating rationality and of the opposite irrelevant or unknown to it. I will also show why participants will remain cautious about their broadened understanding of the world and about their decision and their further action towards their originating rationality after my CI project. My CI project, which was carried out in a supermarket chain in Taiwan according to the plan in this chapter, will be detailed in the next chapter.

There were one preparatory week and eight planned workshops in the plan for my CI project. In this plan, I organised a debate process among participants, which was to discuss the concept of a purposeless system. This debate process was planned to be carried out from Workshop One to Workshop Six. From Workshop One to Workshop Three, the plan was to facilitate participants to identify their originating rationality. From Workshop Four to Workshop Five, the plan was to facilitate participants to identify the opposite of their originating rationality which they would like to take on board and to engage consciously their originating rationality with the opposite envisaged and taken on board by it. In Workshop Six, the plan was to facilitate participants to engage consciously their originating rationality with the opposite irrelevant to it.

I also planned for the situation in which participants might want to embody a part or the whole of the concept of a purposeless system in their organisation. Workshop Seven was an optional workshop which was planned for this situation to happen.

7.3.4.1 In Workshop Eight, the plan was to facilitate participants to reflect upon what they think about the whole learning process of the CI project.

7.3.4.2 I also reserved a half of my research time for the situation which I could not know in advance. In this plan, Workshops Nine to Sixteen are unplanned workshops and they were reserved for the situation which I could not know in advance.

7.3.4.3 The way in which the plan for my CI project was organised by the concept of a purposeless system, is shown below in Figure 7.4.

<p>The originating rationality of my CI project to achieve its purpose of organising a debate among participants at Workshop One to Workshop Six and at Workshop Eight regarding reconsidering their purpose by adopting the concept of a purposeless system.</p>	<p>The opposite envisaged and taken on board by the originating rationality of my CI project: to embody the concept of a purposeless system in the organisation at the planned but optional Workshop Seven.</p>
<p>The opposite irrelevant or unknown to the originating rationality of my CI project.</p> <p>To have eight unplanned workshops as resources reserved for the irrelevant or unknown situations.</p>	

Figure 7.4: The way in which the plan for my CI project was organised by the concept of a purposeless system.

7.3.4.1. The preparation of workshops for my CI project

7.3.4.1.1. Preparatory Week

In the preparatory week, the plan was to invite participants from the people inside or outside the organisation where the CI project was to be carried out, on the basis of voluntary, of the appointment by the person who invited me to carry out the CI project in the organisation and of my invitation.

7.3.4.1.2. Workshop One

At the first workshop meeting of the CI project, I planned to facilitate participants to identify their organisational purpose with my facilitation. I planned to facilitate participants to identify their organisational purpose by the method of brainstorming which may diverge the participants' thinking regarding their organisational purpose. I also planned to converge the participants' thinking regarding their organisational purpose by asking the proposer of each organisational purpose proposed to give a reason why this particular purpose should be their organisational purpose and to discuss in the workshop these purposes and the reasons for them to be their organisational purpose.

At the end of the first workshop meeting, the plan was to give participants of the workshop a booklet briefing VSM. I planned to tell them that I was going to do a presentation of VSM for them at the second workshop meeting and I planned to invite them to read the booklet before the second workshop. I planned to tell them that I was very willing to answer any question they might have regarding what was written in the booklet at the second workshop meeting.

Through Workshop One, the plan was to facilitate participants to identify a purpose or a set of purposes as their organisational purpose(s).

7.3.4.2. Workshop Two

At the second workshop meeting of the CI project, I planned to do a presentation of VSM for participants and answer the questions raised by participants regarding VSM.

Through Workshop Two, the plan was to facilitate participants of the workshop to have an essential understanding of VSM.

7.3.4.3. Workshop Three

At the third workshop meeting of the CI project, I planned to encourage participants to apply VSM to their organisation. Through the system identification and system diagnosis process of VSM, participants may identify some problems where improvement may be made.

Through Workshop Three, the plan was to facilitate participants to identify some problems of their organisation through the application of VSM.

7.3.4.4. Workshop Four

At the fourth workshop meeting of the CI project, the plan was to facilitate participants to identify the opposite of their originating rationality which they would like to take on board. From this workshop, I start to facilitate participants to engage consciously their originating rationality with the opposite envisaged and taken on board by it. Here, I planned to use again the method of brain-storming which was used to identify the purpose of the participants' organisation at the first workshop meeting of the CI project. Brain-storming would be used to diverge the participants' thought regarding what the opposite of their originating rationality should be. Similar to what was used to converge the participants' thought regarding their organisational purpose, I would ask the proposer of each opposite of the originating rationality envisaged to give his or her reason why the particular rationality proposed by him or her should be the opposite of their originating rationality. Then I would ask participants of the workshop to have a discussion about what they believe should be the opposite which they would like to take on board.

Through Workshop Four, the plan was to facilitate participants to identify the opposite or the set of opposites of their originating rationality which they would like to take on board.

7.3.4.5. Workshop Five

At the fifth workshop meeting of the CI project, the plan was to facilitate participants to take on board "the" opposite of their originating rationality identified in the fourth workshop and affirm it by adopting VSM to achieve it. At this workshop, the plan was to facilitate participants to engage consciously their originating rationality with the opposite envisaged and taken on board by it. The system identification and system

diagnosis processes of VSM was planned to be used to identify the problems regarding achieving the opposite envisaged and taken on board by their originating rationality. Although participants might identify the opposite of their originating rationality which they would like to take on board in the fourth workshop, they need not necessarily be familiar with the opposite of their originating rationality identified. Nor need I. I planned to invite someone more experienced on the opposite of the participants' originating rationality identified by participants to the workshop to give a presentation on it.

Through Workshop Five, the plan was to facilitate participants to adopt VSM to achieve the opposite of their originating rationality identified and to engage consciously their originating rationality with the opposite envisaged and taken on board. Through co-constructing their understanding of the world with the opposite envisaged and taken on board by their originating rationality, the plan was to facilitate participants to see what may be otherwise concealed and excluded by their originating rationality. In this way, participants' understanding of the world may be broadened.

7.3.4.6. Workshop Six

At the sixth workshop meeting of the CI project, the plan was that I would do a presentation about CI and facilitate participants of the workshop to consider the opposites of their originating rationality which were still not taken on board, including those which were raised by them, but were not agreed by them, as their originating rationality or as the opposite envisaged and taken on board by their originating rationality. In this workshop, the plan was to facilitate participants to engage consciously their originating rationality with the opposite irrelevant or unknown to it. Several purposes may be proposed by participants in the first workshop when they would like to identify their organisational purpose but only one or one set of these

purposes proposed is/are chosen. Similarly, several rationalities may be proposed by participants at the fourth workshop when they would like to identify the opposite envisaged and taken on board by their originating rationality but only one, or one set of them, is/are chosen. This is because by identifying one purpose or one set of purposes as their original purpose, participants may then discuss in detail their originating rationality of adopting VSM to achieve their original purpose. This is also because by identifying one or one set of rationality as the opposite envisaged and taken on board by their originating rationality, participants may then discuss in detail about it.

After the presentation, my plan was to list all the opposites of their originating rationality raised by participants in previous workshops. I planned to invite participants of the workshop to consider what if all these excluded rationalities are taken on board, based on their experience about taking on board the opposite of their originating rationality at the fifth workshop. That is, I planned to invite participants of the workshop to envisage what they would do if they adopt VSM to achieve these opposite rationalities excluded. Then I planned to invite participants of the workshop to think if there were still many more rationalities excluded and concealed by their originating rationality and by the opposite envisaged and taken on board by their originating rationality.

I also planned to ask participants what they think about planning for achieving the opposite envisaged and taken on board by their originating rationality, estimating the cost and the benefit of the plan and making the resources available for the plan but without implementing the plan. I planned to ask them if they think that it is rational to affirm both their originating rationality and the opposite envisaged and taken on board by their originating rationality. I also planned to ask participants what they think about having a half of their resources reserved for the opposite irrelevant or unknown to their originating rationality.

Through Workshop Six, the plan was to facilitate participants to engage consciously their originating rationality with the opposite irrelevant or unknown to their originating rationality. Through co-constructing their originating rationality with the opposite irrelevant or unknown to their originating rationality, the plan was to facilitate participants to become aware that there are still many more rationalities concealed and excluded by their originating rationality and the opposite envisaged and taken on board by it. In this way, my idea was that participants' understanding of the world may be broadened. But participants could also still be cautious about their incomplete understanding of the world although it has been broadened through the debate process of the CI project.

7.3.4.7. Workshop Seven

At the seventh workshop meeting of the CI project, the plan was to facilitate participants to implement the VSM's Systems One to Five elements of different levels of recursion identified from "opposite rationalities" in the previous workshops. This workshop would be a planned but optional workshop. As mentioned above, the originating rationality of the CI project is not to embody the concept of a purposeless system in the participants' organisation, but to organise a debate process in the organisation. If participants were not interested in implementing the points which they learn from the concept of a purposeless system, I would skip the workshop and facilitate them to reflect upon the debate process (in this case the whole learning process) of the CI project in the eighth workshop directly. However, if participants would like to implement the valuable points they learned from the debate process of the CI project, I would facilitate participants to embody in their organisation these points of a purposeless system they learned in the debate.

To embody a part or the whole of the concept of a purposeless system in the participants' organisation, the plan was to list all the elements, which were raised by participants, of VSM's Systems One to Five of different levels of recursion identified through "opposite rationalities". I planned to go through all these elements one by one. Participants would pick out what they believe as problematic or in need of improvement. In the case of any disagreement among participants about one particular element, participants could discuss it first. If agreement could not be reached among participants regarding whether or not to include that element for further implementation and improvement, I planned to facilitate participants to find out an acceptable way to resolve the disagreement.

Through Workshop Seven, the plan was to facilitate participants to make commitments to implement some elements, which were raised by participants in the previous workshops, of VSM's Systems One to Five of different levels of recursion of their organisation identified through their originating rationality. Based on the valuable points participants learned from adopting VSM to achieve the opposite of their originating rationality identified, I planned to facilitate them to consider to plan for the opposite envisaged and taken on board by their originating rationality, to estimate the cost and benefit of the plan and to make the resource available for the plan but without implementing it. Based on the valuable points participants learned from adopting VSM to achieve the opposite irrelevant to their originating rationality, I planned to facilitate them to consider and to reserve a half of participants' resources for the opposite irrelevant or unknown. In this way, participants might also become cautious about their decision and their further action regarding their originating rationality after the CI project. This is because participants might become aware that their decision was based on a broadened but still incomplete understanding of the world.

7.3.4.8. Workshop Eight

In the eighth workshop meeting of the CI project, the plan was to facilitate participants to reflect upon the whole learning process of the CI project. If participants do not want to embody the concept of a purposeless system in their organisation, the debate process of the CI project would be the whole learning process of the CI project. If participants would like to embody some valuable points of the concept of a purposeless system, the whole learning process will include the debate process of and the embodiment process of the CI project. To facilitate participants to reflect upon the whole learning process of a CI project, I planned to invite participants of the workshop to reflect upon the following five questions. These questions are shown below.

Question One: Can you see what was concealed and excluded by your originating rationality when you took on board the opposite envisaged by your originating rationality?

Question Two: Do you believe that you have a rationality which is not necessarily to be realised when you have a reserve for the opposite irrelevant or unknown to your originating rationality and what do you think about having a rationality which is not necessarily to be realised?

Question Three: Do you think that the situation has been improved by CI?

Question Four: What do you think of CI?

Question Five: Is there any comment you would like to make regarding the learning process of CI and the whole CI project?

Through Workshop Eight, the plan was to facilitate participants to reflect upon the whole learning process of the CI project. In addition, I did not plan to set up any idealised standard regarding how participants “should” react in relation to the concept of a purposeless system and measure their reaction in accordance. This is because CI is an intervention to raise the issue of a purposeless system to facilitate participants to reconsider their originating rationality and to see what would have otherwise been concealed and excluded by it. The decision regarding how they are going to do with their originating rationality after a CI project, is a decision which should be considered and made by participants locally according to their own situation.

7.3.4.9. Workshop Nine to Workshop Sixteen

These eight workshops are unplanned workshops which are reserved for the situation which I cannot know in advance.

Having shown more details regarding CI, I will show in the next section why CI is a research alternative to conventional action researches.

7.4. CI AND SOME ISSUES OF ACTION RESEARCH

In the previous section, I have shown that CI may facilitate participants to broaden their understanding of the world through co-constructing it with the opposite envisaged and taken on board by their originating rationality and with the opposite irrelevant or unknown to it, through raising the issue of a purposeless system and through facilitating the mutual learning among participants. I have also shown that CI may facilitate participants to reconsider their originating rationality and to make their own decision regarding their further action towards it. I have shown too that CI may

facilitate participants to remain cautious about their broadened understanding of the world and about their decision and their further action towards their originating rationality after a CI project.

Therefore, CI is not a mere academic research but also an intervention which emphasises facilitating participants to deal with the problems facing them through raising the issue of a purposeless system and through facilitating the mutual learning among participants. Agreeing with Lewin's Action Research, CI argues that a research should also set out to engage participants rather than simply to find out or test in the participants' organisation some general rules which are believed to be universally applicable. And, CI also seeks to apply what is learned in one particular CI project to another CI project with caution. For instance, as will be shown in Chapter Eight, I, as a researcher of CI, will re-situate the originating rationality of my CI project - which is to organise a debate among participants as mentioned in this chapter - when I learn from carrying out the plan of my CI project in Taiwan. Therefore, although CI does not regard what is learned in one particular CI project or situation as something which may be universally applicable, CI seeks to apply it to another CI project or situation with caution. This is how I as a researcher of CI may build up knowledge and experiences through the learning process of CI projects.

In terms of the way in which participants may be facilitated, CI can be regarded as being oriented to raise the issue of a purposeless system. In CI, the issue of a purposeless system is raised in order to facilitate participants to reconsider their purpose and to see what would have otherwise been concealed and excluded by their original purpose during the research process. This facilitation is done as a researcher of CI facilitates participants to identify their original purpose and their originating rationality of adopting ways to achieve their original purpose; and to co-construct their originating rationality with the opposite envisaged and taken on board by it and with the opposite irrelevant or unknown to it.

CI does not provide participants with definite answers to the issue of a purposeless system. For those participants who expect a researcher of CI to come up with answers rather than questions regarding their situation, CI may make them confused in the beginning. However, through envisaging and taking on board the opposite of their originating rationality and thinking about having a reserve for the opposite irrelevant or unknown to their originating rationality, participants may be able to reconsider their originating rationality and to see what would have been concealed by it. Participants will then be able to make their own decision according to their situation regarding their further action towards their originating rationality. CI does not provide an idealised standard regarding how participants “should” react in relation to the concept of a purposeless system or the learning process of a CI project.

Looking at CI in this way, I argue that CI is an alternative to conventional action researches, which puts emphasis on facilitating participants to evaluate their action according to their purpose defined. In the research process of CI, a researcher will facilitate participants to identify their original purpose and their originating rationality of adopting ways to achieve their original purpose; to envisage and take on board the opposite of their originating rationality; and to think about having a reserve for the opposite irrelevant or unknown. What CI does is to raise the issue of a purposeless system to facilitate participants to reconsider their originating rationality and to see what would have otherwise been concealed and excluded thereby. Then participants may make their own decision according to their situation regarding their further action regarding their originating rationality. However, CI also facilitates participants to become aware that whatever decision they make is based on incomplete knowledge. This is because participants now become aware that there are still many more opposite rationalities which they have not taken into consideration.

In a CI project carried out in a supermarket chain in Taiwan, which will be detailed in Chapter Eight of the thesis, I facilitated participants to reconsider their original purpose of being a successful supermarket chain and their originating rationality of adopting ways (Beer's VSM in this case) to achieve their original purpose. This facilitation was done through identifying participants' original originating rationality as achieving their purpose of being a successful chain of supermarkets by adopting VSM; through facilitating participants to envisage and take on board the opposite of their originating rationality which was to adopt VSM to achieve the purpose of being a successful chain of convenience stores in this case; and through thinking about having a reserve for the opposite irrelevant or unknown to their originating rationality which was to adopt VSM to achieve the purpose of being a successful chain of shopping malls, of department stores, of warehouses, of hypermarts or of specialist shops.

Having argued that CI is a research alternative to conventional action researches, I will discuss below how CI addresses some issues of action research (Su, 1996) utilised to review the literature of action research in Chapter Two. These issues are:

- a. Relationship between a researcher and participants;
- b. Role of a professional researcher and participants concerning skills required;
- c. Conflict;
- d. Power;
- e. Desirable action;
- f. Consequence of applying the approach.

7.4.1. Relationship between a researcher and participants

The relationship between a researcher and participants in CI is that a researcher can be regarded as facilitating an issue-raising and mutual learning process among participants researched. Similar to Participatory Action Research and Collaborative

Inquiry, a researcher of CI is no longer detached from the participants researched. Although a researcher of CI designs the learning process of CI, which are the sequential workshops mentioned in the previous section, a researcher of CI does not regard himself or herself as having any right to dominate the scientific inquiry. A researcher of CI is a facilitator who facilitates participants to reconsider their originating rationality and to see what would have otherwise been excluded and concealed by it. CI raises the issue of a purposeless system for participants to think about. However, CI does not predetermine how participants should react when they have reconsidered their originating rationality and seen what would have otherwise been concealed and excluded by it through thinking about the issue of a purposeless system. Therefore, a researcher of CI does not bring in any pre-determined hypothesis regarding the issue of a purposeless system to test in a CI project. Therefore, the participants researched do have a say in the learning process of CI except the design of the learning process itself. In this sense, participants of CI are regarded as co-researchers rather than objects to be studied.

7.4.2. Role of a professional researcher and participants concerning skills required

The role of a professional CI researcher concerning skills required, is that a researcher of CI should be able to facilitate an issue-raising and mutual learning process among participants through facilitating participants to diverge and to present what they believe should be the purpose of their organisation; what they believe should be their originating rationality of adopting ways to achieve their organisational purpose; and what they believe should be the opposite of their originating rationality. Those skills are also needed that can facilitate participants to converge and to identify the purpose or the set of purposes of their organisation; their originating rationality of adopting ways to achieve their organisational purpose(s); and the opposite envisaged and taken on board by their originating rationality. The skills to facilitate participants to embody the valuable points which they learn from the concept of a purposeless system, are also needed.

7.4.3. Conflict

Conflict is not explicitly addressed in CI. Through the learning process of CI, participants learn to envisage and take on board the opposite of originating rationality and to consider to have a reserve for the opposite irrelevant or unknown to their originating rationality. After the learning process of CI, participants may become aware that their originating rationality does conceal and exclude from themselves the opposites thereof. And, participants may also become aware that whatever best decision which they make according to their own situation regarding their further action towards their originating rationality, is based on their broadened but still incomplete understanding of the world. Therefore, participants are more willing to learn from their opposition and from what is seemingly irrelevant after the learning process of CI. Conflicts among participants may be tempered when they realise that opposite or irrelevant opinions of individual participants are what they can learn from, rather than what they should try to exclude from themselves and to fight against.

7.4.4. Power

The power relation among participants themselves is not explicitly addressed by CI. The power relation between a researcher and participants are balanced by a researcher's regarding the participants researched as co-researchers rather than objects to be studied. The way in which the power relation among participants may be tempered by CI is similar to the way in which the conflicts among participants may be tempered by CI. Before the learning process of CI, some participants may try to impose their views on other participants. After the learning process, these participants may still insist on their views. However, at least they become aware that their originating rationality does conceal and exclude from themselves the opposites thereof. In addition, these participants may also become aware that opposite or irrelevant opinions of individual

participants are what they can learn from, rather than what they should try to exclude from themselves and to fight against. Power relations among participants may be tempered when participants are more willing to learn from opposite or seemingly irrelevant opinions of individual participants. Power relations among participants may also be tempered when participants become more cautious about their broadened understanding of the world and when participants become more cautious about exercising unilateral control over other participants.

7.4.5. Desirable action

The desirable actions expected by CI are actions which are grounded on the issue-raising and mutual learning process of CI. Through the learning process of CI, participants may reconsider their originating rationality and see what would have otherwise been concealed and excluded by their originating rationality. The research process of CI raises the issue of a purposeless system for participants to think about. However, CI does not set up an idealised standard regarding how participants “should” react in relation to the concept of a purposeless system raised by CI. Rather, CI provides participants with the opportunity to reconsider their originating rationality and to see what would have otherwise been concealed and excluded by it and to make their own decision according to their own situation regarding their further action towards it.

7.4.6. Consequence of applying the approach

The consequence of applying CI is that, after the learning process of CI, participants may become aware that whatever best decision which they possibly make according to their situation regarding their further action towards their originating rationality is based on their broadened but still incomplete understanding of the world. Participants may become aware that their original purpose and their originating rationality of adopting ways to achieve their purpose are incomplete. And, participants

also may become aware that whatever decision which they make after the learning process of CI regarding their further action towards their purpose and their rationality of adopting ways to achieve their purpose, is incomplete and not absolute either. This is because that participants may become aware through the learning process of CI that there are still many more opposite purposes and opposite rationalities of adopting ways to achieve these opposite purposes which have not been taken into their consideration.

7.5. CONCLUSION

In this chapter, I have applied the concept of a purposeless system developed in previous chapters to organising a purposeless system approach - Complementary Intervention (CI) - and I have proposed it as a research alternative to conventional action researches.

“Complementary” Intervention (CI) is a purposeless system approach to “complementing” one’s originating rationality with other components of a purposeless system in order to facilitate participants of CI to reconsider their originating rationality and to see what would have otherwise been concealed and excluded by it. Our understanding of the world will “always” needs complementation, no matter how broad it has been.

In line with a constructivist argument, CI seeks to broaden participants’ understanding of the world by co-constructing it with its alternatives. It also argues the need to facilitate participants to become aware that their understanding of the world will never be complete. It achieves these by complementing and engaging consciously participants’ originating rationality with the opposite envisaged by it through taking it on board. In addition, CI also complements and engages consciously participants’

originating rationality with considering to have a reserve for the opposite irrelevant or unknown.

CI also argues that it is important for CI to facilitate participants to become aware that the best decision which they make regarding their further action towards their originating rationality is based on incomplete knowledge and that their decision and action is not absolute. Therefore, despite that participants' understanding of the world may be broadened through it, CI argues that participants should remain cautious about their decision and their further action towards their originating rationality.

CI then argues that to facilitate participants to divert their thoughts and to reconsider their original purpose and action is a research alternative to conventional action researches which focus on facilitating participants to evaluate their action according to their purpose defined. The "action" element of CI is that it facilitates participants to think about the issue of a purposeless system. On the side of participants, they reconsider their originating rationality and see what would have otherwise been concealed and excluded by the originating rationality. In addition, participants may come to temper their originating rationality when their originating rationality is juxtaposed with the points of view of the opposite envisaged and taken on board and of the opposite irrelevant or unknown.

I continue to show the way in which participants' understanding of the world may be broadened by co-constructing it with the opposite envisaged and taken on board by participants' originating rationality and with the opposite irrelevant or unknown in a CI project. CI is an intervention organised by the concept of a purposeless system. CI applies the concept of a purposeless system to organising a CI project. In addition, CI further applies the concept of a purposeless system to organising a debate process in a CI project.

When CI applies the concept of a purposeless system to organising a CI project, CI plans for the situation in which the concept of a purposeless system will be utilised as a framework to *organise a debate* among participants of an organisation regarding reconsidering their original purpose in the CI project. Meanwhile, CI also plans for the situation in which the concept of a purposeless system will be *embodied* in the participants' organisation in the project. And CI will also *reserve* a half of resources for the CI project for the situation which cannot be known in advance.

When CI further applies the concept of a purposeless system to organising a debate in a CI project, it facilitates participants to discuss the components of a purposeless system in the debate. The components of a purposeless system which are to be discussed in the debate process of a CI project are the participants' originating rationality, the opposite envisaged and taken on board by theirs and the opposite irrelevant or unknown to theirs. In this way, CI facilitate participants to reconsider their originating rationality and to see what would have been otherwise concealed and excluded by it.

Participants may still insist on their originating rationality after the debate process of a CI project, or they may decide to adopt the opposite envisaged and taken on board by their originating rationality, or to adopt some other rationality. Whatever their decision, they are aware that this particular rationality which they adopt still excludes and conceals the opposites of this particular rationality and that their insistence on this particular rationality is made at the cost of the concealment and exclusion. This is why participants will remain cautious about their broadened understanding of the world and about their decision and their further action towards their originating rationality after a CI project.

When CI applies the concept of a purposeless system to organising a debate for the debate process of a CI project by discussing the components of a purposeless

system, CI will leave the concept of the rational framework an open question. In addition, CI also leaves the issue of having a reserve of resources for the opposite irrelevant or unknown and the definition of symmetry open questions.

VSM has been selected in this CI case to facilitate participants to address the problems facing them in the debate process of the CI project. Although the concept of a purposeless system is also developed in this thesis through the discussion of SD, due to access considerations it is not selected to address the problems facing participants in the debate process of my CI project. However, as shown by my discussion of SD in Chapter Five, I believe that one can arrive at the idea of organising CI in a variety of ways. My discussion of SD in Chapter Five helped me to explore the concept of a purposeless system. This concept in turn guided the CI that was undertaken.

A pilot study was carried out prior to my CI project. This pilot study was aimed at facilitating me to explore what participants might think about a debate organised around the notion of a purposeless system (without explicitly mentioning the components of a purposeless system to participants). It was also aimed at facilitating me to explore what participants might learn through this debate and to practise the skill of conducting my CI project. The result of this study showed that debating the concept of a purposeless system (albeit implicitly) was able to facilitate participants to reconsider their originating rationality through showing them what was beyond their originating rationality. Therefore, this pilot study gave me confidence in debating the concept of a purposeless system also in the context of my CI project. It also gave me some ideas about what could happen when participants debated the concept in my CI project.

The detailed plan for my CI project consisted of one preparatory week, eight planned workshops and eight unplanned workshops. A debate process on the concept of a purposeless system was planned for Workshops One to Six. Workshops One to Three would facilitate participants to identify their originating rationality. Workshops Four to

Five would facilitate participants to identify the opposite of their originating rationality which they would like to take on board and to facilitate them to engage consciously their originating rationality with the opposite envisaged and taken on board. In Workshop Six, the plan was to facilitate participants to engage consciously their originating rationality with the opposite irrelevant.

I also planned for the situation in which participants may want to embody a part or the whole of the concept of a purposeless system in their organisation. Workshop Seven was an optional workshop planned for this situation to happen. In Workshop Eight, I planned to facilitate participants to reflect upon what they think about the whole learning process of the CI project. I also reserved a half of my research time for the situations which I could not know in advance. In this plan, Workshops Nine to Sixteen were unplanned workshops and they were reserved for the situations which I could not know in advance. However, I became aware after my CI project carried out in Taiwan that the “physical” concentration of energy in this way, might not be the way the “resources” would be utilised. I will reflect upon these reserved unplanned workshops in Chapter Eight in my reflections upon the opposite irrelevant or unknown to the originating rationality of the plan for my CI project.

CI was presented as a research alternative to conventional action researches. CI is not a mere academic research but also an intervention which emphasises facilitating participants to deal with the problems facing them through raising the issue of a purposeless system and through facilitating the mutual learning among participants. It does not provide participants with definite answers to the issue of a purposeless system, nor does it provide an idealised standard regarding how participants “should” react in relation to the concept of a purposeless system or the learning process of a CI project. Based on the discussion above, I argue that CI is a research alternative to conventional action researches, which puts emphasis on facilitating participants to evaluate their action according to their defined purpose.

Since I argue that CI is a research alternative to conventional action researches, I have also discussed how CI addresses some issues of action research (Su, 1996) utilised to review the literature of action research in Chapter Two. The relationship between a researcher and participants in CI is that a researcher can be regarded as facilitating an issue-raising and mutual learning process among participants researched. Participants are also regarded as co-researchers, rather than objects to be studied. The role of a professional CI researcher concerning skills required is that a researcher of CI should be able to facilitate an issue-raising (the issue of a purposeless system in particular) and mutual learning process among participants. Conflict is not explicitly addressed in CI. However, through the learning process of CI, conflicts among participants may be tempered when participants realise that opposite or irrelevant opinions of individual participants are what they can learn from rather than what they should try to exclude from themselves and to fight against.

Power relations between a researcher and participants are balanced by the researcher's regarding the participants researched as co-researchers rather than objects to be studied. Power relations among participants are not explicitly addressed but may be tempered when participants are more willing to learn from opposite or seemingly irrelevant opinions of individual participants, when they become more cautious about their broadened understanding of the world and when they become more cautious about exercising unilateral control over other participants. The desirable actions expected by CI are actions which are grounded on the issue-raising and mutual learning process of CI. It does not set up an idealised standard regarding how participants "should" react to the concept of a purposeless system raised by CI. Rather, it provides participants with the opportunity to reconsider their originating rationality and to see what would have otherwise been concealed and excluded by it and to make their own decision according to their own situation regarding their further action towards it. The consequence of applying CI is that, after the learning process of CI, participants may become aware that

whatever best decision which they possibly make according to their situation regarding their further action towards their originating rationality is based on their broadened but still incomplete understanding of the world. Their decision may be made with this caution in mind.

Chapter Eight: A Complementary Intervention Project in Taiwan

8.1. INTRODUCTION

As mentioned in Chapter Seven, the concept of a purposeless system may be utilised to organise a CI project and to organise a debate in a CI project. In the meantime, CI may also affirm the situation in which the concept of a purposeless system may be embodied in an organisation. In this chapter, I show how the concept of a purposeless system was applied in a CI project for a supermarket chain in Taiwan. Beer's VSM (Viable System Model) was utilised to facilitate participants to deal with the problems facing the supermarket chain in this CI project - since the concept of a purposeless system was developed partly through the discussion of VSM in previous chapters. Through this CI project, I show and explore further how the theory of and the practice of the concept of a purposeless system are related.

To start with, I show how the concept of a purposeless system was applied to organising my CI project in a supermarket chain in Taiwan. As mentioned in Chapter Seven, when CI applies the concept of a purposeless system to organising a CI project, the originating rationality is that the concept of a purposeless system is utilised as an organising framework to organise a debate process among participants regarding rethinking their purpose and seeing what otherwise would have been concealed and excluded by their purpose. In my CI project, the purpose of the chain - the Ai-Guo Supermarket Chain (AGSC) - was, as the director general said when I first saw him, to "provide a wide range of commodities and a convenient and comfortable shopping environment for the nearby communities of each branch of the chain". The originating rationality of my CI project does not seek to embody the concept of a purposeless system in the Ai-Guo Supermarket Chain (AGSC). As also mentioned in Chapter

Seven, the debate process was planned to take place at Workshops One to Six and at Workshop Eight. However, when I carried out my CI project in Taiwan, the debate process took place at Workshops One to Seven and at Workshop Nine. An additional workshop - Workshop Four - was needed because of the size of the supermarket chain. Therefore, there will be a change of the numbering of workshops since Workshop Four, compared with the numbering of workshops mentioned in Chapter Seven.

In the application of the concept of a purposeless system to organising my CI project in the AGSC, the opposite envisaged and taken on board by the originating rationality of CI was to embody the concept of a purposeless system in the AGSC. The embodiment process planned to take place at Workshop Seven, actually took place at Workshop Eight. The change of the numbering of this planned but optional workshop was because, as mentioned above, an additional workshop was needed by the debate process.

CI also had a reserve in my CI project for the situation in which the concept of a purposeless system was neither to be embodied in the AGSC, nor to be utilised as a framework to organise a debate among participants. This situation was considered by having a reserve of a half of my research time (i.e., workshops) unplanned. However, when I carried out my CI project in Taiwan, it emerged that the situation unknown in advance might demand something beyond these unplanned workshops reserved. This will be shown later in this chapter in my description of my CI project in Taiwan. I will also reflect on this at the end of this chapter.

The originating rationality of CI to apply the concept of a purposeless system to organising my CI project in AGSC by adopting the concept of a purposeless system as a framework to organise a debate among the participants regarding reconsidering their purpose; the opposite envisaged and taken on board by the originating rationality to embody the concept of a purposeless system in the AGSC; and the opposite irrelevant or

unknown to the originating rationality of CI to have a reserve of a half of the research time of my CI project are shown in Figure 8.1 (see below). This is the way in which CI applies the concept of a purposeless system to organising my CI project.

<p>The originating rationality of CI to achieve its purpose of organising my CI project by adopting the concept of a purposeless system to organise a debate among participants in the AGSC regarding reconsidering their purpose.</p> <p>The plan for the debate made, the potential cost and benefit of the plan estimated, the resources needed by the plan made available, and the plan implemented.</p>	<p>The opposite envisaged and taken on board by the originating rationality: to embody the concept of a purposeless system in the AGSC.</p> <p>The plan for the embodiment of the concept of a purposeless system made, the potential cost and benefit of the plan estimated, and the resources needed by the plan available despite the plan not being implemented.</p>
<p>The opposite irrelevant or unknown to the originating rationality of CI to achieve its purpose of organising a CI project in the AGSC.</p> <p>Resources reserved for the irrelevant or unknown states and no plan made for them.</p>	

Figure 8.1: The way in which CI applies the concept of a purposeless system to organising my CI project in the AGSC.

8.2. THE AI-GUO SUPERMARKET CHAIN (AGSC) IN TAIWAN

The director general of the AGSC is very interested in managerial theories. He also owns a publishing company, which publishes Distribution News (Chang, 1999), a magazine which covers a wide range of management knowledge and practice regarding the industry of commodity distribution. The director general is also a friend of my

father. Both these factors figured in his agreement to let me have a trial of CI in his supermarket chain.

Ai-Guo Supermarket Chain (AGSC) is one of the medium-sized companies in the retail sector in Taiwan. AGSC, as a whole, has about 130 employees and an estimated sales turnover of 530 million New Taiwan Dollars (about 10 million Pounds when the rate of New Taiwan Dollar to British Sterling is 52 to 1) for the current financial year (i.e., 1999). It is a subsidiary of a larger group “Ai-Guo Corporation” which has three more operating companies; one is related to a café-restaurant chain, one to international trade, and one to magazine publishing. These operating companies enjoy a high degree of discretion. The group’s corporation structure is formed by a director general, a vice-director general and a general manager who is supported by a special assistant and a managerial head office with the following three departments: the department of finance and accounting, the administration department and the purchase department. Each of the three departments is headed by a manager. Figure 8.2 below shows the organisation chart for Ai-Guo Corporation. As shown in Figure 8.2, there are two sections in the department of finance and accounting; they are the finance section and the accounting section. There are two sections in the administration department; they are the planning section (which is responsible for the sales promotion, new store planning and public relation of the corporation) and the section of personnel and administration (which is responsible for the personnel, the general affairs and the facility and equipment maintenance of the corporation). There are also two sections in the purchase department; they are the section of bulk buying and the section of engineering materials (which is responsible for supplying the engineering materials needed for setting up a new supermarket). Altogether the Ai-Guo Corporation has 160 employees.

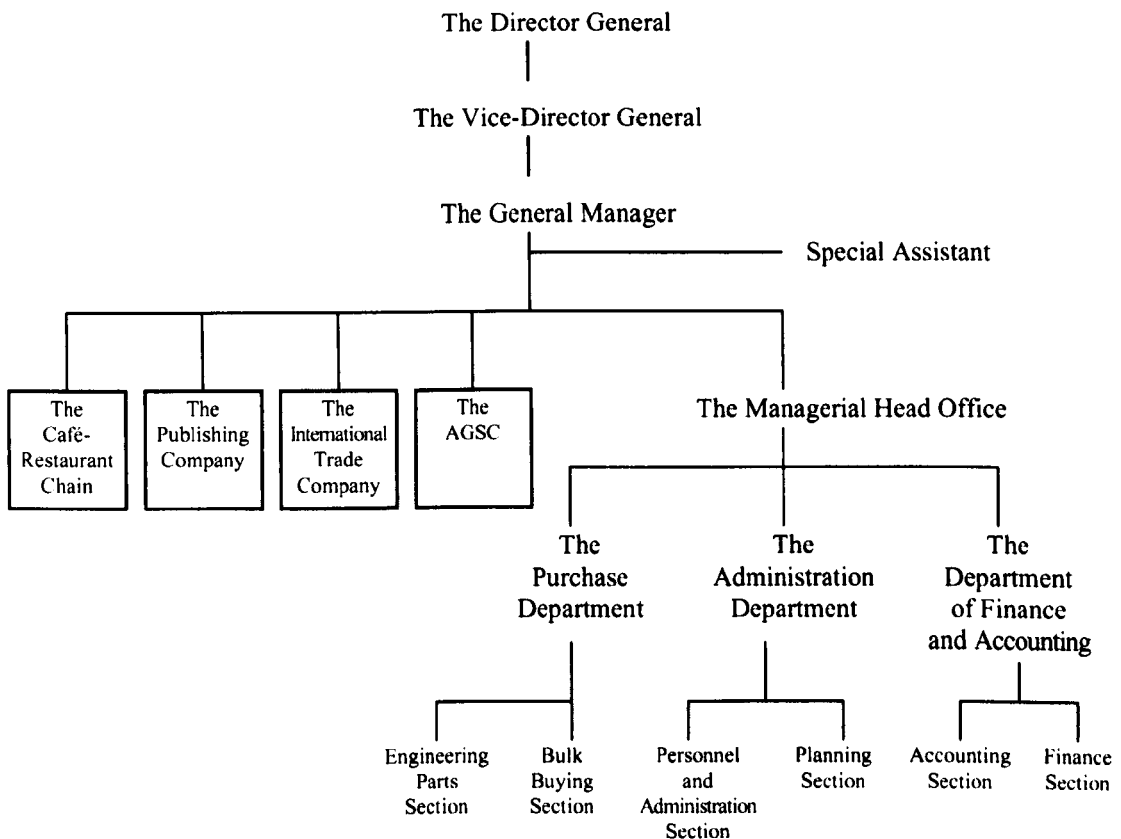


Figure 8.2: The organisation chart for Ai-Guo Corporation.

AGSC has six supermarket branches in its chain. These branches are the Yang-Ming branch, the Han-Min branch, the Jian-Gong branch, the Yi-Da branch, the Qiao-Tuo branch and the Lu-Zhu branch. All these branches also enjoy a high degree of discretion. The chain's organisational structure is formed by a chain manager, supported by an assistant. The planning and personnel responsibilities and the finance and accounting responsibilities and the purchase responsibilities of the supermarket chain are carried out by the managerial head office of the Ai-Guo Corporation. The organisation chart for the AGSC is shown below in Figure 8.3.

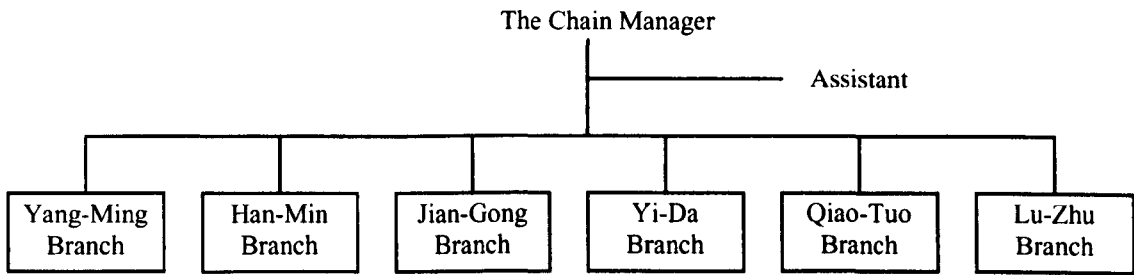


Figure 8.3: The organisation chart for AGSC.

The Yang-Ming branch is one of the six branches of the AGSC. It has 22 employees and its estimated sales turnover for the current financial year (1999) is 89 million New Taiwan Dollars (about 1.7 million Pounds). The Yang-Ming branch has eight units in its supermarket. They are the Fruit and Vegetable Unit, the Meat and Aquatic Food Unit, Soft Drink Unit, the Cold Food Unit, the Sweets and Biscuit Unit, which also sells canned food and dried food, the Daily Necessity Unit, the Household Hardware Unit, and the Wine and Cigarette Unit. All these units enjoy a high degree of discretion to determine the amount of commodities to be ordered, to suggest new commodities, and to phase out slow-selling commodities. The branch's organisational structure is formed by a branch manager who is supported by an assistant, and by a personnel officer, an accountant who is also in charge of the cashiers, an acceptor and a foreman who is responsible for the management of the shop floor department, which includes all the eight units mentioned above. The cashiers are also responsible for the display of cigarettes and wine. In the day shift from eight o'clock in the morning till four o'clock in the afternoon, each unit, except the Fruit and Vegetable Unit, the Meat and Aquatic Food Unit, and the Wine and Cigarette Unit, has one display person who is responsible for the display of commodities in the unit. Both the Fruit and Vegetable Unit, and the Meat and Aquatic Food Unit, have two processors of food. The Wine and

Cigarette Unit is staffed by cashiers. There are two cashiers in the supermarket in the day shift. In the afternoon shift from four o'clock till twelve o'clock at night, there are two display persons responsible for the commodity display of all the seven units, except the Cigarette and Wine Unit, which is staffed by cashiers. There are two cashiers in the supermarket in the afternoon shift. In the night shift from twelve o'clock till eight o'clock in the morning, there is no display person in the supermarket, but there are three cashiers in the supermarket. The customers of the branch are people mainly living in the nearby communities of the branch. The branch's organisation chart is shown in Figure 8.4 below and the responsibilities of the staff members are detailed below.

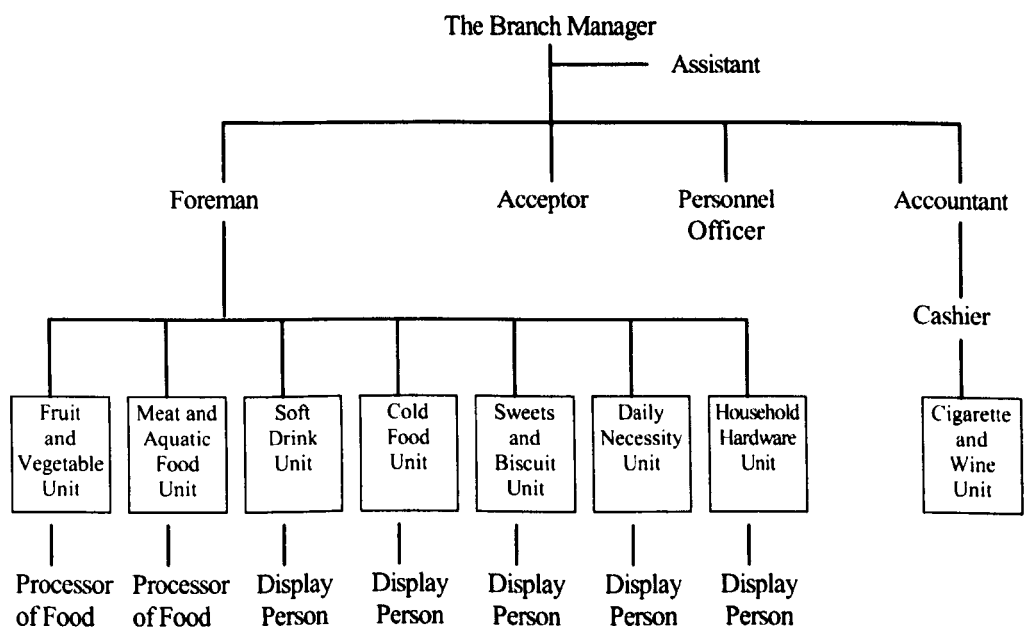


Figure 8.4: The organisation chart for Yang-Ming branch of AGSC.

The display person

The display person of each unit is responsible for the display of the commodities for sales; the cleanness of each unit; the display of the posters for key

commodities, promotional and new commodities; the checking of expired or abnormal commodities; the ordering of commodities, the suggestion of new and the returning of slow-selling commodities to manufacturers; helping customers to find the commodities required; and providing support for other units of the Yang-Ming branch when the display persons of other units are busy. All the display persons report directly to the foreman.

The processor of food

There are two processors of food who are responsible for processing fruit and vegetables, and another two who are responsible for processing meat and aquatic food. Basically, they are responsible for the cutting, packing and displaying of fresh food; the cleanness and dryness of the operational field; the cleaning of facilities, machines, cutting boards, floor and washing basins; the pricing of fresh food processed; checking three times a day if there is any fresh food needed and supplying it immediately; and checking expired or damaged food. All these persons report directly to the foreman.

The foreman

The foreman is responsible for the shop floor department. He is in charge of all the display persons of each unit, including the four processors of food of the Fruit and Vegetable Unit and the Meat and Aquatic Food Unit. In terms of the Fruit and Vegetable Unit, and the Meat and Aquatic Food Unit, he facilitates the raw materials of these units to be put in storage and in order and he also audits the activities of processors of food mentioned above. In terms of other units, he is responsible for the ordering of commodities and confirming the orders of them made by display persons; suggesting new commodities; phasing out slow-selling commodities; putting the stocks in order; filling out the commodity returning forms for the commodities which need to be returned to manufacturers; implementing the sales promotion plans and suggesting

promotional commodities; and guiding and auditing the activities of the display persons mentioned above. The foreman is responsible for the day-to-day management of the shop floor.

The personnel officer

The personnel officer is responsible for making the staff's operational manual and job description; recruiting and training new staff; keeping staff's attendance record; keeping staff's reward and penalty records; applying for staff's promotion and transfer; and dealing with the arguments between staff. The personnel officer is also responsible for reporting as unsellable the expired food of the Fruit and Vegetable Unit and the Meat and Aquatic Food Unit and making the daily statement of unsellable expired food.

The accountant

The accountant is responsible for depositing the operating revenue of the Yang-Ming branch in the bank on Mondays, Wednesdays, and Fridays; making the statements of daily and monthly operating revenues and of daily and monthly cash; auditing the activities of cashier's counters; managing the tax receipts wrongly typed by cashiers; preparing change for the cash machines every morning; making monthly financial statements; and paying tax and managing tax receipts. The accountant is also in charge of the cashiers in the supermarket.

The cashier

The cashier is responsible for calculating the total amount of the commodities purchased by customers and accepting the payment from customers; facilitating customers to pack the commodities purchased; and supporting staff of other units when there is no customer waiting for checking out.

The acceptor

The acceptor is responsible for accepting the commodities delivered by manufacturers and putting them in order in the storage room; managing and tracing the quantity of commodities ordered by each unit; checking if the quantity of commodities delivered is the same as ordered and auditing if the quality of commodities delivered is the same as ordered; and checking if the quantity and quality of the commodities to be returned to manufacturers are the same as described on paper.

The assistant of the branch manager

The assistant of the branch manager is responsible for checking whether the prices of commodities on the bill are the same as those previously reported by manufacturers and supporting the cashiers if there are lots of customers waiting for checking out.

The branch manager

The branch manager is responsible for determining the policy; making monthly plans to achieve the annual objective of operating revenue given from the chain management; guiding all the staff in the branch to implement the monthly plans; auditing the implementation of the plans; interpreting the policies from the chain management to the staff in the branch; and training the staff in the branch, evaluating their performance and suggesting their promotion. The branch manager is also responsible for the management of personnel, commodities, facilities, cash and security in the branch, and for dealing with the complaints of customers and with unexpected events.

The branch manager is given the discretion by the chain management to determine monthly objectives of the Yang-Ming branch. Normally, the chain manager determines the current branch's annual objective with reference to the objective achieved by the branch last year. When there exists a large discrepancy between the objective and the actual achievement of the branch this year, the chain management will require the branch manager to review whether the policy of the branch is suitable for the environment of the branch. For instance, the Yi-Da branch is near the export processing zone in Kaohsiung where there are many foreign labourers from Thailand working. The Yi-Da branch sells imported instant noodles and other groceries from Thailand and it is one of the two supermarkets in the AGSC which sells these commodities. The other branch is the Lu-Zhu branch. The Qiao-Tuo branch is near an industrial zone in the Kaohsiung where there are many domestic labourers working. The policy of the Qiao-Tuo branch is to sell low-priced commodities with fair quality rather than quality commodities. It will also be reviewed whether the monthly plans to achieve the annual objective are appropriate, when the annual objective of the branch is not achieved.

The branch manager also has the discretion regarding the sales promotion in the Yang-Ming branch. The branch manager also makes the monthly and yearly plans of sales promotion. The monthly and yearly plans made by the branch manager will be consulted with the chain manager before they can be implemented. The chain manager basically will approve these promotional plans made by the branch manager.

8.3. MY CI PROJECT CARRIED OUT IN THE AGSC IN TAIWAN

The concept of a purposeless system was applied to organising a debate among participants in the AGSC in my CI project. Participants in the AGSC might have an originating rationality in mind. By discussing the components of a purposeless system, participants were invited to take on board the opposite envisaged by their originating

rationality and to affirm the opposite envisaged, and to realise that there were still many more rationalities concealed and excluded by both of these.

As mentioned in the introduction to the chapter, one more workshop than planned was utilised by the debate process, because the AGSC is such a large organisation. Subsequent workshops were renumbered accordingly.

As mentioned in Chapter Seven, in terms of the embodiment of the concept of a purposeless system in their organisation, participants may also decide according to their situation to embody a part of, or the whole of, the concept of a purposeless system in the embodiment process of a CI project. In my CI project in the AGSC, participants decided according to their situation that they would like to embody the component of their originating rationality and also the valuable points suggested by the component of the opposite envisaged by theirs and the component of the opposite irrelevant or unknown to theirs, as will be shown below. The embodiment process took place at Workshop Eight.

8.3.1. The Preparation for the workshops of the CI project

8.3.1.1. The Preparatory Week

Having gained entry to the company and the trust and authorisation from the director general, I then invited participants from the people inside and outside the AGSC on the basis of my invitation, the appointment by the director general and on their own interest. The Yang-Ming branch has been selected as the branch to which I would apply CI. This is because the Yang-Ming branch is a medium-sized branch among the AGSC and the director general also has an office there. I invited all the levels of employees of the branch. I invited the branch manager, the assistant of the branch manager, the

foreman, the personnel officer, the accountant, the acceptor, one display person, one processor of food, and one cashier from the day shift, one display person and one cashier from the afternoon shift, and one cashier from the night shift. I also invited the chain manager of the supermarket chain, the manager of the department of finance and accounting of the corporation, the manager of the administration department of the corporation and the manager of the purchase department of the corporation. I invited the general manager of the corporation too. The director general of the Ai-Guo Corporation was interested in my theory and theories about systems thinking. Therefore, he wanted to participate in the CI project. His wife, who was the vice-director general of the Ai-Guo Corporation, was also invited by him to participate in the CI project. Because of the support from the director general, all the staff in the corporation I invited agreed to participate in my CI project. Two customers of the Yang-Ming branch and two manufacturers who supplied commodities for the Yang-Ming branch were invited on voluntary basis. Altogether, there were twenty three people in the CI project.

8.3.1.2. Workshop One

At the first workshop meeting of the CI project, I facilitated participants to identify the organisational purpose of AGSC. As mentioned in Chapter Seven, I facilitated participants to identify their organisational purpose by the method of brainstorming which may diverge the participants' thinking regarding their organisational purpose. Because of the influence of Chinese culture, participants of a workshop do not actively present their opinions. Therefore, in the beginning of the workshop, I told the participants to relax and to regard the workshop as a conversation rather than as a normal meeting in the company. Despite my notification, participants of the workshop were still quite nervous. This was because all the line managers were present in the workshop. Therefore, when I invited volunteers to state their thoughts about the organisational purpose of the AGSC, I could not get any volunteer. This meant I had to

invite (a better word for nominate) some participants to identify their organisational purpose. Without letting the answers from higher management shape the answers of their subordinates, I asked the line managers to wait until their subordinates expressed their views.

I started by inviting the display person of the day shift and asked him what he thought about the purpose of the AGSC. He said he did not really know. I then invited a cashier to answer the same question. She said that the purpose of the AGSC was to sell commodities. Then I invited the processor of food to answer this question. She said that the purpose of AGSC was to provide a broad shopping environment and a variety of commodities for its customers. She believed that the difference between a normal shop and a supermarket was that a supermarket was much bigger than a normal shop and that it sold many more commodities.

The foreman of the Yang Ming branch said that he agreed with the processor of food that a broad shopping environment and wide-ranged commodities were important. But he believed that what was more important for the AGSC was that these commodities were well-displayed and competitively priced. The accountant said that she basically agreed with the foreman. She said the purpose of the AGSC should focus on providing its customers with a wide range of commodities with competitive price. The branch manager of the Yang-Ming branch added that in addition to well-displayed and wide-ranged commodities, he believed that a clean and neat shopping environment was also very important. He also mentioned that the AGSC had to take good care of its staff and to provide them with a good working environment. He said his opinion was from the view of the social responsibility of the AGSC.

The chain manager agreed with the branch manager and said that the social responsibility was normally ignored by most supermarket managers and this was not right. However, the chain manager also said the social responsibility of AGSC was

based on the survival of the AGSC. Therefore, in order to take more social responsibilities for the staff of AGSC, he encouraged all the staff in the workshop to work together to make AGSC a more successful company. He added that the point for the AGSC was to keep the price of commodities low and to provide a high quality customer service.

The director general said that he believed that although price was a very important factor, all the staff must not forget to provide a good quality service for customers. He added that focusing on price only among supermarkets in the industry could not do any good to the industry and to the customers. This was because focusing on reducing the price of commodities meant a reduction in quality of commodities or of customer services. He agreed that price was a very important factor, especially in a city like Kaohsiung, where there were many industry zones and where a large proportion of the population were domestic or foreign labourers. He gave in the workshop an example about the sales of mineral water. A domestic brand which fulfilled the national sanitary standard of Taiwan, but without too much mineral ingredients, was sold at the price of 17 New Taiwan Dollars. Next to it on the shelf was an Australian brand which not only fulfilled the national sanitary standard of Taiwan and of Australia, but also had prosperous mineral ingredients, was sold at the price of 19 New Taiwan Dollars. The domestic brand was quite popular while the Australian brand was unpopular. Both of these two brands did not advertise on TV or through other media. He said that the only thing that mattered in this case seemed to be the difference in price.

The director general said that he was not discouraged by the fact that the environment of his supermarket chain appreciated low-priced commodities very much. He believed that the AGSC needed to keep the price of its commodities low and perhaps to sell a larger proportion of low-priced commodities. However, the quality of life of the customers of the AGSC could be enhanced if the customer service provided by the chain, could be enhanced or at least maintained at a reasonable level. He believed the

purpose of the AGSC is to enhance the quality of life of its customers by providing a clean and neat shopping environment, a high quality customer service and a wide-ranged commodities with a low price.

I invited the two manufacturers in the workshop and asked them what they thought about the purpose of AGSC. One manufacturer said that he agreed with the purposes proposed earlier in the workshop. From a manufacturer's point of view, however, the point was whether the AGSC had a good reputation of fast selling commodities and of paying for them quickly. At the moment, he said, the manufacturers allowed their commodities to be returned from supermarkets to them if their commodities were slow-selling. Therefore, whether or not a supermarket was able to sell fast their commodities was quite important for them. In the meantime, the ability of a supermarket to pay for the commodities from manufacturers was also very important. Some owners of supermarkets delayed the payment and some might do runners (i.e., might run away) if their supermarkets went bankrupt. The other manufacturer agreed and added that the worst case was that some owners of supermarkets burned their shops to get insurance money. What the owners insured were their own supermarkets rather than the commodities from the manufacturers. Therefore, the manufacturers got nothing in the end. These two points were, according to the two manufacturers, what they would like the people in the AGSC to take into consideration when they considered their purpose.

I also invited the two customers and asked them what they thought the purpose of AGSC should be. One of them (customer A) said that she came to the Yang-Ming branch regularly because the branch was close to where she lived and because the commodities sold here were relatively cheaper than in ordinary shops. Therefore, she believed that the purpose of AGSC should be to provide relatively cheaper commodities and easy access for customers. The other customer (customer B) said that she liked the branch because she could find nearly all kinds of commodity here, some of which could

not be found even in a warehouse chain like Macro. Therefore, she believed that the purpose of the AGSC was to provide wide-ranged commodities for its customers.

I then converged the participants' thinking regarding the organisational purpose of AGSC. As described in Chapter Seven about CI, this would be done by asking the proposer of each organisational purpose proposed to give a reason why this particular purpose should be the organisational purpose of AGSC and to discuss these purposes and the reasons for them to be the organisational purpose of the AGSC in the workshop. In this workshop, there did not seem to be too much diversity in the purposes proposed. The purposes proposed were mainly about that the AGSC should provided a clean and neat shopping environment (proposed by the branch manager and the director general); broad shopping environment (by the processor of food and the foreman); wide-ranged commodities (the processor of food, the branch accountant, the branch manager, the director general and customer B); and well-displayed commodities (the foreman and the branch manager), together with competitive price (the foreman, the branch accountant, the chain manager, the director general and customer A); and quality customer service (the chain manager and the director general). Other purposes of the AGSC proposed in the workshop were to sell commodities (a cashier); to take up the social responsibility of the AGSC for its employees (the branch manager and the chain manager); to sell manufacturers' commodities fast and to pay for their commodities quickly (two manufacturers); and to provide easy access (customer A). All the purposes proposed by participants in the workshop were written by me on the white board so that all participants could see them clearly.

Despite that the purposes proposed by participants in the workshop did not conflict with each other and they might easily be merged as one, I still invited participants to give their reasons why they believed the purposes they proposed should be the organisational purpose of the AGSC. Unsurprisingly, participants in the workshop did not insist that the purposes they proposed should be the organisational

purpose of the AGSC. Rather, they quickly agreed that all the purposes proposed in the workshop might be merged as one. After a short discussion, they agreed the organisational purpose of the AGSC was to provide a broad, clean, and neat shopping environment and well-displayed and wide-ranged commodities together with low price and quality customer service. Participants believed that the social responsibilities of the AGSC for its employees were regarded as a part of managerial tasks which did not need to be stated in the organisational purpose of the AGSC. To sell commodities fast and to pay for commodities quickly were not stated in the purpose of the AGSC for the same reason.

As described in Chapter Seven about CI, at the end of the first workshop meeting, I gave participants of the workshop a booklet briefing VSM. I told them I was going to do a presentation of VSM for them at the second workshop meeting and I invited them to read the booklet before. I told them I would be very willing to answer any question they might have regarding what was written in it at the second workshop meeting.

The outcome of Workshop One was a merged organisational purpose of the AGSC identified by participants, which was to provide a broad, clean, and neat shopping environment and well-displayed and wide-ranged commodities together with low price and quality customer service.

8.3.2. Workshop Two

At the second workshop meeting of the CI project, I did a presentation of VSM for participants and answered the questions raised by participants regarding VSM. I understood beforehand that it would be quite difficult for participants to understand VSM in a two-hour presentation, who did not have any background of systems thinking

and of cybernetics. It was also a great challenge for me to present VSM in a two-hour presentation. Therefore, I separated the theoretical session of VSM from the application session of VSM by using one workshop for each of them. The material used for my presentation was the Chinese translation of the chapter in my thesis on VSM without the sections containing critique against VSM. The ideas I could give them regarding VSM were some very essential ones including what the word “viable” means and the importance of the separation of operation from management for the sake of dealing with the extreme complexity of the environment of their organisation. I also presented the procedures of system identification with reference to the concept of recursion and introduced the functional roles which needed to be played by Systems One to Five.

The example I presented VSM was the Taiwanese military organisation. Most men in Taiwan have to do their national service for two years when they are about twenty years old. Therefore, most men in Taiwan have experience in the military organisation. For the female participants, they more or less knew the Taiwanese military organisation as their friends, relatives or family were once in the army. In the military organisation of the Taiwanese army, a battalion contains its duplicates - i.e., companies - and it is itself contained by its duplicate - i.e., a brigade. In the meantime, a brigade is contained by its duplicate - i.e., a division. All the organisations for companies, battalions, brigades and divisions are very similar. Because of the special historical background of Taiwanese who know military organisations, participants did not have many problems with the concept of recursion. In addition, participants also understood that companies, battalions, brigades and divisions were viable themselves and could also be a part of a larger containing viable system. The system identification procedure and the functional roles of Systems One to Five which needed to be played at each level of recursion were also introduced by using the same example of the Taiwanese military organisation. Surprisingly, participants seemed to demonstrate a high degree of acceptance towards and had little problems with the ideas of VSM presented in the workshop.

The only problem participants had was that they wondered whether or not the military management would be suitable for supermarket management. I told participants that VSM was not equivalent to military management. Participants' impression on military management was that military management was quite bureaucratic. They believed that the military slogan "there is no action without an order" in military management was not sufficiently flexible for supermarket management. A staff member waiting for the order from his or her manager was far too passive and inflexible. Every action in the military was well regulated by regulations or rules. They believed that the military slogan "whenever there is regulation, follow it; follow the rules if there is no regulation; follow the customs if there is no rule" was not applicable to supermarket management. This was because it seemed that everything with which one was confronted happened before, while new things kept coming up in supermarket management. I told participants that an important difference between military management and VSM was that in VSM regulations, rules or even customs, were supposed to be as few as possible. I continued that when few regulations, rules or customs were imposed by higher management on viable parts, these viable parts would have more discretion to respond actively to new things or changes in the environment. When this was the case, I said, viable parts did not need to wait for orders from higher management before they could take any action.

The outcome of Workshop Two was that participants of the AGSC had an essential understanding of VSM.

8.3.3. Workshop Three

At the third workshop meeting of the CI project, I encouraged participants to apply their understanding of VSM to their organisation. I facilitate participants to go

through the system identification process. With the organisational purpose identified in the previous workshop, participants identified three levels of recursion within the Ai-Guo Corporation. Participants identified that the AGSC was the system in focus at the recursion level one; the Ai-Guo Corporation which contained AGSC was at the recursion level zero; and the Yang-Ming branch of the AGSC was contained by AGSC and was at the recursion level two. The three levels of recursion within the Ai-Guo Corporation identified by participants are shown below in Figure 8.5.

8.2.3.4. The identification of System One elements of the Yang-Ming branch

I then invited participants to identify systems One to Five for each level of recursion. I started by inviting them to identify systems One to Five elements at the recursion level zero, which was the Ai-Guo Corporation. This was because we had been familiar with this level of recursion. Participants identified the Fruit and Vegetable Unit, the Meat and Aquatic Food Unit, the Cold Food Unit, the Sweet and Biscuit Unit, the Dairy Nuts Unit, the Non-hold hardware Unit, and the Wine and Cigarette Unit as the eight elements of the Yang-Ming branch. These eight units identified the Yang-Ming branch at the recursion level one. Figure 8.6 below shows the three levels of recursion identified by participants. The more detailed recursion diagram is shown in Figure 8.7.

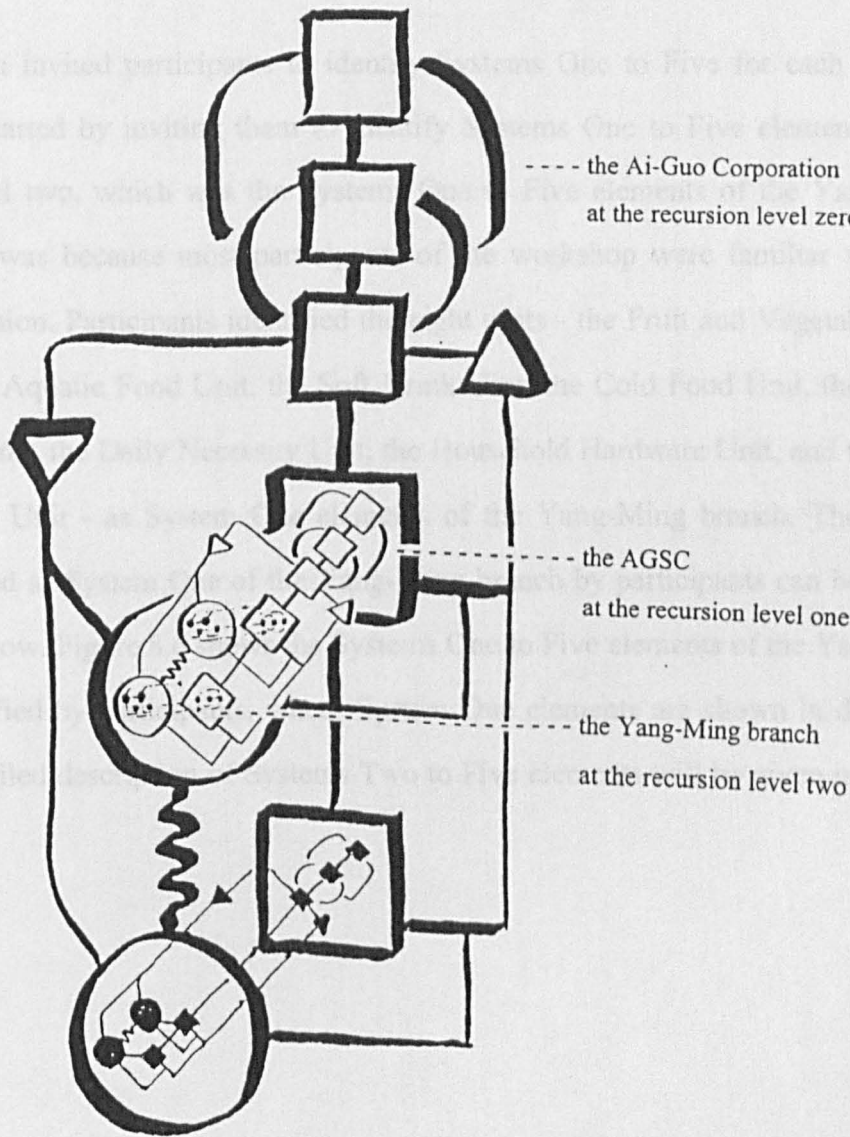


Figure 8.5: The three levels of recursion within the Ai-Guo Corporation identified by participants, where the AGSC was the system in focus at the recursion level one; the Ai-Guo Corporation which contained AGSC was at the recursion level zero; and the Yang-Ming branch of the AGSC was contained by AGSC and was at the recursion level two.
Source: Model adapted from Beer's VSM (Beer, 1985, p. 3).

8.3.3.1. The identification of System One elements of the Yang-Ming branch

I then invited participants to identity Systems One to Five for each level of recursion. I started by inviting them to identify Systems One to Five elements at the recursion level two, which was the Systems One to Five elements of the Yang-Ming branch. This was because most participants of the workshop were familiar with this level of recursion. Participants identified the eight units - the Fruit and Vegetable Unit, the Meat and Aquatic Food Unit, the Soft Drink Unit, the Cold Food Unit, the Sweets and Biscuit Unit, the Daily Necessity Unit, the Household Hardware Unit, and the Wine and Cigarette Unit - as System One elements of the Yang-Ming branch. These eight units identified as System One of the Yang-Ming branch by participants can be seen in Figure 8.6 below. Figure 8.6 shows the Systems One to Five elements of the Yang-Ming branch identified by participants, where System One elements are shown in detail and the more detailed description of Systems Two to Five elements will be given in the text later.

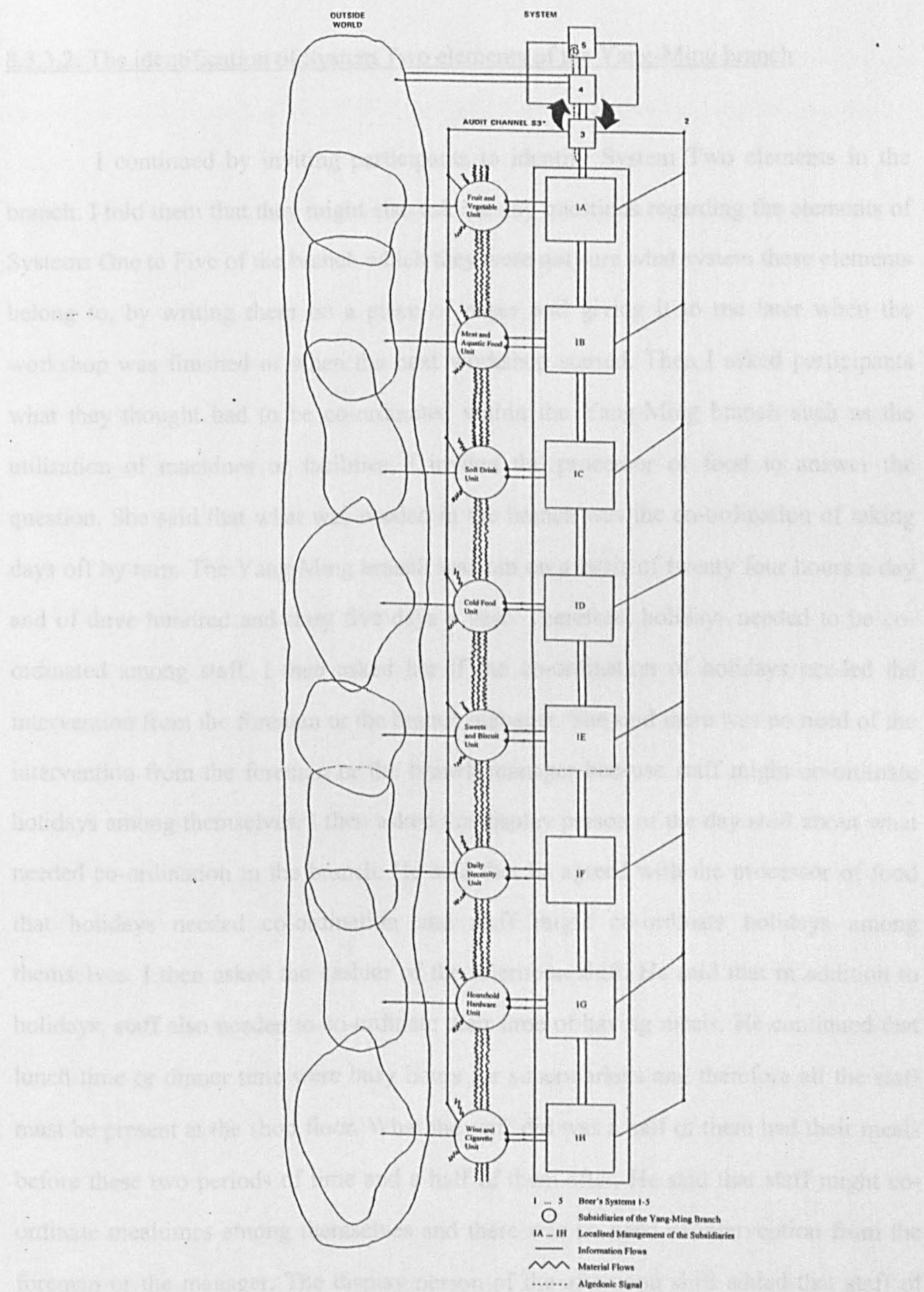


Figure 8.6: Systems One to Five elements of the Yang-Ming branch. The eight units identified as System One of the Yang-Ming branch by participants are the Fruit and Vegetable Unit, the Meat and Aquatic Food Unit, Soft Drink Unit, the Cold Food Unit, the Sweets and Biscuit Unit, the Daily Necessity Unit, the Household Hardware Unit, and the Wine and Cigarette Unit. The more detailed description of Systems Two to Five will be given later in the text.
 Source: Model adapted from Beer's VSM (Jackson, 1991, p. 107).

8.3.3.2. The identification of System Two elements of the Yang-Ming branch

I continued by inviting participants to identify System Two elements in the branch. I told them that they might also ask me any questions regarding the elements of Systems One to Five of the branch which they were not sure what system these elements belong to, by writing them on a piece of paper and giving it to me later when the workshop was finished or when the next workshop started. Then I asked participants what they thought had to be co-ordinated within the Yang-Ming branch such as the utilisation of machines or facilities. I invited the processor of food to answer the question. She said that what was needed in the branch was the co-ordination of taking days off by turn. The Yang-Ming branch was ran on a basis of twenty four hours a day and of three hundred and sixty five days a year. Therefore, holidays needed to be co-ordinated among staff. I then asked her if the co-ordination of holidays needed the intervention from the foreman or the branch manager. She said there was no need of the intervention from the foreman or the branch manager because staff might co-ordinate holidays among themselves. I then asked the display person of the day shift about what needed co-ordination in the branch. He said that he agreed with the processor of food that holidays needed co-ordination and staff might co-ordinate holidays among themselves. I then asked the cashier of the afternoon shift. He said that in addition to holidays, staff also needed to co-ordinate their time of having meals. He continued that lunch time or dinner time were busy hours for supermarkets and therefore all the staff must be present at the shop floor. What the staff did was a half of them had their meals before these two periods of time and a half of them after. He said that staff might co-ordinate mealtimes among themselves and there was no need of intervention from the foreman or the manager. The display person of the afternoon shift added that staff of each unit might get support from other units when his or her unit was very busy. This co-ordination of personnel support among all the units in the Yang-Ming branch might be done among the staff themselves. Staff basically agreed that there was no co-ordination problems in the Yang-Ming branch. The foreman also agreed that holidays,

mealtimes and personnel support for other units were three main things needed co-ordination in the branch and staff might do the co-ordination task among themselves.

8.3.3.3. The identification of System Three elements of the Yang-Ming branch

I then invited participants to identify the System Three elements in the Yang-Ming branch. I refreshed participants' memory by saying that System Three is a control function which is about interpreting the purpose given from higher management and determining the objectives for implementation and determining the measurement of performance and the resources to be allocated to each unit and auditing each unit. The display person of the afternoon shift said that determining the promotional plans (annual and monthly) for commodities might be one element of System Three. I asked other display persons, the processor of food and cashiers what they thought about what the display person of the afternoon shift had said. They believed that determining the annual and monthly promotional plans for commodities should be one element of System Three. I then asked them how the promotional plans was determined and how it was implemented. They said that the promotional plan was determined by the branch manager. They said that the branch manager determined the dates and the kinds of commodity for promotion and they and the foreman decided where these commodities would be displayed and they attached to them promotional labels. The branch manager added that he discussed with the chain manager regarding what commodities would be promoted and what their promotional prices were.

I then invited participants to identify the problems which might affect the implementation of the promotional plans. I asked participants if the annual or monthly promotional plans were emphasised in the branch. Participants said that they were highly emphasised. The branch accountant said that the Yang-Ming branch was actually very good at commodity promotion. I then invited participants to identify what they thought might affect their promotional plans. The display person of the afternoon shift

said that their supermarket would be affected when other competitive supermarkets or shops had promotional events and they did not. The foreman added that their promotional plan would be affected if other hypermart (two or three times larger than a supermarket) chains had united chain promotional events. The branch manager also said that the promotional events of competitive supermarkets or hypermarts, might affect their promotional plans. He continued that the customers of the branch were quite price-sensitive and that the branch needed to have frequent promotional events. However, promotional events in the branch were sponsored by manufacturers and frequent promotional events created financial pressure on manufacturers. Therefore, frequent promotional events meant that less manufacturers would sponsor each of these events. I wrote down all the problems raised in the workshop on the white board and told participants that these problems would be discussed at later workshops.

I then asked participants to identify other elements of System Three. The foreman said that the annual and monthly plans of operation revenues might be a System Three element. I asked participants if the annual and monthly plans of operation revenues were emphasised. The display persons, the processor of food, and the cashiers did not seem to know much about these plans. The foreman added that these annual and monthly plans of operating revenues were determined and measured at branch level. He said that the Yang-Ming branch did not give specific objectives of operating revenues for each of its units. I asked the foreman why the branch did not. The foreman answered why should the branch. I told the foreman that each unit in the Yang-Ming branch was like a shop itself. And, by going down a level of recursion to recursion level three through applying the system identification process again (as we did earlier in the workshop), one might find that a unit also contained several sub-units. Therefore, similar to the Yang-Ming branch, which contained several units, was given the annual and monthly objectives of operating revenues, each unit in the branch which might contain several sub-units might be given annual and monthly objectives of operating revenues.

In addition, when each unit achieved its own annual and monthly objectives of operating revenues, the branch management might collect the results of their achievement; achieve the annual and monthly objectives of operating revenues of the branch; and focus itself on the managerial tasks at branch level. The foreman agreed. But he said that it was difficult for the branch to know how much operating revenue each unit achieved. This was because the Yang-Ming branch did not have a Point of Service (POS) computer system which could accumulate the information about the commodities sold and provide the opportunity for the branch to analyse the information. The branch manager said that to give operating revenue objectives to each unit was an interesting idea. He said that the problem just raised by the foreman could be overcome by calculating the commodities ordered per month. That is, when the quantity of commodities on the shelves remained the same, the quantity sold in a month would be almost the same as the quantity ordered in that month. The branch manager said that he would give the idea a thought.

I then asked participants to identify System Three elements about the allocation of resources to each unit. Participants could not identify one. I said that this might be because that each unit was not given annual and monthly objectives of operating revenues. If each of them was given one, they would have needed resources such as the opportunities of being included in promotional events in order to achieve their own objectives. Participants agreed.

I then invited participants to identify System Three elements about auditing. The foreman said that what the display persons and processors of food were required to do were to display commodities and make sure that enough quantity was displayed, to check if there were any expired or abnormal commodities displayed, to make sure the selves and alleys were clean and neat, and to provide good customer services. Basically, these activities were audited by him and the branch manager. Sometimes, customers

also audit these activities for them. However, if customers picked out expired commodities, non-fresh food, or they reported that some commodities were out of stock or customer service was not good, the concerned staff would be warned. The manufacturers' sales people might also audited for them. The branch manager added that he and the foreman audited these activities irregularly. In addition, he said, the foreman should trace the turnover rate (quantity sold per month over quantity stocked) of popular commodities to prevent them from going out of stock.

I then invited the branch accountant to say what needed auditing financially. She said that the tax receipts copy kept in the cash machine, the receipts which proved that the staff had paid on the behalf of the branch with their own money (such as for the petrol used for business trips), and the balance sheet of each unit of the branch. She said that there were twenty security cameras in the branch which could clearly see, even the colour of the money. Therefore, when they were first employed, cashiers were warned not to steal money from the cash machines. Also customers, when they entered the branch, could see the sign of "security camera in operation". She went on to say that stealing was a very big problem for the management of supermarkets. Especially as the Yang-Ming branch was a supermarket open twenty four hours a day with only three cashiers in the night shift. I continued by asking her how stealing took place and how it could be audited. She said that it was not appropriate for her to speak about it at that moment. I understood that she did not want to discuss the possibilities of stealing and auditing it in front of the staff. Therefore, I decided to ask her later when the workshop was finished.

8.3.3.4. The identification of System Four elements of the Yang-Ming branch

I continued by inviting participants to identify System Four elements. I refreshed participants memory by saying System Four is an intelligence function about collecting the information from the environment, passing the information collected to

Systems Three and Five, and bringing the environmental information and that of the internal operation together. The display person of the afternoon shift spoke about the information regarding competing supermarkets, stores or hypermarkets. I asked him how this information was collected by the branch. He said that sometimes the branch manager or the foreman sent some persons to the competing supermarkets, stores or hypermarkets. The branch manager also collected the promotional direct mails (DM) of these competitors, which were sent with newspapers. The branch could also know competitors' information from regular customers. The cashier of the night shift said that the collection of information could also be done by asking the delivery personnel from the manufacturers. The foreman added that normally the branch got information by collecting competitors' promotional DM sent with newspapers and asking customers. The branch also quite often asked the sales people from the manufacturers since they sold commodities to different supermarkets, stores or hypermarkets.

I then asked participants to say what might be the problems of using these methods to collect competitors' information. The display person of the afternoon shift said that the problem was that their staff would be recognised and "friendly followed" by the staff of competitors when they went to the competitors' shop floors. The foreman said that another problem was that the promotional prices of commodities changed so quickly. When their staff went to the competitors' shop floors to check the prices mentioned by manufacturers or customers, the prices had been changed. The other problem was that sometimes customers did not provide correct information. The branch manager added that sometimes their staff were recognised by manufacturers in competitors' shops.

I then asked participants if they thought that the information about their customers was an element of System Four function. Participants said "yes". I asked them who their customers were. Participants seemed to agree that housewives were their main customers. The foremen added that middle-aged people and young people who

started their job recently were also regular customers. I asked participants if the commodities sold in the branch were what housewives, middle-aged people and young people, who recently started their job, needed. Participants agreed. I went on by asking them if they had new targets for customers in the future. Participants did not seem to have any plans regarding how to obtain new customers in the future.

8.3.3.5. The identification of System Five elements of the Yang-Ming branch

I then invited participants to identify System Five elements. I refreshed participants' memory by saying that System Five is a policy function which represents the purpose of the system in focus, determines policies and creates an atmosphere within the system in focus, balances Systems Four and Three functions and responds to emergent information coming from Systems One to Four. I continued that the purpose of the AGSC was determined at the previous workshop as to provide a clean, neat and broad shopping environment and well-displayed and wide-ranged commodities together with low prices and quality customer service. I asked participants to think about the purpose of the Yang-Ming branch. I asked the display person of the afternoon shift this question. He said that the purpose of the branch might be the same as that of the AGSC despite that the Yang-Ming branch served its customers in a smaller area than the chain did. Participants seemed to agree. The branch manager added that the policies of each branch might be different although their purpose was the same. The branch manager continued to say that their branch focused on customers like housewives and middle-aged people and that the commodities were those which would be bought by these people. Some branches of the AGSC were close to industrial areas where domestic or foreign labourers might be their main customers. The policies of these branches might be that they sold more low-priced commodities or foreign food such as food from Thailand. I then asked the branch manager how policies of the branch were determined. He said that he determined the policies, reported to the chain manager and announced them in the staff meetings of the branch.

I continued by asking the branch manager what the proportion was regarding the time which he utilised to deal with the day-to-day management to the time which he utilised to know new markets and the trend of commodities. He said about six to one. I asked if he had enough time for finding new markets and new trends of commodities. He said he did not. He was far too busy with the day-to-day management. He suggested that this information might be collected by the chain management and passed on to the branches so that all the branches might have unified policies towards new markets and new trends of commodities. I said that this might be discussed in the next workshop when we go up to a higher level of recursion where the AGSC would be the system in focus. However, I told the branch manager that each branch also had its own operating environment. The branch manager had just said that some branches had domestic or foreign labourers as their main customers and some others did not. Therefore, there might be some information which was more suitable to be collected at branch level. I told the participants that this could be an issue for the next workshop.

I then asked the staff in the branch to tell me what they would report to the branch manager before they could take real action. A display person of the day shift said that what he needed to report to the branch manager was when he would like to order new products, to initiate a new promotional event in his unit or to take (a) day(s) off because of sickness or personal affairs. The display person of the afternoon shift added that to return slow-selling commodities also needed to be reported to the branch manager. The branch manager added that some emergent situations or customers' complaints also needed to be reported. Then I spoke to the foreman. He said that what he needed to report to the branch manager were how the staff worked and how the shop floor was operating. I invited participants to identified elements of Systems Three, Four, and Five, among those which they said they needed to report to the branch manager. Participants agreed that System Five elements were emergent situations and customers' complaints; System Four elements were to order new commodities and to return slow-

selling commodities; and the rest were all System Three elements. Participants said that they then experienced that a person might be involved in several functions of Systems Three, Four, and Five, which they originally believed should be dealt with by different people, units or departments. The branch manager said that he experienced what proportion of Systems Three, Four, and Five, constituted one of his working days.

What was written on paper and given to me after the third workshop or before the fourth workshop were:

System Two elements written by the branch accountant: small amounts of expense could be paid by the allowance allocated to each unit, but large amounts of expense needed to be approved by the foreman or the branch manager.

System Three elements written by the branch personnel: the audit of personnel attendance could be done by checking the attendance card to see if the person was really at the shop floor. In addition, if two people often entered the shop floor at the same time as their attendance cards showed, it was very likely that one person registered the attendance card for the other.

System Five elements written by the foreman: notify the branch manager when the electricity went off, the branch was on fire, there was robbery in the branch or customers fought or had quarrels with each other.

What the accountant told me after the workshop was that there were always at least two cashiers working together in one shift in the branch. However, theft might still happen when the cashier helped friends or family. For instance, when these persons brought two expensive items to the check out counter, the cashier might type in much lower prices for these items. This could not be easily found out through the security camera or by the other cashiers in the same shift. I asked if a Point of Service (POS)

computer system, which read the price of commodities from a scanner, could help. She said that this would not help if the cashier really wanted to steal. The hand scanner which the POS computer system utilised could be easily deceived, as it could only read the price of commodities from certain angles. If the cashier scanned the price of commodities from an angle out of the range, the cash machine would not show any price. The security camera would not show this as an abnormal transaction. Therefore, friends or family of the cashier might buy plenty of items and pay only for a couple of them. This kind of theft was very difficult to trace and could probably only be audited by chance when a cashier and a customer seemed to know each other very well and the customer hurried to leave when she saw them. In this situation, she could ask the cashier, when the customer had left, what s/he had bought, and she could check this with the security cameras and the tax receipt copy kept in the cash machine.

The vice-director general said that the management of a supermarket was a kind of conscience business. She was with me when the branch accountant told me the kinds of theft which might happen in supermarkets. The vice-director general said that theft was very common in supermarkets. She said that it was quite tempting for staff to see a lot of commodities which their family needed and which might not cost them any money if they “brought” the commodities home. She continued by saying that working in supermarkets was not a highly paid job. For a cashier in the Yang-Ming branch, he or she was paid 18000 New Taiwan Dollars (i.e., about 350 Pounds) a month. What the cashier received as a cashier in one month could be one hundred fifty times of his or her monthly salary. Therefore, it was quite common for cashiers to steal. One case which happened in another supermarket was that a cashier stole 330000 New Taiwan Dollars (about 6300 Pounds) in one month. What the cashier did was he typed the price of commodities correctly, showed the total amount to a customer, accepted money from the customer, and the cash machine then showed the amount of change to be returned to the customer. However, before he returned the change to the customer, he typed a big amount of money to be returned to the customer. For instance, a customer bought

commodities which were worth of 1590 New Taiwan Dollars. The customer gave the cashier 1600 New Taiwan Dollars. The cashier accepted 1600 New Taiwan Dollars and the cash machine showed the amount of change being 10 New Taiwan Dollars. However, the cashier then typed “returning the customer 1500 New Taiwan Dollars”. The customer expected 10 New Taiwan Dollars change and the cashier gave the customer 10 New Taiwan Dollars. The customer was happy and left. The final transaction “returning the customer 1500 New Taiwan Dollars” was shown on the tax receipt of the customer, but normally the customer did not see it. In the end, the customer paid 1590 New Taiwan Dollars for the commodities bought, the cashier got 1500 New Taiwan Dollars which was obtained from a fraud money returning transaction and the supermarket got 90 New Taiwan Dollars. She - the vice-director general - continued that some supermarkets did not know how they got bankrupt because their business was not bad. She said that she preferred diligent and honest people rather than clever people when employing staff, especially cashiers.

The Systems Two to Five elements written by participants and given to me after this workshop or before the next workshop showed that VSM was not the only way of locating and conceptualising the problems facing participants in the AGSC. Participants had had solutions to some problems facing them before I introduced VSM to them. Therefore, although VSM was adopted to facilitate participants to deal with the problems facing them in this CI project, VSM should not be considered as the only way of locating and conceptualising their problems.

In addition, the interaction between me and some participants after this workshop showed that intervention might happen outside workshops rather than merely within workshops. Because of the influence of Chinese culture, some participants would like to present their opinions to me in private rather than in public. The after-workshop conversation with some participants about the Systems Two to Five elements written by them on paper provided me with some more opportunity to interact with them outside

workshops. The Systems Two to Five elements written on paper and given to me by these participants after this workshop or before the next workshop showed that the solution to the problems of participants did not necessarily come from VSM. However, the after-workshop conversation with these participants about the Systems Two to Five elements written by them on paper provided them with the opportunity to show their acceptance of and support towards my CI project. It also provided me with the opportunity to show my appreciation to their acceptance and support. From this perspective, I believe that the after-workshop conversation which might build up a good interaction between me and these participants and which might facilitate me to gain the support of these participants towards my CI project, was an intervention which happened outside workshops.

To deal with the problem of theft by the staff was another intervention which happened outside workshops. The management of the AGSC did not want the knowledge of theft and anti-theft to be spread among the staff. Therefore, the problem of theft by the staff had to be dealt with outside workshops. After listening to what the branch accountant and the vice-director general said about theft, I discussed with them and the director general privately about the possibility of running legal workshops for the staff in the AGSC. I said to them that to inform the staff in the AGSC of the legal and severe consequences of theft might prevent the staff from it in the first place. In addition, running legal workshops to inform the staff of the legal and severe consequences of theft might leave them no excuse for the unawareness of the consequences. The director general asked me how legal workshops might be arranged. I said that they could be run for all the staff in the AGSC once only and for newly employed staff on a regular basis, such as once every three months. The content of legal workshops might include the legal consequences of theft by the staff; the previous cases of theft in the AGSC or in the industry and how these cases were dealt with; and how the AGSC dealt with it at the moment. The content of legal workshops might also include other legal problems frequently facing the staff, such as how to deal with the

theft by customers and with robbery. After-workshop written examinations in legal workshops might also be applied.

The director general summoned the corporate personnel manager. The director general wanted me to explain again the idea of legal workshops to deal with theft by the staff to him. After my explanation, the corporate personnel manager said that legal workshops was an idea worthy of trying and that legal workshops might be a part of the formal training course for newly employed staff in the AGSC.

The outcome of Workshop Three was that some problems of the AGSC at branch level were identified through the application of VSM. For instance, participants found that the branch needed to have frequent promotional events to attract customers' attention, but frequent promotional events meant that less manufacturers would sponsor each of these events; participants agreed to consider the issue of giving each unit of the branch its own annual and monthly objectives of operating revenues; the branch manager indicated that the foreman should trace the turnover rate (quantity sold per month over quantity stocked) of popular commodities to prevent them from going out of stock; participants raised the problem of theft by the staff and by customers; participants did not seem to have new targets for customers in the future; the branch manager was far too busy with the day-to-day management and he did not have enough time for finding new markets and new trends of commodities; participants raised the issue that this information of new markets and new trends of commodities might be collected by the chain management and passed on to the branches, so that all the branches might have unified policies towards new markets and new trends of commodities.

I told participants that they might consider to make some improvements regarding those problems identified in this workshop in the embodiment process of the CI project at an optional workshop later.

8.3.4. Workshop Four

At the fourth workshop meeting of the CI project, I encouraged participants to apply their understanding of VSM to the AGSC, which was the system in focus at the recursion level one, and later on to the Ai-Guo Corporation, which contained AGSC and was at the recursion level zero. With the experience of application of VSM learning from Workshop Three, participants were then more familiar and comfortable with VSM.

As mentioned in the beginning of this section, this workshop - Workshop Four - was additionally utilised by the debate process in my CI project carried out in the AGSC. This was because the AGSC was a large organisation and it took one more workshop than planned to go through the debate process. Therefore, there was a subsequent change of the numbering of workshops since Workshop Four, compared with the numbering of workshops planned by my plan mentioned in Chapter Seven. That is, Workshop Four in my plan mentioned in Chapter Seven became Workshop Five in my CI project carried out in the AGSC described in this chapter; Workshop Five in my plan became Workshop Six in my CI project carried out in the AGSC; ..., etc.

8.3.4.1. The identification of System One elements of the AGSC

At this workshop, I again invited participants to identity Systems One to Five elements for the AGSC. As participants had identified the AGSC as the system in focus which contained six branches at the third workshop, they agreed that six branches of the AGSC as elements of System One of the AGSC in this workshop. The six branches identified by participants as System One elements of the AGSC can be seen in Figure 8.7 below. Figure 8.7 shows the Systems One to Five elements of the AGSC identified by participants, where System One elements are shown in detail and the more detailed description of Systems Two to Five elements will be given in the text later.

I refreshed participants' memory by saying that the branch manager, the foreman, the branch accountant and the branch personnel, who were the higher management at branch level, were then local management at chain level. I told participants that they might also ask me any questions regarding the elements of Systems One to Five of the chain if they were not sure what system these elements belong to, by writing them on a piece of paper and giving it to me later when the workshop was finished or when the next workshop started.

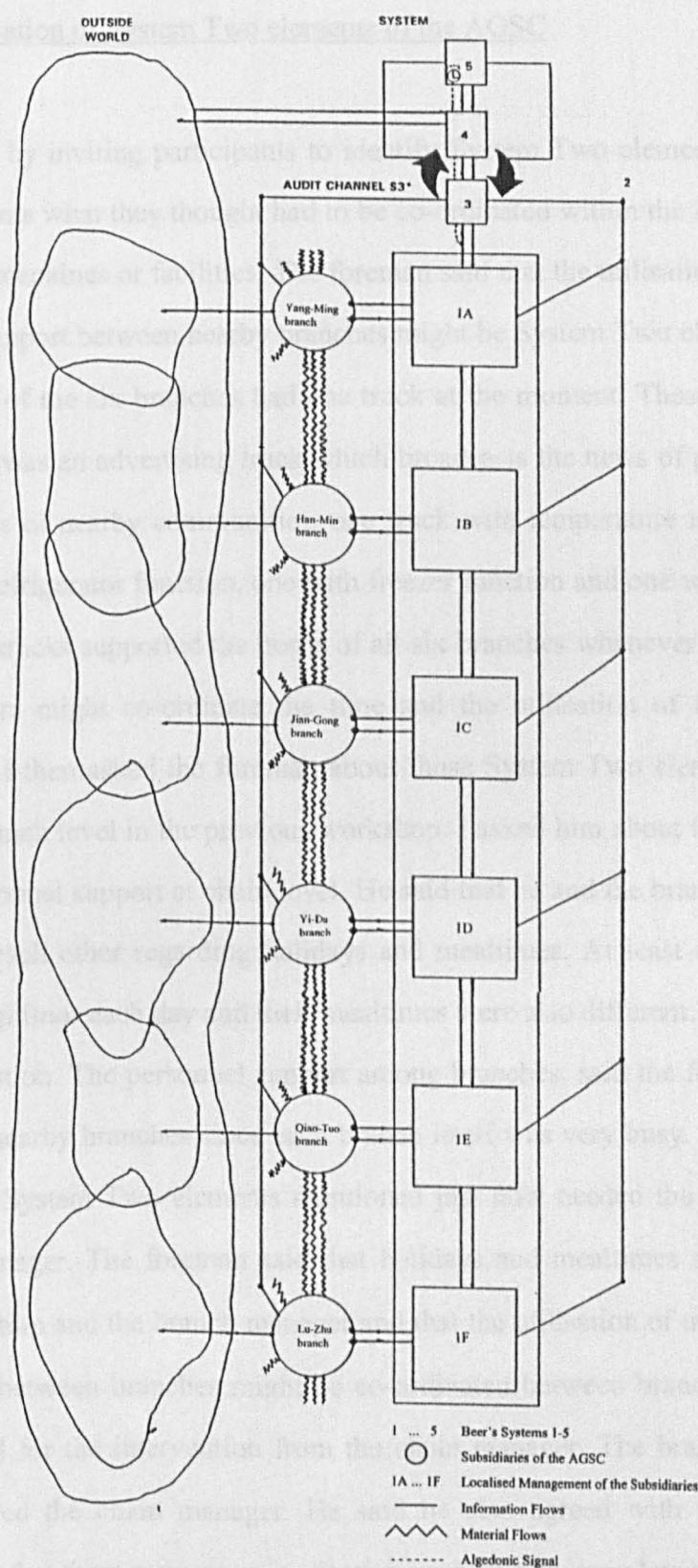


Figure 8.7: The Systems One to Five elements of the AGSC. The six branches identified as System One of the AGSC by participants are the Yang-Ming branch, the Han-Min branch, the Jian-Gong branch, the Yi-Da branch, the Qiao-Tuo branch and the Lu-Zhu branch. The more detailed description of Systems Two to Five elements will be given in the text later.
 Source: Model adapted from Beer's VSM (Jackson, 1991, p. 107).

8.3.4.2. The identification of System Two elements of the AGSC

I continued by inviting participants to identify System Two elements at chain level. I ask participants what they thought had to be co-ordinated within the AGSC such as the utilisation of machines or facilities. The foreman said that the utilisation of trucks and the personnel support between nearby branches might be System Two elements. He continued that each of the six branches had one truck at the moment. These six trucks were different. One was an advertising truck which broadcasts the news of promotional events on the streets of nearby communities, one truck with temperature maintenance function, one with refrigerator function, one with freezer function and one was an open-ended truck. These trucks supported the needs of all six branches whenever needed and the branch managers might co-ordinate the time and the utilisation of these trucks among themselves. I then asked the foreman about those System Two elements raised and identified at branch level in the previous workshop. I asked him about the holidays, mealtimes and personnel support at chain level. He said that he and the branch manager co-ordinated with each other regarding holidays and mealtimes. At least one of them had to be at the shop floor each day and their mealtimes were also different. This was an in-branch co-ordination. The personnel support among branches, said the foreman, was basically between nearby branches since each branch itself was very busy. I then asked the foreman if the System Two elements mentioned just now needed the intervention from the chain manager. The foreman said that holidays and mealtimes might be co-ordinated between him and the branch manager and that the utilisation of trucks and the personnel support between branches might be co-ordinated between branch managers. There was no need for the intervention from the chain manager. The branch manager agreed. I then asked the chain manager. He said he also agreed with the foreman. Participants agreed that there were no co-ordination problems at chain level.

8.3.4.3. The identification of System Three elements of the AGSC

I then invited participants to identify the System Three elements at chain level. I refreshed participants' memories by saying that System Three is a control function which is about interpreting the purpose given from higher management; determining the objectives for implementation; determining the measurement of performance and the resources to be allocated to each branch; and auditing each branch. I also invited participants to think about the elements of System Three identified at the third workshop at branch level including the promotional plans, the annual and yearly objectives of operating revenues, allocation of resources, and auditing. The branch manager said that there were no united promotional events at chain level at the moment. He continued that, as he had said in the last workshop, he discussed with the chain manager about the kinds of, and the promotional prices of, commodities to be promoted. This was the case for each branch manager. The chain manager said that he often thought about the united promotional events of the whole chain, but there were some difficulties at the moment. The chain manager said that he was promoted from a branch manager half a year ago by the director general to be responsible for the day-to-day management of the six branches. Therefore, the whole chain management had not been totally set up. The chain management did not have its own finance, accounting, personnel, planning, and purchase departments. These departments were allocated at corporate level. As the director general had appointed him as the chain manager, he would try his best to enhance the integration of the six branches to accomplish the determination of the director general. He emphasised that the united promotional events between all six branches would be done as soon as possible.

The foreman raised the issue of united purchase to reduce the cost of commodities. The manager of the purchase department of the corporation said that at the moment united purchase was done only when the amount of commodities was very large. He said that he agreed with the foreman that united purchase might reduce the

cost of commodities and increase the competitiveness of each branch. However, this also affected the discretion which each branch had regarding providing suitable commodities for its customers in its area.

I then asked the chain manager about how the annual and monthly objectives of operation revenues were determined at chain level. The chain manager said that the director general determined the growth rate of the whole chain and the chain manager allocated the annual objective of operating revenues to each branch to achieve the objective given by the director general. The branch manager then determined his own monthly objectives of operating revenues to achieve the annual objective allocated to him. I then asked the branch manager if there were some problems which might affect him to achieve his monthly objective of operating revenue. He said that the promotional events of competitors and the high quitting rate of staff were the two major problems. I then asked the chain manager what he would do if the branch manager did not achieve the annual objective of operating revenue allocated. The chain manager said that he would require the branch manager to review whether the policy of the branch was suitable for the environment of it. It will also be reviewed whether the monthly objectives determined by the branch manager to achieve the annual objective were appropriate.

I then asked participants to identify System Three elements about the allocation of resources to each branch. The branch manager said that the chain manager basically respected the branch managers' discretion regarding the ordering of new commodities; returning of existing commodities to manufacturers; and the promotional events reported by branch managers. The branch manager continued that although the chain manager did not give budget to each branch for doing promotional events, he believed that the discretion given by the chain manager was also a kind of resource which might help him to achieve his monthly objectives of operating revenues. I then asked the branch manager if he was given the discretion to set up a new unit in the branch, if

necessary. The manager said that he would discuss this matter with the chain manager first. I then asked participants if they believe they should set up some new unit in the branch. The processor of food said that the appliance unit should be set up because lots of customers asked if the branch sold appliances. The cashier of the night shift agreed and so did the display person of the day shift. The branch manager also agreed. I then asked them if there should be a staff exclusively responsible for the appliance unit. The staff of the branch all agreed. The director general said that he had been considering setting up an appliance unit in each branch, but there was a maintenance problem for appliances. He said his consideration was that the branch would need to send broken appliances to manufacturers of appliances if the branch had no technician at the shop floor. This would create a lot of administrative tasks for the staff. Therefore, he had been looking for someone who had owned his or her own appliance stores and who was interested in setting up appliance branches in his supermarkets. However, so far he had not found one. He concluded by saying that as so many staff members had raised the issue, he would give it again a thought.

8.3.4.4. The identification of System Four elements of the AGSC

Participants were then invited to identify System Four elements. I refreshed participants' memory by saying System Four is a function about collecting the information from the environment, passing this on to Systems Three and Five and bringing the environmental information and the information of internal operation together. The chain manager said that the collection of environmental information was basically done at branch level. The chain had not started to collect and provide the environmental information of the whole chain for the six branches. He said that the branch manager raised at the last workshop the issue of collecting the information of new markets and of new trends of commodities at chain level and giving the information collected to each branch in order to have united action. He agreed with the branch manager that gradually the chain management should provide general information of the

environment of the whole six branches. However, he said that he also agreed with me that each branch should also be sensitive to its own environment.

8.3.4.5. The identification of System Five elements of the AGSC

I then invited participants to identify System Five elements. I refreshed participants' memory by saying that System Five is a policy function which represents the purpose of the system in focus; determines policies and creates an atmosphere within the system in focus; balances Systems Four and Three functions; and responds to emergent information from Systems One to Four. I continued that the purpose of the AGSC was determined at the previous workshop as to provide a clean, neat and broad shopping environment and well-displayed and wide-ranged commodities together with low prices and quality customer service. I asked the chain manager about the policy of the chain. The chain manager said that his supermarket chain generally focused on customers like housewives and middle-aged people who lived nearby each branch and each branch was also given the discretion to focus on its own unique customers such as domestic or foreign labourers. He said that since the customers of the chain were generally price-sensitive, the policy of the chain was to sell price-competitive and low-priced commodities while maintaining a reasonable level of customer service. I then asked the chain manager how policies of the chain were determined. He said that he determined the policies, reported to the general manager and announced them in the staff meetings of the chain.

What was written on paper and given to me after the fourth workshop or before the fifth workshop were:

System Two elements written by the corporate accountant: each branch was allocated 5000 New Taiwan Dollars (about 96 Pounds) a day as its allowance but any expense more than that amount needed to be approved by the chain manager.

System Three elements written by the corporate accountant: the audit of cashiers could be done by checking the tax receipt copy kept in the cash machines and the audit of stocks level of commodities could be done by checking the actually commodities' stock in the storage room and on the shop floor.

Again, the Systems Two to Five elements written by participants and given to me after the fourth workshop or before the fifth workshop, showed that participants had had solutions to some problems facing them before I introduced VSM to them and that VSM was not the only way of locating and conceptualising the problems facing participants in the AGSC. In addition, I still regarded the after-workshop conversation with some participants about the Systems Two to Five elements written by them on paper as the opportunity to show my appreciation to their acceptance of and support towards my CI project.

8.3.4.6. The identification of Systems One to Five elements of the Ai-Guo Corporation

I continued by inviting participants to identify Systems One to Five elements at corporate level which might affect the AGSC. Participants had identified that the Ai-Guo Corporate contained four operating companies, including the AGSC, one café-restaurant chain, one international trade company and one magazine publishing company. At this - the fourth - workshop participants identified these four operating companies as System One elements of the Ai-Guo Corporation. These four companies identified by participants as System One elements of the Ai-Guo Corporation can be seen in Figure 8.8 below. It shows the Systems One to Five elements of the Ai-Guo Corporation identified by participants, where System One elements are shown in detail and the more detailed description of Systems Two to Five elements will be given in the text later.

I told the chain manager that he was regarded a local management at corporate level, although he was the higher management at chain level. The chain manager said that he could understand this. I again told participants that they might also ask me any questions regarding the elements of Systems One to Five of the corporation if they were not sure what system these elements belong to, by writing them on a piece of paper and giving it to me later when the workshop was finished or when the next workshop started.

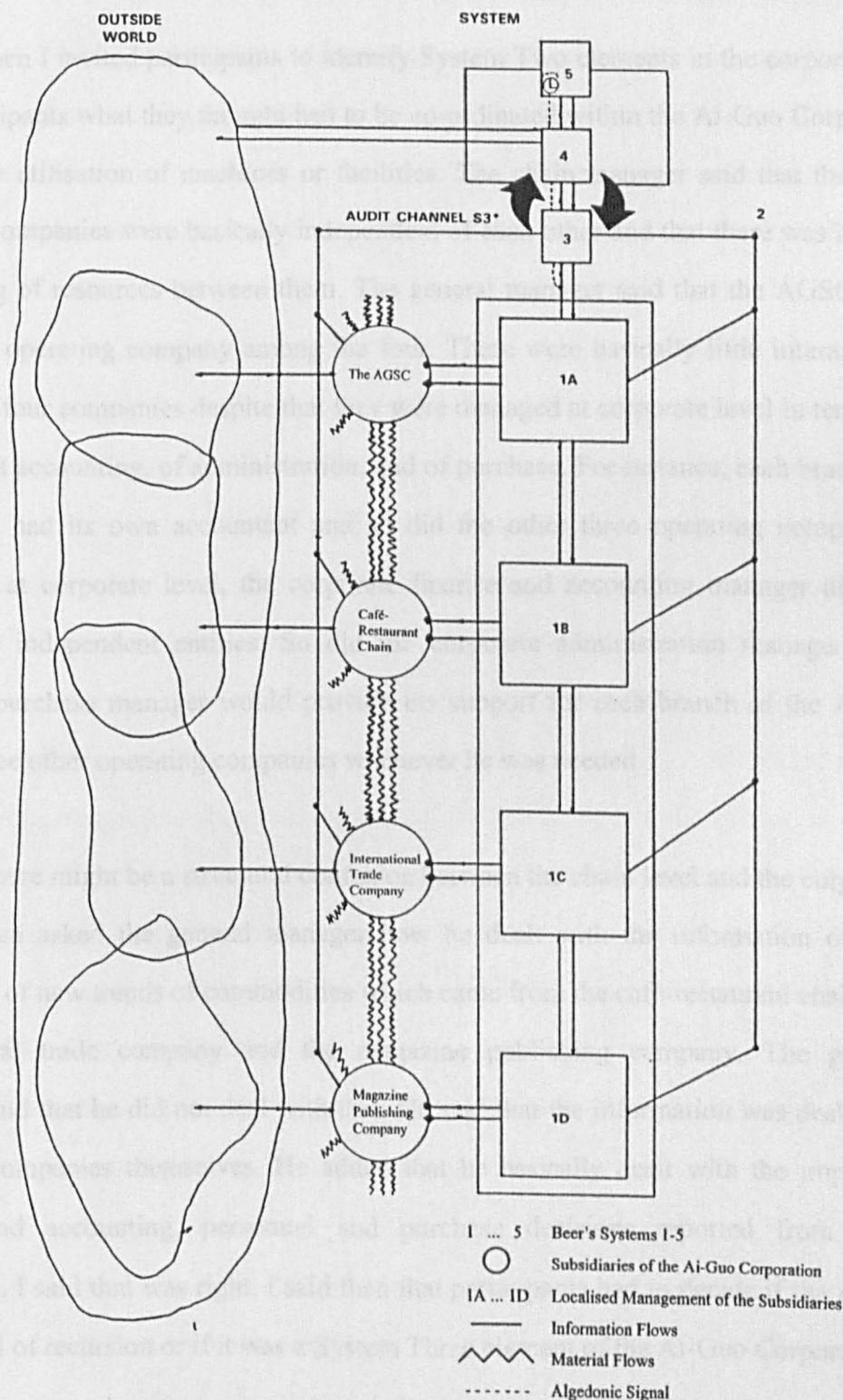


Figure 8.8: The Systems One to Five elements of Ai-Guo Corporation identified by participants. The AGSC and three companies are identified as System One of the Ai-Guo Corporation by participants; these three companies include one café-restaurant chain, one international trade company and one magazine publishing company. The more detailed description of Systems Two to Five elements will be given in the text later.
Source: Model adapted from Beer's VSM (Jackson, 1991, p. 107).

Then I invited participants to identify System Two elements in the corporation. I ask participants what they thought had to be co-ordinated within the Ai-Guo Corporate such as the utilisation of machines or facilities. The chain manager said that the four operating companies were basically independent of each other and that there was hardly any sharing of resources between them. The general manager said that the AGSC was the largest operating company among the four. There were basically little interactions among the four companies despite that they were managed at corporate level in terms of finance and accounting, of administration, and of purchase. For instance, each branch of the AGSC had its own accountant and so did the other three operating companies. Therefore, at corporate level, the corporate finance and accounting manager directly faced nine independent entities. So did the corporate administration manager. The corporate purchase manager would provide his support for each branch of the AGSC and for three other operating companies whenever he was needed.

There might be a structural confusion between the chain level and the corporate level. I then asked the general manager how he dealt with the information of new markets or of new trends of commodities which came from the café-restaurant chain, the international trade company and the magazine publishing company. The general manager said that he did not deal with this. He said that the information was dealt with by these companies themselves. He added that he basically dealt with the important finance and accounting, personnel and purchase decisions reported from these companies. I said that was right. I said then that participants had to decide if the AGSC was a level of recursion or if it was a System Three element of the Ai-Guo Corporation.

I continued by saying that in situation one where the AGSC was a level of recursion, the AGSC should had its own finance, accounting, administration and purchase functions (System Three function) and the function of environmental information collection (System Four function) at chain level, rather than at corporate

level. That is, the AGSC should have its own Systems One to Five functions (as shown in Figure 8.7). In addition, the department of finance and accounting, the department of administration and the purchase department should focus on providing these functions mentioned above at corporate level for the four operating companies. That is, the Ai-Guo Corporation should also have its own Systems One to Five functions (as shown in Figure 8.8).

I said that in the situation two where the AGSC was a System Three element of the Ai-Guo Corporation, the AGSC did not need to have its own finance, accounting, administration and purchase functions (System Three function) and the function of collecting environmental information (System Four function). This was because the department of finance and accounting, the department of administration and the purchase department of the Ai-Guo Corporation could provide these functions for the AGSC. In addition, since there were few interactions between the AGSC and the other three operating companies, these three companies might be kept at the current situation. The department of administration which contained the planning section did not necessarily have to provide the environmental information of the whole Ai-Guo Corporate for these three operating companies since that might not be relevant to the local situation of these three operating companies. In the meantime, in situation two, the System One elements of the Ai-Guo Corporation should be the six branches and the three operating companies rather than the AGSC and the three companies.

Participants believed that they were more likely in situation two. The director general said that the three other operating companies were relatively smaller than the AGSC. He continued that if the six branches of the AGSC were treated as six entities, these three operating companies might be treated as another three entities. The department of finance and accounting, the department of administration and the department of purchase might provide Systems Three and Four functions for all these nine entities.

I said that if the AGSC was more likely to be an element of System Three of the Ai-Guo Corporation, the promotional events organised at chain level or the provision of environmental information for the six branches might need the support from the department of administration which had the planning section and from the purchase department. This was because these issues were then not completely under the control of the chain manager of the AGSC. The chain manager said that he respected the decision made by the director general regarding that the AGSC was an element of System Three of the Ai-Guo Corporation. The director general said that the managers of the department of administration and of the purchase department should fully co-operate with the chain manager regarding the promotional events and the provision of environmental information.

The System One elements re-identified by participants are shown below in Figure 8.9. In this figure, the Ai-Guo Corporation now has nine System One elements rather than four System One elements directly under itself. Figure 8.9 shows the Systems One to Five elements of the Ai-Guo Corporation re-identified by participants, where System One elements are shown in detail and the more detailed description of Systems Two to Five elements will be given in the text later.

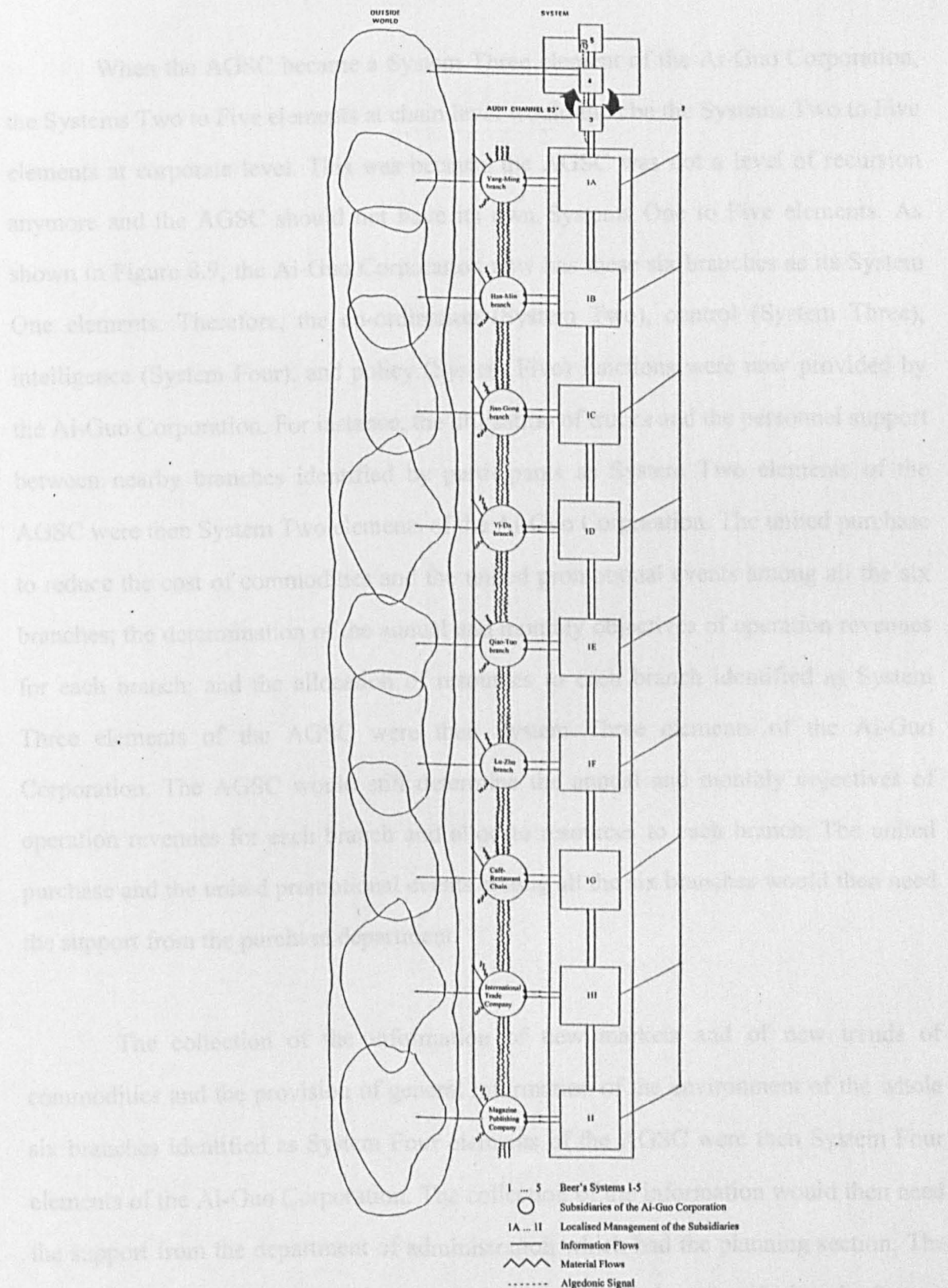


Figure 8.9: The Systems One to Five elements of the Ai-Guo Corporation re-identified by participants. The six branches of the AGSC and three other operating companies of the Ai-Guo Corporation are then re-identified as System One of the Ai-Guo Corporation by participants. More detailed description of Systems Two to Five elements will be given in the text later. Source: Model adapted from Beer's VSM (Jackson, 1991, p. 107).

When the AGSC became a System Three element of the Ai-Guo Corporation, the Systems Two to Five elements at chain level would then be the Systems Two to Five elements at corporate level. This was because the AGSC was not a level of recursion anymore and the AGSC should not have its own Systems One to Five elements. As shown in Figure 8.9, the Ai-Guo Corporation now has these six branches as its System One elements. Therefore, the co-ordination (System Two), control (System Three), intelligence (System Four), and policy (System Five) functions were now provided by the Ai-Guo Corporation. For instance, the utilisation of trucks and the personnel support between nearby branches identified by participants as System Two elements of the AGSC were then System Two elements of the Ai-Guo Corporation. The united purchase to reduce the cost of commodities and the united promotional events among all the six branches; the determination of the annual and monthly objectives of operation revenues for each branch; and the allocation of resources to each branch identified as System Three elements of the AGSC were then System Three elements of the Ai-Guo Corporation. The AGSC would still determine the annual and monthly objectives of operation revenues for each branch and allocate resources to each branch. The united purchase and the united promotional events among all the six branches would then need the support from the purchase department.

The collection of the information of new markets and of new trends of commodities and the provision of general information of the environment of the whole six branches identified as System Four elements of the AGSC were then System Four elements of the Ai-Guo Corporation. The collection of the information would then need the support from the department of administration which had the planning section. The determination of the purpose and policy for all the six branches identified as the System Five elements of the AGSC were then the System Five elements of the Ai-Guo Corporation. The director general would still determine the growth rate for the six branches and the AGSC would still determine the policies and reported to the general manager. However, the growth rate or the policies for the six branches would then need

to take into consideration the information of new markets and of new trends of commodities and the general information of the environment of the whole six branches collected by the department of administration.

Therefore, instead of three levels of recursion, participants re-identified two levels of recursion for the Ai-Guo Corporation. The Ai-Guo Corporation was then the system in focus at the recursion level one and the Yang-Ming branch was contained by the system in focus and it was at recursion level two. These two levels of recursions of the Ai-Guo Corporation re-identified by participants are shown in Figure 8.10 below.

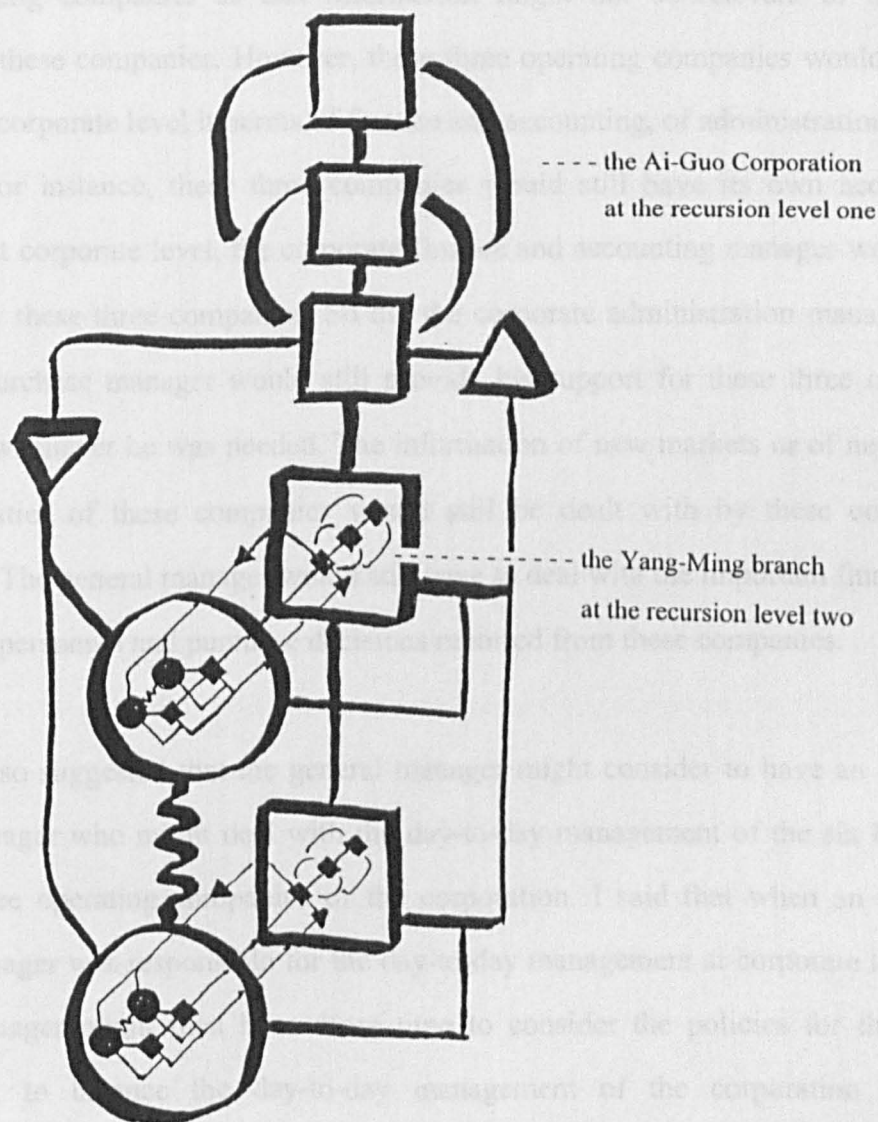


Figure 8.10: The two levels of recursion of the Ai-Guo Corporation re-identified by participants, where the Ai-Guo Corporation was the system in focus at the recursion level one; and the Yang-Ming branch of the AGSC was contained by the Ai-Guo Corporation and was at the recursion level two.
Source: Model adapted from Beer's VSM (Beer, 1985, p. 3).

Since there were few interactions between the six branches and the three operating companies, these three operating companies might remain as the current situation. The department of administration which had the planning section did not

necessarily have to provide the environmental information of the six branches for these three operating companies as that information might not be relevant to the local situation of these companies. However, these three operating companies would still be managed at corporate level in terms of finance and accounting, of administration, and of purchase. For instance, these three companies would still have its own accountant. Therefore, at corporate level, the corporate finance and accounting manager would still face directly these three companies. So did the corporate administration manager. The corporate purchase manager would still provide his support for these three operating companies whenever he was needed. The information of new markets or of new trends of commodities of these companies would still be dealt with by these companies themselves. The general manager would still have to deal with the important finance and accounting, personnel and purchase decisions reported from these companies.

I also suggested that the general manager might consider to have an assistant general manager who might deal with the day-to-day management of the six branches and the three operating companies of the corporation. I said that when an assistant general manager was responsible for the day-to-day management at corporate level, the general manager might then have more time to consider the policies for the whole corporation, to balance the day-to-day management of the corporation and the preparation for the environmental change which might affect the corporation. The general manager and the director general said that they would give this a thought.

The outcome of Workshop Four was that some problems of the AGSC at chain level were identified through the application of VSM. For instance, there were no united promotional events at chain level (i.e., between all the six branches) at that moment; the whole chain management had not been totally set up; participants raised the issue of united purchase at chain level to reduce the cost of commodities; participants raised the need to set up an appliance unit in each branch; participants raised the need of collecting

the information of new markets and of new trends of commodities at chain level and giving the information collected to each branch in order to have united action.

Some problems of the AGSC at corporate level were identified through the application of VSM. For instance, there was a structural confusion between the chain level and the corporate level regarding if the AGSC was a level of recursion or it was a System Three element of the Ai-Guo Corporation; and the director general and the general manager agreed to consider to have an assistant general manager who might deal with the day-to-day management of the four operating companies of the corporation. The structural confusion was resolved in this workshop by that participants agreed that the AGSC was a System Three element; and that the department of finance and accounting, the department of administration and the purchase department of the Ai-Guo Corporation should provide the finance, accounting, administration and purchase functions (System Three function) and the function of collecting environmental information (System Four function) for the AGSC. The promotional events organised at chain level or the provision of environmental information for the six branches would be fully supported by the department of administration which had the planning section and by the purchase department.

I told participants that they might consider to make some improvements regarding those problems identified in this and previous workshops in the embodiment process of the CI project at an optional workshop.

8.3.5. Workshop Five

At the fifth workshop meeting of the CI project, I facilitated participants to envisage the opposite of their originating rationality. Again, I used the method of brainstorming which was used to identify the purpose of the AGSC at the first workshop

meeting of the CI project. In this workshop, I started to facilitate participants to engage consciously their originating rationality with the opposite envisaged and taken on board by their originating rationality. Brain-storming was used to diverge the participants' thought regarding what the opposite of their originating rationality should be. As described in Chapter Seven, what was used to converge the participants' thought regarding their organisational purpose would be that I asked the proposer of each opposite of their originating rationality envisaged to give his or her reason why the opposite envisaged and proposed by him or her should be the opposite envisaged by the originating rationality of the AGSC.

The opposite of the originating rationality of the AGSC proposed by participants were the AGSC to be a successful chain of shopping malls, a successful chain of department stores, a successful chain of warehouses, a successful chain of hypermarkets, a successful chain of convenience stores or a successful chain of specialist shops. The reason for each of them to be the opposite of the originating rationality of the AGSC was:

Shopping mall: Like supermarkets, shopping malls also sell commodities. However, they sell nearly every kind of commodity people need (according to the display person of the afternoon shift).

Department store: Department stores sell high quality and high-priced commodities, especially in terms of clothes, shoes and accessories (according to the foreman).

Warehouse: The customers of warehouses are generally shopkeepers or organisational buyers. Therefore, the commodities sold in warehouses are packed at a bigger quantity (according to the branch manager).

Hypermart: Hypermarts are similar to warehouses in terms of the size of the shop floor. However, commodities sold in hypermarts are not packed at a bigger quantity. Actually they are wrapped as those in a supermarket or an ordinary store (according to the processor of food).

Convenience store: Convenience stores sell a smaller range of commodities at a higher price compared with those sold at supermarkets (according to the branch accountant).

Specialist shop: Specialist shops sell particular kinds of commodity for people who had special needs (according to the chain manager).

Participants agreed to have the opposite envisaged by their originating rationality as being a successful chain of convenience stores. As mentioned in Chapter Seven about CI, I then asked participants of the workshop to have a discussion about what they believed should be the opposite envisaged by their originating rationality. In the discussion, participants believed that shopping malls, department stores, hypermarts or warehouses were relatively more similar to supermarkets than convenience stores in terms of wide-ranged commodities provided by them. Participants believed that department stores focused on providing high quality and high-priced commodities, especially in terms of clothes, shoes and accessories. They also believed that warehouses focused on whole-selling commodities at a low prices. Hypermarts, participants believed, were similar to the warehouses in terms of their size. Therefore hypermarts were similar to supermarkets despite that they provide even a wider range of commodities than supermarkets at a similar price. Participants believed that convenience stores sold not only commodities but also convenience. They said that convenience stores provided a much smaller range of commodities than supermarkets but at a much higher price. They agreed to have the opposite envisaged by their

originating rationality as being a chain of convenience stores, which provided a small range of commodities at a high price.

The outcome of Workshop Five was that being a successful chain of convenience stores was envisaged and identified by participants of the workshop as the opposite of their originating rationality.

8.3.6. Workshop Six

At the sixth workshop meeting of the CI project, I facilitated participants to take on board the opposite of their originating rationality envisaged - i.e., being a successful chain of convenience stores - and affirm it by adopting VSM to achieve it. At this workshop, I facilitated participants to engage consciously their originating rationality with the opposite envisaged and taken on board by their originating rationality. As mentioned in Chapter Seven about CI, the system identification and system diagnosis processes would be used to identify the problems regarding achieving the envisaged purpose of being a successful chain of convenience stores.

I invited the editor of the magazine publishing company of the Ai-Guo Corporation to do a presentation on the management of convenience store chains. As mentioned in Chapter Seven about CI, participants need not necessarily be familiar with the opposite of their originating rationality envisaged. Nor need the practitioner(s) of CI. Therefore, the practitioner(s) of CI might need to invite someone more experienced on the opposite of the originating rationality envisaged by participants in the workshop. In the situation of the AGSC, I found the editorial board of the magazine publishing company of the Ai-Guo Corporation might have some expertise on the management of convenience store chains. I asked the director general if he could introduce me to the editorial board of that company. The director general agreed and he introduced me to the

editor of the editorial board. After I had told the editor about my CI project, he said he agreed to do the presentation on the management of convenience store chains at the sixth workshop.

The following is a digest of what was presented by the editor and was also related to the discussion of the workshop later on.

Convenience stores sell convenience. Convenience stores sell those kinds of commodity which people need immediately. For instance, it sells commodities which people have to buy within an hour. Warm cooked food is an example that people have to buy within an hour when they are hungry. So with cold drinks and some stationary. Convenience stores' shelves are designed to be lower than customers' eyesight so that customers can see the whole store easily and find the commodities they want immediately. This is because their customers are generally in a hurry.

Since convenience stores sell convenience and people need the commodities sold in convenience stores immediately, people accept the commodities being higher priced in these stores. Convenience stores are open at the basis of twenty four hours a day to provide convenience for their customers. Therefore, what is sold at the price of 20 New Taiwan Dollars in a supermarket may be sold at the price of 25 New Taiwan Dollars in a convenience store. The gross profit of commodities in convenience stores is as high as 40-50 percent in average. That is, the result of the price minus the cost of commodity dividing the cost of commodity is about 40-50 percent in average. For instance, a commodity sold at the price of 20 New Taiwan Dollars in a supermarket may cost the supermarket 17 New Taiwan Dollars to order it from the manufacturer of the commodity. However, the same commodity may cost the convenience store chain 16 or even less than 16 New Taiwan Dollars to order it from the manufacturer. This is because the chain as a whole has hundreds or even thousands of branches and it may order a very large quantity. Thus the high gross profit of commodities in convenience stores results

from selling commodities at a high price to their customers and ordering them at a low cost from manufacturers. Consequently, it would not be worthwhile if people do weekly shopping in convenience stores when they have time.

The convenience stores focus on the customers whose age are between 15-35 years. Since the price of commodities in convenience stores are higher than that in supermarkets, hypermarkets or in warehouses, their regular customers are generally not price-sensitive. Young people basically fulfil this criterion.

The number of kinds of commodity sold at convenience stores are about 1500-2000. The design of a convenience store also considers what kinds of commodity will be needed when most stores are closed at night. The result of this consideration plus those kinds of commodity which people may immediately need suggest that each convenience store should sell about 2000 kinds of commodity. This also means that the area of the shop floor of each convenience shop is about 30 pings (about 120 square yards) in general.

The branch manager of each convenience store cannot order freely the commodities he or she would like to sell in his or her store. Rather, the manager is required to order commodities from the recommendation list provided by the convenience store chain in order to assure that the quality of commodities sold in his or her store is good. For instance, food poisoning in one convenience store may affect the image of the whole chain. In addition, when each convenience store orders its own commodities, the cost of quality management of commodities ordered and the cost of self-ordering process and of transportation of commodities ordered may increase. The result is that the profitability of these commodities may decrease. In addition, when each convenience store sells completely different ranges of commodities, the chain will have difficulty in providing diagnosis for the stores in the chain which are not popular to customers. The commodity recommendation list is considered under the conditions: that

these commodities in the list are generally popular commodities and quality commodities; that the range of commodities in the list has to be distributed evenly to cover a wide enough range of commodities; and that image-damaging commodities which may damage the image of the chain should be avoided.

Each convenience store keeps necessary stocks only. In order to keep the food or commodities in each store fresh, each convenience store sells popular commodities or high-turn-over-rate commodities. Under one kind of commodity only one or two brands - i.e., the first and second leading brands - are displayed. In addition, because of the small area of the shop floor of each convenience store, 90 percent of commodities are displayed and less than 10 percent of commodities are stocked in the storage room. The stock of each product is also maintained at a minimum level in order to turn over the stocks in the store and to keep the food or commodities in the store fresh. Consequently, the productivity of each convenience store is increased because of the high turn over rate of its commodities. Manufacturers are also required to distribute small amounts of commodities frequently.

Promotion and advertisement of the whole chain and of new commodities are done by the head office of the chain. Discount of commodities is rarely seen in each convenience store and it is also rarely utilised to reduce the stock of unpopular commodities. The advertisement is utilised to promote the image of the whole chain and to advertise new commodities sold in each convenience store.

After the presentation of the management of convenience store chains by the editor, I invited participants to envisage what would happen if they managed by using VSM the Yang-Ming branch as a convenience store and managed by using VSM the AGSC as a chain of convenience store. Participants said that they found what used to be their problem when they managed supermarkets was not a problem for the management of convenience stores. They also said that they found out what they believed to be an

advantage when they managed supermarkets was not an advantage at all when they managed convenience stores. For instance, in supermarket management, their customers were housewives and middle-aged people who were generally price-sensitive. Therefore, their problem was to try to have more promotional events to attract these customers' attention. However, in the management of convenience stores, there were generally no price reduction promotional events. Customers of convenience stores were young people below the age of thirty five or people who had immediate needs which must be satisfied within a short period of time. These customers were not price-sensitive and were willing to pay more to serve their immediate needs. Therefore, the price of commodities in convenience stores seldom went down for promotion. In the meantime, participants said that they used to be proud that the AGSC provided wide-ranged commodities and nearly ten brands under one single commodity category for its customers. However, wide-ranged commodities and many brands for one single commodity category were not advantages in the management of a convenience store chain.

In the workshop, participants also asked the editor to talk about the management of warehouse chains since warehouse chains were also one of their primary competitors. The editor then talked briefly about the management of warehouse chains. I also invited participants to envisage what they would do if they managed, by using VSM, the Yang-Ming branch like a warehouse and the AGSC like a warehouse chain. What was mentioned by the editor and was related to the discussion of participants are mentioned below.

Warehouses focus on whole-selling commodities and their customers are generally shopkeepers or organisational buyers. Large-quantity buying is a figure of warehouses.

Warehouses promote strongly their own private brands. Warehouses would have their own private brand for the commodities which fulfil one or two of the following conditions: large amount sold, high profit, that brand names are not very important, that promotional events may arouse the interest of customers and that the commodities' quality should be high enough which may not likely be complained by customers. They strongly promote their own private brand by pricing their own private brand 20-30 percent off the price of the leading brand and putting their own private brand beside or right below the leading brand. The result is that if customers value quality, they go for the leading brand; if customers value price, they go for the private brand of the warehouse; other brands on the shelves become a sort of decoration.

Participants said that they could learn from the management of warehouses. Participants believed that popular products in all units of their supermarket might be packed into large-quantity packs. Alternatively, a new whole sale unit might be set up to display all the popular commodities which were packed into large-quantity packs.

Participants believed that they should also promote their own private brand more strongly. They said that they had got several private brand commodities such as rice and mineral water. They believed they could promote their private brand more strongly by reducing the number of competing brands to two or three. And then they could put their private brand beside or right below the leading brands.

The outcome of Workshop Six was that participants experienced how to adopt VSM to achieve the opposite of their originating rationality envisaged including achieving the purpose of being a chain of convenience stores and the purpose of being a chain of warehouses. Participants also experienced how to engage consciously their originating rationality with the opposite envisaged and taken on board by their originating rationality. For instance, participants found in the management of convenience stores that there were generally no price reduction promotional events; that

customers of convenience stores were young people below the age of thirty five or people who had immediate needs which must be satisfied within a short period of time; and that wide-ranged commodities and many brands for one single commodity category were not advantages. Participants also found in the management of warehouses that popular products might be packed into large-quantity packs; and that the private brands of warehouses were strongly promoted.

Participants of the workshop agreed that they saw what might be otherwise concealed and excluded by their originating rationality of achieving the purpose of being a successful chain of supermarkets by adopting VSM. Participants' understanding of the world was broadened through co-constructing their understanding of the world with the opposite envisaged and taken on board by their originating rationality. For instance, participants found that customers were not necessarily price-sensitive; that price reduction promotional events were not always necessary; and that wide-ranged commodities and many brands for one single commodity category were not always advantages.

8.3.7. Workshop Seven

At the seventh workshop meeting of the CI project, I did a presentation about CI and then invited participants to consider those opposite of their originating rationality which were still not taken on board, including those which were raised by them but were not agreed by them in previous workshops. In this workshop, I facilitated participants to engage consciously their originating rationality with the opposite irrelevant or unknown to their originating rationality. After the presentation, I listed all the opposite of their originating rationality raised in previous workshops. Due to the little diversity of the organisational purposes proposed, all could become merged as one. Therefore, there was no organisational purpose which was not agreed by participants. Thus, what I listed in

this workshop were the opposite of their originating rationality envisaged by participants which were not agreed by participants as the opposite of their originating rationality to be taken on board. The opposite of their originating rationality included adopting VSM to achieve the purpose of being a successful chain of shopping malls, of department stores, warehouses, hypermarkets and specialist shops.

I invited participants of the workshop to consider what if all these excluded opposite originating rationality mentioned above were taken on board, based on their experience about taking on board the opposite of their originating rationality at the seventh workshop. That is, I invited participants of the workshop to envisage what they would do if they managed by using VSM the Yang-Ming branch like a shopping mall, a department store, a warehouse, a hypermart or a specialist shop and the AGSC like a chain of shopping malls, of department stores, of warehouses, of hypermarkets or of specialist shops. Because of the experience they had in the previous workshop, regarding applying VSM to achieve the purpose of being a successful chain of convenience stores and the purpose of warehouses, participants agreed that there were still many more rationalities which were excluded and concealed by their originating rationality to achieve their organisational purpose of being a successful chain of supermarkets and the opposite envisaged by their originating rationality to adopt VSM to achieve their purpose of being a successful chain of convenience stores.

After the discussion in which they tried to envisage to achieve these excluded opposite originating rationality raised in previous workshops, participants said that CI provided them with opportunities to see what they might do if they had the opposite of their originating rationality as their originating rationality. They also agreed their own originating rationality did conceal and exclude them from the opposite of their originating rationality. They believed that it was quite illuminating to envisage themselves to have the opposite of their originating rationality as their originating

rationality, to see what they would do then and to reconsider what they were doing for their own originating rationality.

Participants also said that they would like to learn from the opposite envisaged by their originating rationality in order to improve the achievement of their originating rationality. They said that they would pick out valuable points learned from the opposite envisaged by their originating rationality and implement these valuable points rather than simply planned for or reserved a half of their resources for these valuable points. I said to participants that, as we discussed in this workshop, there would always be some more rationalities which might become the opposites of their originating rationality that they were unable to merge into their own originating rationality. In addition, there would always be some more rationalities which might be irrelevant or unknown to their originating rationality. I continued by saying that this was why there were these two components - the opposite envisaged by one's originating rationality and the opposite irrelevant or unknown to one's originating rationality - in a purposeless system. I also said to them that that was why, as far as I was concerned, we could only *plan* for the opposite envisaged by our originating rationality and have a reserve for the opposite irrelevant or unknown to our originating rationality.

Participants said that through the learning process of CI they understood that their originating rationality could never be complete. However, they still would like to implement rather than simply plan for or reserve a half of their resources for the valuable points they had already learned from the opposites that had been envisaged in opposition to their originating rationality. I said to participants that the point was that they learned that their originating rationality was not complete, that there was some opposite of their originating rationality which they could only plan for (i.e., not implement) and that there were some opposite still irrelevant or unknown to their originating rationality. The question regarding how much resources needed to be planned for and how much resources needed to be reserved for the opposites that had

been envisaged in opposition to the originating rationality of participants, was a judgement which could be made among participants according to their situation.

The outcome of Workshop Seven was that participants became aware that there were still many more rationalities which were concealed and excluded by their originating rationality of adopting VSM to achieve their organisational purpose of being a successful chain of supermarkets and the opposite envisaged by their originating rationality to adopt VSM to achieve the purpose of being a successful chain of convenience stores. That is, participants became aware that there were still many more rationalities which were beyond what they could address through engaging and co-constructing their originating rationality consciously with the opposite irrelevant or unknown to their originating rationality. Therefore, although participants' understanding of the world was broadened, participants were cautious about their incomplete understanding of the world. In addition, they would like to learn from the opposites that had been envisaged in opposition to their originating rationality in the previous workshops organised by CI. They would also like to implement some valuable points suggested by the opposites that had been envisaged in opposition to their originating rationality rather than to simply plan for, or reserve a half of their resources for, these valuable points.

8.3.8. Workshop Eight

At the eighth workshop meeting of the CI project, I invited participants to consider the implementation of the Systems One to Five elements of different levels of recursion identified in the previous workshops and identified by different opposite rationalities. This workshop was a planned but optional workshop. As mentioned in the beginning of this section, because of the subsequent change of the numbering of workshops since Workshop Four, this optional workshop planned in my plan as

Workshop Seven became Workshop Eight in my CI project carried out in the AGSC. Also as mentioned in Chapter Seven, whether or not this workshop will take place depends on if participants would like to embody the concept of a purposeless system in their organisation. Since participants in the AGSC would like to implement the valuable points they learned from debating the concept of a purposeless system, I invited participants to this planned but optional workshop - i.e., the embodiment process of the CI project. I listed all the elements of Systems One to Five of different levels of recursion of the AGSC identified through opposite rationalities, which were raised by participants.

These elements were as follows:

- * that the branch needed to have frequent promotional events to attract its customers' attention but frequent promotional events meant that less manufacturers would sponsor each of these events;
- * the issue of giving each unit of the branch its own annual and monthly objectives of operating revenues;
- * that the foreman should trace the turnover rate (quantity sold per month over quantity stocked) of popular commodities to prevent them from going out of stock;
- * the problem of theft by the staff and customers;
- * the issue of having new target customers as their customers in the future;
- * that the branch manager was far too busy with the day-to-day management and he did not have enough time for finding new markets and new trends of commodities;
- * the issue that the information of new markets and new trends of commodities might be collected by the chain management and passed on to the branches so that all the branches might have unified policies towards new markets and new trends of commodities;

- * a structural confusion between the chain level and the corporate level regarding if the AGSC was a level of recursion or if it was a System Three element of the Ai-Guo Corporation;
- * the issue of having an assistant general manager who might deal with the day-to-day management of the four operating companies of the corporation;
- * the issue of attracting customers like young people below the age of thirty five or people who had immediate needs;
- * the issue of less brands under one commodity category;
- * that popular products in all units of their supermarket might be packed into large-quantity packs or that a new whole sale unit might be set up to display all the popular commodities which were packed into large-quantity packs; and
- * that they should promote their own private brand more strongly.

I went through all the elements one by one. Participants then picked out what they believed as problematic or in need of improvement. If there was any disagreement among participants about one particular element, participants would discuss it first. If agreement could not be reached among participants regarding whether or not to include that element for further implementation and improvement, participants agreed that the director general could make the decision.

What the participants picked out were the elements of Systems One to Five of different levels of recursion of the AGSC identified by different opposite rationalities, as shown in Figure 8.11 below. What was related to their originating rationality were that they would like an appliance unit or an appliance counter managed by an external company; to regard the AGSC as a System Three element rather than a level of recursion (i.e., rather than a viable system which has its own Systems Three, Four and Five function); the provision of the information of new markets and new commodity

trends from the corporate management; and the united promotional events organised by the corporate management. What was related to the opposite envisaged and taken on board by their originating rationality - i.e., to adopt VSM to achieve the purpose of being a successful chain of convenience stores - was that they picked out the review and gradual reduction of the number of brands under one single commodity category. What was related to the opposite irrelevant or unknown to their originating rationality was that they would like popular products in all units of their supermarket to be packed into large-quantity packs and more promotion of their own private brand, which was the way of management promoted by warehouse chains.

<p>The originating rationality of AGSC to achieve its organisational purpose of being a successful chain of supermarkets by adopting VSM.</p> <p>Participants would like an appliance unit or an appliance counter managed by an external company; to regard the AGSC as a System Three element rather than a level of recursion (i.e., rather than a viable system which has its own Systems Three, Four and Five function); the provision of the information of new markets and new commodity trends from the corporate management; and the united promotional events organised by the corporate management.</p>	<p>The opposite envisaged and taken on board by its originating rationality: to adopt VSM to achieve the purpose of being a successful chain of convenience stores.</p> <p>Participants would like a gradual reduction of the number of brands under one single commodity category.</p>
<p>The opposite irrelevant or unknown to its originating rationality: such as to adopt ways to achieve the purpose of being a successful chain of warehouses.</p> <p>They would like popular products in all units of their supermarket to be packed into large-quantity packs and more promotion of their own private brand, which was the way of management promoted by warehouse chains.</p>	

Figure 8.11: The elements of Systems One to Five of different levels of recursion of the AGSC identified by different opposite rationalities picked out by participants for further implementation and improvement in the embodiment process of the CI project.

Although the problem of theft by the staff was not chosen by participants for further improvement within this workshop - due to the management of the AGSC not wanting to address this problem publicly - the problem was intervened outside workshops. After the workshop, the corporate personnel manager told me that he found a speaker who had been running legal workshops for companies in the retail sector for

several years and that he had contacted the person to discuss the details of how the person might run legal workshops in the AGSC.

The outcome of Workshop Eight was that, in the embodiment process of the CI project, participants made commitments to implement and improve some elements of Systems One to Five at different levels of recursion of the AGSC identified in previous workshops by different opposite rationalities - i.e., by their originating rationality, the opposite envisaged and taken on board by their originating rationality and the opposite irrelevant to their originating rationality.

8.3.9. Workshop Nine

In the ninth workshop meeting of the CI project, I invited participants to reflect upon the whole CI project and the whole learning process of CI.

As described in Chapter Seven about CI, I invited participants of the workshop to reflect upon the following five questions. These questions and participants' reflections are shown below.

Question One: Can you see what was concealed and excluded by your originating rationality when you took on board the opposite envisaged by your originating rationality?

Participants said that they became aware that they used to dislike something because the thing was against their organisational purpose rather than the thing itself was unpleasant. For instance, they said that they used to regard that a narrow range of commodities was a fatal disadvantage. Now they understood that this was because they managed a supermarket rather than a convenience store. In addition, participants said

that they became aware that they used to like something because the thing was in agreement with the organisational purpose rather than the thing itself was pleasant. They said that, for instance, they used to be proud of the wide range of commodities sold in their supermarket. Now they understood that this was because they managed a supermarket rather than a convenience store. Participants now believed that the unpleasant thing might become pleasant if their organisational purpose was changed and the pleasant might become unpleasant if their organisational purpose was changed. They agreed that they were concealed by their originating rationality of adopting VSM to achieve their organisational purpose of being a successful chain of supermarkets. They also agreed that taking on board and affirming the opposite envisaged by their originating rationality to adopt VSM to achieve the purpose of being a successful chain of convenience stores provided them with the opportunity to see what otherwise would have been concealed and excluded by their originating rationality.

Question Two: Do you believe that you have a rationality which is not necessarily to be realised when you have a reserve for the opposite irrelevant or unknown to your originating rationality and what do you think about having a rationality which is not necessarily to be realised?

Participants would like to see CI as that it provided an opportunity of learning from the opposite envisaged by their originating rationality in order to achieve their originating rationality better rather than it made their rationality unnecessarily to be achieved. Participants believed that the AGSC in the end should still have one single merged purpose so that all the staff in the AGSC might concentrate their efforts to achieve the single merged purpose and to make the AGSC a successful chain of supermarkets. To take on board the opposite envisaged by their originating rationality enabled them to learn from the opposite envisaged by their originating rationality. They believed that the valuable points which they learned from the opposites that had been envisaged in relation to their originating rationality might be used to achieve their

originating rationality better. They said that they did not want their supermarket chain to fail. Rather, they would like to improve it continuously. Therefore, they would like their rationality of adopting VSM to achieve their organisational purpose of being a successful chain of supermarkets a rationality which could be achieved rather than which was not necessarily to be achieved.

Question Three: Do you think that the situation has been improved by CI?

Participants said that CI facilitated them to improve their situation in a way that they could learn from the opposite that had been envisaged in relation to their originating rationality in order to achieve better their originating rationality. Participants believed that CI provided them with an opportunity to see what they might do if they had their opposite originating rationality as their originating rationality. They also agreed their own originating rationality did conceal and exclude them from its opposite. They believed that the illuminating learning process of CI enabled them to pick out valuable points learned from the opposites that had been envisaged in relation to their originating rationality and implement these valuable points in order to improve their situation and to achieve their original purpose better.

Question Four: What do you think of CI?

Participants said that CI provided them with an opportunity to make the best judgement they could make according to the current knowledge available to them while knowing the current knowledge available to them to make that judgement was incomplete and might be overrode. Participants said that through the learning process of CI, they could learn from different opposite rationalities and make the best judgement according to these opposite rationalities that had been envisaged in the process. However, participants said that they knew there were still many more rationalities which were not raised in the workshop and which might override the rationality raised in the

process. They said that they made their judgement according to their best knowledge while knowing that their best knowledge might be overrode by other opposite rationalities. They said that CI gave them confidence and rendered them cautious about that confidence at the same time.

Question Five: Is there any comment you would like to make regarding the learning process of CI and the whole CI project?

Participants said that it was preferable at first to believe that they were absolutely right in the purpose which they would like to achieve and their originating rationality was perfect. However, after they had seen through the learning process of CI, their originating rationality did conceal and exclude its opposite. Taking on board the opposite envisaged by their originating rationality provided them with the opportunity that they might see what would had been otherwise concealed and excluded by their originating rationality. In addition, those pleasant or unpleasant ways of management were not purely because of themselves; they were pleasant or unpleasant because of the organisational purpose they defined.

The reflections upon these questions above shows that participants basically agreed that CI had facilitated them to improve their situation. CI is an intervention which facilitates participants to become aware that their own purpose and their rationality of adopting ways to achieve their purpose are not absolute. CI introduces a way to facilitate participants not to exclude and conceal from themselves the opposite of their originating rationality and ways to achieve the opposite of their purpose. After the CI project, participants agreed that their own purpose and their rationality of adopting ways to achieve their purpose should not be absolute. Participants of the workshops also agreed that the way in which CI introduced to facilitate them to reconsider the own purpose and their originating rationality, was quite helpful. Participants said that the most interesting thing which they had learned from start to finish was that what used to

be their problems were not problems if they had the opposite of their originating rationality as their originating rationality. For instance, in supermarket management, their customers were housewives and middle-aged people who were generally price-sensitive. Therefore, their problem was to try to have more promotional events to attract these customers' attention. However, in the management of convenience stores, there were generally no price reduction promotional events. Customers of convenience stores were young people below the age of thirty five or people who had immediate needs which must be satisfied within a short period of time. These customers were not price-sensitive and were willing to pay more to serve their immediate needs. Therefore, the price of commodities in convenience stores seldom went down for promotion. Participants also found out what they believed to be advantages were not advantages when they had the opposite of their originating rationality as their originating rationality. For instance, participants said that they used to be proud that the AGSC provided wide-ranged commodities for its customers and it also provided nearly ten brands under one single commodity category for its customers. However, wide-ranged commodities and many brands under one single commodity category were not advantages in the management of a convenience store chain.

The decision which participants made regarding their situation was that they would like to learn from the opposites that had been envisaged in opposition to their originating rationality in the previous workshops. They wanted to improve the achievement of their originating rationality by implementing those valuable points which they learned from the opposite envisaged by their originating rationality. That is, they would like to learn from the rationality of adopting VSM to achieve the purpose of being a successful chain of convenience stores and of warehouses in order to achieve better their rationality of adopting VSM to achieve their purpose of being a successful chain of supermarkets. Although participants did not plan to set up a convenience store chain or reserve a half of their resources for setting up a warehouse chain, they

understood that their rationality of adopting VSM to achieve their purpose of being a successful chain of supermarkets was not absolute and could be overrode.

The outcome of Workshop Nine was that participants agreed that the learning process of CI had facilitated them to improve their understanding of possible options for acting in their situation. Participants agreed that the learning process of CI facilitated them to broaden their understanding of the world through co-constructing it with the opposite envisaged and taken on board by their originating rationality and with the opposite irrelevant or unknown to their originating rationality, through raising the issue of a purposeless system and through facilitating the mutual learning among them. Participants also agreed that the learning process of CI facilitated them to reconsider their originating rationality; to see what would have otherwise been concealed by their originating rationality; and to make their own decision regarding their further action towards their originating rationality. Participants also agreed that the learning process of CI facilitated them to remain cautious about their broadened understanding of the world and about their decision and their further action towards their originating rationality after the CI project.

8.4. SOME REFLECTIONS UPON MY CI PROJECT IN TAIWAN

8.4.1. A note on participants' responses in relation to the concept of a purposeless system

As mentioned in Chapter Seven, CI does not set up an idealised standard regarding how participants should react in relation to the concept of a purposeless system. After a CI project, participants make their own decision according to their own situation regarding their further action towards their originating rationality. CI argues that participants' decision and action towards their originating rationality is what needs

to be considered by participants according to their own situation. CI does not put aside what is decided by participants according to their own situation by itself setting up an idealised standard of participants' decision and action regarding how participants should react in relation to the concept of a purposeless system. The concept of a purposeless system is not a concept which is utilised to *equate* participants' decision and action. Therefore no participants' decision and action turn out to be *a correct, reliable, and faithful image* of the concept of a purposeless system. As Nietzsche (1980, pp. 45-46) says:

Every concept originates through our equating what is unequal. No leaf ever wholly equals another, and the concept 'leaf' is formed through an arbitrary abstraction from these individual differences, through forgetting the distinctions; and now it gives rise to the idea that in nature there might be something besides the leaves which would be 'leaf' - some kind of original form after which all leaves have been woven, marked, copied, colored, curled, and painted, but by unskilled hands, so that no copy turned out to be a correct, reliable, and faithful image of the original form.

Therefore, to set up an idealised standard of participants' decisions and actions comes from abstracting from participants' individual differences regardless of participants' situations. It also comes from the idea that in nature, there might be something besides participants' decisions and actions which should be the ideal decisions and actions of participants. Thus, CI does not provide an idealised standard regarding how participants should react in relation to the concept of a purposeless system. My reflections upon my own CI project in Taiwan is based on this argument. My reflections after having undertaken the project are explored in the following subsections.

8.4.2. My reflections upon the issue of participants' "rational framework"

In their situation, participants decided to address one merged and broadened rationality rather than two rationalities in opposition in their rational framework. As mentioned above, in the ninth workshop participants believed that in the end they should still have a merged purpose for the AGSC, so that all the staff might work together to achieve that merged purpose and to make the AGSC a successful company. Participants did not want that their originating rationality of adopting VSM to achieve their purpose of being a successful chain of supermarkets became a rationality which was not necessarily to be achieved. In the workshops, the opposite envisaged and taken on board by participants' originating rationality was to adopt VSM to achieve the purpose of being a successful chain of convenience stores. However, participants did not decide to plan for the situation in which they were going to manage a successful chain of convenience stores. Rather, they would like to achieve better their originating rationality by learning valuable points from the opposite envisaged and taken on board by their originating rationality. After my CI project, participants' rational framework addresses their originating rationality and those valuable points which they learned from the opposite envisaged and taken on board by their originating rationality which might facilitate them to achieve better their originating rationality. Therefore, in their situation, participants decided to address in their rational framework one merged and broadened rationality rather than two rationalities in opposition.

In addition, participants' openness towards what was seemingly opposite to their originating rationality makes participants' rational framework an *evolving rational framework*. Despite that participants decided to address in their rational framework one merged rationality rather than two rationalities in opposition, they became more cautious about their originating rationality and more willing to listen to what was seemingly opposite to their originating rationality. As mentioned above in previous sections about my CI project in Taiwan, participants became aware that what used to be

their problems were not problems if they had the opposite of their rationality as their originating rationality and that what used to be their advantages were not advantages if they had the opposite of their rationality as their originating rationality. For instance, participants became aware that to have plenty price-reduction promotional events were the problems for the managing of supermarkets, but they were not problems for the managing of convenience stores; and that wide-ranged commodities and many brands under one commodity category were the advantages for the managing of supermarkets, but they were not advantages for the managing of convenience stores. Participants saw what would have otherwise been concealed and excluded by their originating rationality and they became more cautious about their originating rationality. In the embodiment process of my CI project, participants decided to review and gradually reduce the number of brands under one commodity category in their supermarket chain, which was opposite to their originating rationality. Participants became more willing to listen to what was seemingly opposite to their originating rationality. I suggest that participants' openness towards what was seemingly opposite to their originating rationality makes participants' rational framework an evolving rational framework.

Participants' rational framework after my CI project is expressed in Figure 8.11. This figure depicts: participants' originating rationality (the grid without shadow); those valuable points which participants learned from the opposite envisaged and taken on board by their originating rationality which might facilitate them to achieve better their originating rationality (the cloud with light shadow); and their openness towards the opposite envisaged and taken on board by their originating rationality (the dashed arrows). This openness is in relation to the rational framework of a purposeless system which addresses participants' originating rationality and the opposite envisaged and taken on board by their originating rationality (both the grids with and without shadow).

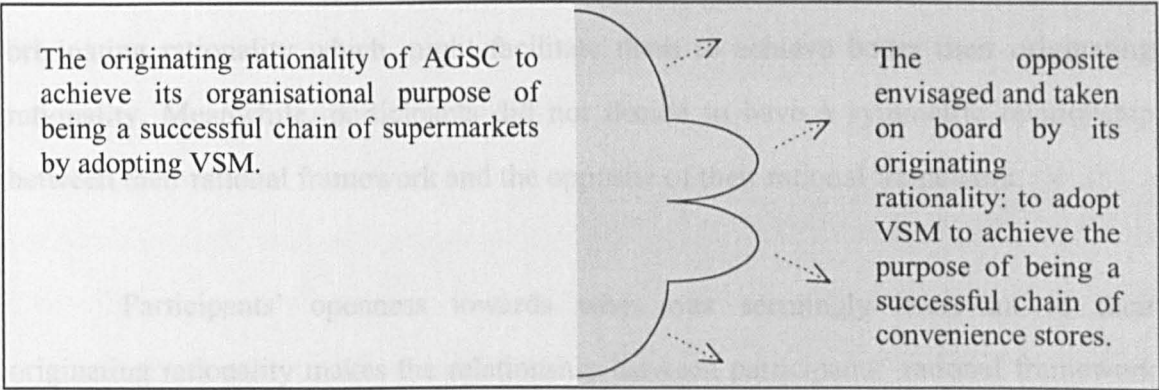


Figure 8.12: Participants' rational framework after my CI project, in relation to the rational framework of a purposeless system. Participants' rational framework after my CI project addresses participants' originating rationality (the grid without shadow); those valuable points which participants learned from the opposite envisaged and taken on board by their originating rationality which might facilitate them to achieve better their originating rationality (the cloud with light shadow); and their openness towards the opposite envisaged and taken on board by their originating rationality (the dashed arrows). The rational framework of a purposeless system addresses participants' originating rationality and the opposite envisaged and taken on board by their originating rationality (both the grids with and without shadow).

8.4.3. My reflections upon the issue of the relationship between participants' rational framework and the opposite of participants' rational framework

In their situation, participants decided to achieve their originating rationality better by learning valuable points from the opposite of their rational framework (i.e., the opposite irrelevant to their originating rationality), rather than deciding to reserve a half of their resources for the opposite of their rational framework. As mentioned above, participants did not reserve a half of their resources for the situation in which they could not know in advance such as to manage a successful chain of warehouses. Participants still preferred their originating rationality to reserving a half of their resources for the opposite irrelevant or unknown to their originating rationality after my CI project. Participants would like to achieve their originating rationality better by learning valuable points from the opposite irrelevant to their originating rationality (i.e., the opposite of their rational framework) such as the management of warehouse chains. Therefore, in their situation, participants' rational framework also addressed those valuable points which participants learned from the opposite irrelevant to their

originating rationality which might facilitate them to achieve better their originating rationality. Meanwhile, participants did not decide to have a symmetric relationship between their rational framework and the opposite of their rational framework.

Participants' openness towards what was seemingly irrelevant to their originating rationality makes the relationship between participants' rational framework and the opposite of participants' rational framework an *evolving relationship*. Despite that participants decided to achieve better their originating rationality and that they did not decide to have a symmetric relationship between their rational framework and the opposite of their rational framework, they became more cautious about their rational framework and more willing to listen to what was seemingly irrelevant to their originating rationality (i.e., the opposite of their rational framework). As mentioned above in previous sections about my CI project in Taiwan, participants became aware that there were still many more rationalities which were beyond their originating rationality and the opposite envisaged and taken on board by their originating rationality and which they had not taken in consideration. Participants became aware that their rational framework could never be complete and they became more cautious about their rational framework. In the embodiment process of my CI project, participants also decided to have popular commodities in their supermarket chain packed as large-quantity packs and decided to promote more strongly their own private brand. Large-quantity packs and the strong promotion of private brands were what participants learned from the managing of warehouse chains. Therefore, participants became more willing to listen to what was not very relevant to their originating rationality. Participants' openness towards what was not very relevant to their originating rationality makes the relationship between participants' rational framework and the opposite of participants' rational framework an evolving relationship.

The evolving relationship between participants' rational framework after my CI project and the opposite of participants' rational framework is shown below in Figure

8.13. In this figure, we can picture the following: participants' rational framework after my CI project addresses participants' originating rationality (the grid without shadow); those valuable points which participants learned from the opposite envisaged and taken on board by their originating rationality which might facilitate them to achieve better their originating rationality (the cloud with light shadow); their openness towards the opposite envisaged and taken on board by their originating rationality (the dashed arrows in the grid with light shadow); those valuable points which participants learned from the opposite irrelevant or unknown to their originating rationality which might facilitate them to achieve better their originating rationality (the cloud with dark shadow); and their openness towards the opposite irrelevant or unknown to their originating rationality (the dashed arrows in the grid with dark shadow). The opposite of participants' rational framework after my CI project is what is beyond participants' rational framework (the grid with light shadow but without the cloud with the light shadow and the grid with dark shadow but without the cloud with dark shadow). The dashed arrows indicate that the relationship between participants' rational framework after my CI project and the opposite of participants' rational framework is evolving.

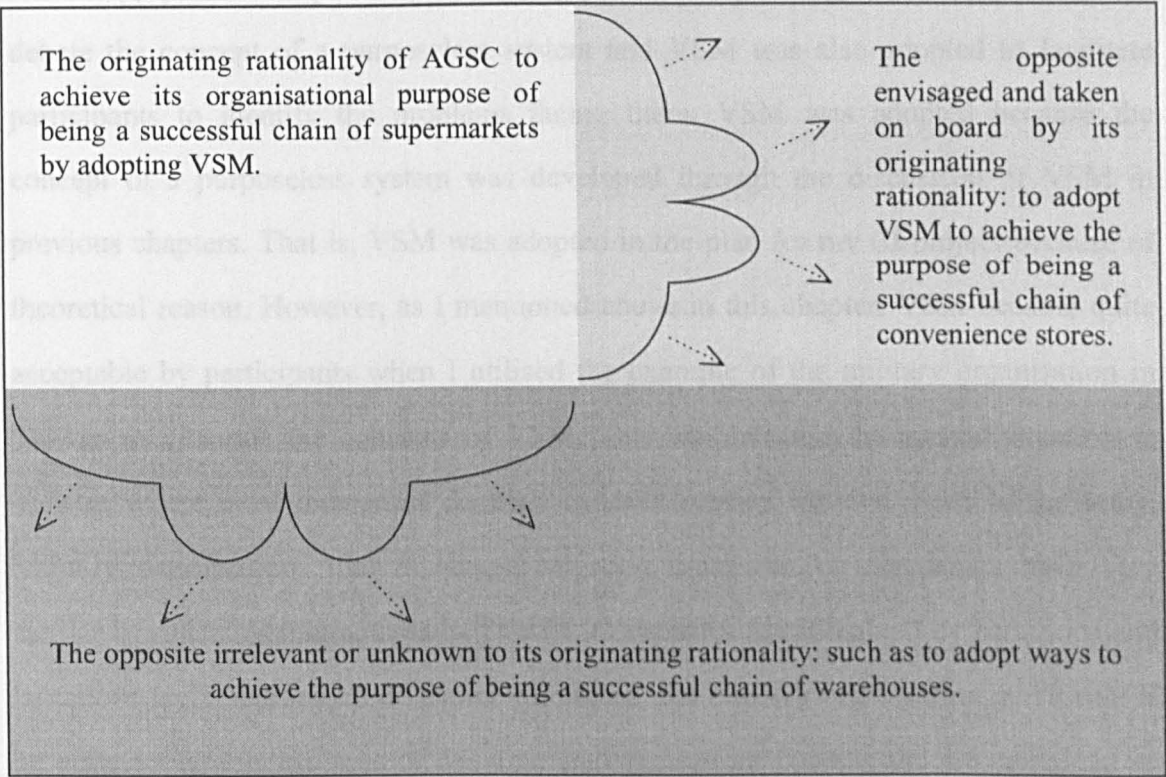


Figure 8.13: The evolving relationship between participants' rational framework after my CI project and the opposite of participants' rational framework. Participants' rational framework after my CI project addresses participants' originating rationality (the grid without shadow); those valuable points which participants learned from the opposite envisaged and taken on board by their originating rationality which might facilitate them to achieve better their originating rationality (the cloud with light shadow); and their openness towards the opposite envisaged and taken on board by their originating rationality (the dashed arrows in the grid with light shadow); and those valuable points which participants learned from the opposite irrelevant or unknown to their originating rationality which might facilitate them to achieve better their originating rationality (the cloud with dark shadow); and their openness towards the opposite irrelevant or unknown to their originating rationality (the dashed arrows in the grid with dark shadow). The opposite of participants' rational framework is what is beyond participants' rational framework (the grid with light shadow but without the cloud with the light shadow and the grid with dark shadow but without the cloud with dark shadow). The dashed arrows indicate that the relationship between participants' rational framework after my CI project and the opposite of participants' rational framework is evolving.

8.4.4. My reflections upon the originating rationality of the plan for my CI project

In their situation, participants were quite acceptable towards adopting VSM to achieve their identified organisational purpose and to identify the problems facing them. As mentioned in Chapter Seven, the originating rationality of the plan for my CI project

was to apply the concept of a purposeless system to organising a debate which was to debate the concept of a purposeless system and VSM was also adopted to facilitate participants to identify the problems facing them. VSM was adopted because the concept of a purposeless system was developed through the discussion of VSM in previous chapters. That is, VSM was adopted in the plan for my CI project because of theoretical reason. However, as I mentioned above in this chapter, VSM became quite acceptable by participants when I utilised the example of the military organisation in Taiwan to illustrate the concepts of VSM. This was because the special situation in Taiwan where most men must do their national service for two years in the army. Military organisations like divisions, brigades, battalions or companies have very similar organisational structures in Taiwan. Companies are contained by battalions and battalions are contained by divisions. Therefore, the military organisation in Taiwan is an quite acceptable example of that similar organisations contain and are contained by similar organisations for participants in Taiwan who are familiar with the Taiwanese military organisation.

The result of my CI project in Taiwan shows that the example of the Taiwanese military organisation might make VSM quite acceptable by participants in Taiwan; that VSM did not need confidential statistics of participants' organisation in order to carry out an in-depth analysis; and that VSM and the concept of a purposeless system work quite well together to facilitate participants to improve their situation by broadening their understanding of the world, making their own decision according to their own situation regarding further actions towards their originating rationality, and becoming cautious about their broadened understanding of the world and about their decision and action towards their originating rationality. Therefore, it is possible to continue to adopt VSM (for example in another CI project) not only because of theoretical reasons but also of practical reasons.

However, despite that it is possible to continue to adopt VSM for both theoretical and practical reasons, VSM should not be considered as the only way of locating and conceptualising the problems facing participants. As my after-workshop conversations with some participants about the Systems Two to Five elements written by them on paper showed, participants had had solutions to some problems facing them before I introduced VSM to them. Therefore, VSM should not be regarded as the only way of locating and conceptualising participants' problems.

8.4.5. My reflections upon the opposite envisaged and taken on board by the originating rationality of the plan for my CI project

In their situation, participants decided not only to have a process to debate the concept of a purposeless system, but also to embody a part of the concept of a purposeless system in their organisation. As mentioned in Chapter Seven, the originating rationality of the plan for my CI project is to apply the concept of a purposeless system to organising a debate among participants and is not to embody the concept of a purposeless system in participants' organisation. In the meantime, the plan for my CI project takes on board the embodiment process by planning for it. In my CI project in Taiwan, this planned embodiment process was actually implemented and it was not a plan which remained not implemented. Therefore, to take on board the opposite of my originating rationality by planning for the embodiment process to embody the concept of a purposeless system in participants' organisation was quite important for my CI project in Taiwan.

8.4.6. My reflections upon the opposite irrelevant or unknown to the originating rationality of the plan for my CI project

My CI project carried out in the AGSC did not utilise much of the resources reserved for it. As mentioned in Chapter Seven, there were eight unplanned workshops reserved for what could not be known by the originating rationality of the plan for my CI project in advance. My CI project took up nine workshops instead of eight workshops which were planned in advance. That is, my CI project utilised one of the eight unplanned workshops. My CI project in Taiwan went quite smoothly as planned. One of the reasons is that participants demonstrated high acceptance towards VSM, which reduced the number of unplanned workshops I might spend on teaching them the concepts of VSM. Another reason is that I gained the full support from the director general of the AGSC. Without this support, participants might easily retreat from the CI project because they were all very busy themselves. Therefore, I will need to take into consideration the effect of the full support which I gained from the leader of participants on this CI project when I do my next CI project in a different setting. That is, if I receive less support from the leader of participants, I will expect that my CI project will utilise more unplanned workshops.

Although what could not be known in advance by the originating rationality of the plan for my CI project did not utilise much of the resources reserved for the project - i.e., the eight unplanned workshops - it utilised “resources” in a different way. The intervention of the problem of the theft by the staff happened outside workshops; and my after-workshop conversations with some participants about the Systems Two to Five elements facilitated me to gain supports of these participants towards my CI project. In addition, between the end of each workshop and the beginning of the next workshop, my mind was devoted fully to making sense of participants’ reaction in relation to the concept of purposeless system in that workshop. The resources of my brain energy were also utilised by my CI project not only within but also without workshops. Therefore, to

reserve a half of tangible resources such as eight unplanned workshops for the opposite irrelevant or unknown to the originating rationality of the plan for my CI project, did not mean that all the unknown situations might be or must be addressed by these tangible resources reserved. These tangible resources such as these eight unplanned workshops were reserved to begin to explore what is unknown and not reserved to end it in the first place. Thus, to reserve a half of tangible resources such as eight unplanned workshops is also regarded by me after my CI project as one of many ways in which a half of resources may be reserved for the opposite irrelevant or unknown to the originating rationality of the plan for my CI project. For instance, after-workshop conversations, outside workshop meetings or my brain energy utilised between workshops may also be considered as resources which needed to be reserved.

8.5. CONCLUSION

In this chapter, I have shown that the learning process of CI might facilitate participants to improve their understanding of possible options for acting in their situation, through a CI project carried out in a supermarket chain in Taiwan. Through showing how CI applied the concept of a purposeless system to organising a CI project among participants in the supermarket chain and to organising a debate in this CI project, I have shown that the learning process of CI might facilitate participants in the supermarket chain to broaden their understanding of the world; to reconsider their originating rationality; to see what would have otherwise been concealed by their originating rationality; to make their own decision regarding their further action towards their originating rationality; to remain cautious about their broadened understanding of the world and about their decision and their further action towards their originating rationality after the CI project. This is because the learning process of CI provided participants with the opportunity to co-construct their originating rationality with the opposite envisaged and taken on board by their originating rationality and with the

opposite irrelevant or unknown to their originating rationality, through raising the issue of a purposeless system and through facilitating the mutual learning among them.

The way in which CI applied the concept of a purposeless system to organising my CI project in Ai-Guo Supermarket Chain (AGSC) in Taiwan was as follows: the originating rationality of CI was to adopt the concept of a purposeless system as a framework to organise a debate among participants in the AGSC regarding reconsidering their purpose; the opposite envisaged and taken on board by the originating rationality was to embody the concept of a purposeless system in the AGSC; and the opposite irrelevant or unknown to the originating rationality of CI was to have a reserve of a half of the research time of my CI project.

In the debate organised by the concept of a purposeless system, the debate might facilitate participants to reconsider their purpose and to see what would have been otherwise concealed and excluded by their purpose through discussing the components of a purposeless system in the debate. The components of a purposeless system discussed in the debate were participants' originating rationality, the opposite envisaged and taken on board by participants' originating rationality and the opposite irrelevant and unknown to participants' originating rationality.

There were one preparatory week and nine workshops in my CI project carried out in the AGSC. In this project, I have organised a debate process among participants which was to discuss the concept of a purposeless system. This debate process was carried out from Workshop One to Workshop Seven. From Workshop One to Workshop Four, the debate process of this CI project was to facilitate participants to identify their originating rationality. From Workshop Five to Workshop Six, the debate process of this CI project facilitated participants to identify the opposite of their originating rationality which they would like to take on board and to facilitate them to engage consciously their originating rationality with the opposite envisaged and taken on board

by their originating rationality. In Workshop Seven, the debate process of this CI project facilitated participants to engage consciously their originating rationality with the opposite irrelevant to their originating rationality. In the meantime, participants in the AGSC decided to embody a part of the concept of a purposeless system in their organisation and Workshop Eight was the embodiment process of this CI project which facilitated participants to do this.

In Workshop Nine, I facilitated participants to reflect upon what they thought about the whole learning process of the CI project. Participants basically agreed that the learning process of CI had facilitated them to improve their situation. Participants agreed that the learning process of CI facilitated them to broaden their understanding of the world through co-constructing it with the opposite envisaged and taken on board by their originating rationality and with the opposite irrelevant or unknown to their originating rationality, through raising the issue of a purposeless system and through facilitating the mutual learning among them. Participants also agreed that the learning process of CI facilitated them to reconsider their originating rationality; to see what would have otherwise been concealed by their originating rationality; and to make their own decision regarding their further action towards their originating rationality. Participants agreed too that the learning process of CI facilitated them to remain cautious about their broadened understanding of the world and about their decision and their further action towards their originating rationality after the CI project.

Finally, I reflected upon my CI project in Taiwan. CI argues that to set up an idealised standard of participants' decisions and actions comes from abstracting participants' individual differences regardless of participants' situations. It also comes from the idea that in nature, there might be something besides participants' decisions and actions which should be the ideal decisions and actions of participants. Thus, CI does not provide an idealised standard regarding how participants should react in

relation to the concept of a purposeless system and my reflections upon my own CI project in Taiwan is based on this argument.

My reflections upon the issue of participants' rational framework after my CI project in Taiwan are as follows: In their situation, participants decided to address one merged and broadened rationality rather than two rationalities in oppositions in their rational framework. After my CI project, participants' rational framework addresses their originating rationality and those valuable points which they learned from the opposite envisaged and taken on board by their originating rationality which might facilitate them to achieve better their originating rationality. Participants saw what would have otherwise been concealed and excluded by their originating rationality; they became more cautious about their originating rationality; and they became more willing to listen to what was seemingly opposite to their originating rationality. Therefore, participants' openness towards what was seemingly opposite to their originating rationality made participants' rational framework as an *evolving rational framework* rather than a fixed one.

My reflections upon the issue of the relationship between participants' rational framework and the opposite of participants' rational framework after my CI project in Taiwan are as follows: In their situation, participants decided to achieve their originating rationality better by learning valuable points from the opposite of their rational framework (i.e., the opposite irrelevant to their originating rationality) rather than decided to reserve a half of their resources for the opposite of their rational framework. Participants still preferred their originating rationality to reserving a half of their resources for the opposite irrelevant or unknown to their originating rationality after my CI project. That is, participants did not decide to have a symmetric relationship between their rational framework and the opposite of their rational framework. Participants' openness towards what was seemingly irrelevant to their originating rationality led me to define the relationship between participants' rational framework and the opposite of

participants' rational framework as an *evolving relationship*. Participants became aware that there were still many more rationalities which were beyond their originating rationality and the opposite envisaged and taken on board by their originating rationality and which they had not taken in consideration; they became aware that their rational framework could never be complete; they became more cautious about their rational framework; and they became more willing to listen to what was not very relevant to their originating rationality. Therefore, participants' openness towards what was not very relevant to their originating rationality led me to define the relationship between participants' rational framework and the opposite of participants' rational framework an evolving relationship rather than a fixed one.

My reflections upon the originating rationality of the plan for my CI project, after my CI project in Taiwan are as follows: In their situation, participants were quite acceptable towards adopting VSM to achieve their identified organisational purpose and to identify the problems facing them. VSM is adopted because the concept of a purposeless system was developed through the discussion of VSM in previous chapters. That is, VSM is adopted in the plan for my CI project because of theoretical reason. However, the result of my CI project in Taiwan shows that the example of the Taiwanese military organisation might make VSM quite acceptable by participants in Taiwan; that VSM did not need confidential statistics of participants' organisation in order to carry out an in-depth analysis; and that VSM and the concept of a purposeless system work quite well together to facilitate participants to improve their situation by broadening their understanding of the world, making their own decision according to their own situation regarding further actions towards their originating rationality, and becoming cautious about their broadened understanding of the world and about their decision and action towards their originating rationality. Therefore, it is possible to continue to adopt VSM (for example in another CI project) not only because of theoretical reasons but also of practical reasons. However, despite that it is possible to continue to adopt VSM for both theoretical and practical reasons, VSM should not be

considered as the only way of locating and conceptualising the problems facing participants.

My reflections upon the opposite envisaged and taken on board by the originating rationality of the plan for my CI project, after my CI project in Taiwan are as follows: In their situation, participants decided not only to have a process to debate the concept of a purposeless system, but also to embody a part of the concept of a purposeless system in their organisation. In my CI project in Taiwan, the planned embodiment process was actually implemented rather than remained not implemented; and to take on board the opposite of my originating rationality by planning for the embodiment process to embody the concept of a purposeless system in participants' organisation was quite important for my CI project in Taiwan. Therefore, my next CI project could still take on board the opposite of the originating rationality by planning for the embodiment process to embody the concept of a purposeless system in participants' organisation.

My reflections upon the opposite irrelevant or unknown to the originating rationality of the plan for my CI project, after my CI project in Taiwan are as follows: In their situation, participants did not utilise much of the resources reserved for the CI project. My CI project took up nine workshops instead of eight workshops which were planned in advance. That is, my CI project utilised one of the eight unplanned workshops. My CI project in Taiwan went quite smoothly as planned. One of the reasons is that participants demonstrated high acceptance towards VSM. Another reason is that I gained the full support from the director general of the AGSC. Therefore, I will need to take into consideration the effect of the full support which I gained from the leader of participants on this CI project when I do my next CI project in a different setting. That is, if I receive less support from the leader of participants, I will expect that my CI project will utilise more unplanned workshops.

However, although what could not be known in advance by the originating rationality of the plan for my CI project did not utilise much of the resources reserved for the project - i.e., the eight unplanned workshops - it utilised “resources” in a different way. To reserve a half of tangible resources such as eight unplanned workshops for the opposite irrelevant or unknown to the originating rationality of the plan for my CI project, did not mean that all the unknown situations might be or must be addressed by these tangible resources reserved. These reserved tangible resources such as these eight unplanned workshops were reserved to begin to explore what is unknown and not reserved to end it in the first place. Thus, to reserve a half of tangible resources such as eight unplanned workshops is also regarded by me after my CI project as one of many ways in which a half of resources may be reserved for the opposite irrelevant or unknown to the originating rationality of the plan for my CI project.

Chapter Nine: Conclusion

9.1. INTRODUCTION

This thesis has argued that there is a need for a conscious and continuous complementation to our understanding of the world, no matter how broad our understanding of the world has been. By the word “Complementary”, this thesis makes clear the incompleteness of our understanding of the world; and that our incomplete understanding needs complementation, no matter how broad it has been. The intervention suggested by this thesis is to complement consciously and continuously one’s understanding of the world. This implies complementing one’s originating rationality with other components of a purposeless system in order to facilitate one to reconsider this rationality and to see what would otherwise have been concealed and excluded by it. I organised my discussion by locating components of a purposeless system as:

- * one’s originating rationality;
- * the opposite envisaged and taken on board; and
- * the opposite irrelevant or unknown to one’s originating rationality.

In this thesis, in line with a constructivist argument, I have proposed the need of openness towards alternatives and of taking on board opposition; and I have further proposed the argument that the link between opposites is systemic. I have addressed the systemic link between opposites with reference to a revisitation of VSM and SD. In the course of the discussion, I have proposed a concept of systems thinking named a purposeless system and proposed a purposeless system approach - Complementary Intervention. I have reported the result of a Complementary Intervention project carried

out in a supermarket chain in Taiwan. I used the case of the supermarket chain to show how CI may facilitate one to reconsider one's originating rationality; to see what would otherwise have been concealed and excluded by one's originating rationality; to broaden one's understanding of the world; to make one's decision according to one's situation regarding further action towards one's originating rationality; and to become cautious about one's broadened understanding of the world and about one's decision and further action. Thereby, CI provides one with the opportunity to accept the limitation of one's understanding of the world and of one's action; to accept the need to open oneself up to news springing from the opposites of one's understanding of the world and one's action; to accept the continued partiality of one's understanding of the world and of one's action; and to complement one's understanding of the world and one's action with their opposites. I will show later in this chapter how I have proposed these arguments. Before that, I would like to reflect upon the research issues which the thesis set out to explore, and upon the research process through which these issues were addressed.

9.2. MY REFLECTIONS UPON THE RESEARCH ISSUES AND THE RESEARCH PROCESS OF THE THESIS

As mentioned in Chapter One, the research issues of the thesis are as follows:

1. The first issue concerns how one can undertake a critique of action research and a revisitation of systems thinking in the context of developing the concept of a purposeless system;
2. Arising out of 1, the next issue is to develop a theoretical understanding of the concept of a purposeless system;
3. Arising out of 2, the next issue is to explore how the concept of a purposeless system may be applied.

The process of exploring these issues makes both a theoretical and practical contribution to the literature. By exploring what theorising may occur through the critique of the literature of action research and through the revisitation of the literature of systems thinking, a new concept of systems thinking named a purposeless system has been developed. Therefore, a contribution is made to theory. By exploring how the theoretical development (i.e. the development of the concept of a purposeless system) may be applied to a case and what theorising may occur through the theoretical relevance of the case, a purposeless system approach named Complementary Intervention has been proposed. How the theorising of and the application of the concept of a purposeless system are related, is also explained. Therefore, a contribution is made to practice, too. Thus, I may arrive at the suggestion that the research issues of the thesis were worthy of exploration and the research process aimed at addressing them did, indeed, work to address them.

However, I suggest that there are still alternative ways of organising the discussion of the systemic link between opposites and that some other theorising might have occurred through these alternatives. In this thesis, the research process was to see what theorising might occur by organising the discussion of the systemic link between opposites through making reference to and revisiting the ideas of the VSM and the proposals of SD. Alternative research processes may be to organise the discussion of the systemic link between opposites through making reference to and revisiting VSM and, for instance, Soft Systems Methodology (SSM) (Checkland, 1981, 1985, 1989a,b; Checkland and Scholes, 1990); SD and SSM; or some other two approaches in the literature of systems thinking. In the course of the research process of the thesis, the

concept of a purposeless system was developed through making reference to and revisiting VSM and SD and it was suggested that one could arrive at the concept of a purposeless system through reconsidering how purposes are defined in these approaches. However, this way of developing the concept impacted on the manner in which it became defined by me and utilised in my CI practice. It is possible that had I chosen to discuss, say, VSM and SSM, I would have developed the concept of a purposeless system by focusing more on the varied ways in which participants may define their purposes. This might have meant that my discussion of people's "originating rationality" and of opposition thereto would have incorporated a concern with the process by which people work with differences of vision as they define what they see as workable purposes. It is quite possible and indeed likely that this might affect the theoretical development of the concept of a purposeless system. Therefore, a work of value for further research may be to explore what theorising may occur through the alternative research processes mentioned above, i.e. through organising the discussion of the systemic link between opposites by making reference to and revisiting, say, VSM and SSM; SD and SSM; or some other two (or more) approaches in the literature of systems thinking.

Then I would like to reflect upon the research process of having an informal pilot study prior to my CI research project. This pilot study was aimed at facilitating me to explore what participants might think about a debate organised around the implied notion of a purposeless system (without introducing explicitly the components of a purposeless system in the discussion). It was also aimed at facilitating me to explore what participants might learn through this debate and to practise the skill of conducting

my CI research project. The result of this study showed that debating the concept of a purposeless system was able to facilitate participants to reconsider (what I call) their originating rationality through showing them what was beyond their originating rationality. Therefore, this pilot study did help, in the sense that it gave me confidence in debating the concept of a purposeless system also in the context of my research project. It also helped in the sense that it gave me some ideas about what could happen when participants debated the concept explicitly in my research project, and in the sense that I could practise my skill in conducting my research project.

I would like to reflect upon the extent to which the workability of my research project - which adopts VSM to facilitate participants in Taiwan to address the problems facing them - may be applied to other contexts. The research project carried out in a supermarket chain in Taiwan was a part of the research process, aimed at explaining how the theorising of and the application of the concept of a purposeless system were related. In that project, VSM was adopted to facilitate participants in Taiwan to address the problems facing them because of a theoretical reason i.e. because the concept of a purposeless system was developed partly through the discussion of VSM in the rest of the thesis. Although the concept of a purposeless system was developed also through the discussion of SD, SD was not adopted to facilitate participants in Taiwan in that project because of the access problem mentioned earlier in Chapter Seven. Participants in Taiwan demonstrated high acceptance towards the ideas of the VSM when I used the example of the Taiwanese military organisation to introduce these ideas. The historical background of participants in Taiwan, where most men in Taiwan have at least two-year experience in the army and women have their family, relatives, or friends in the army,

had a considerable impact on the success of my research project. However, this background may cast light on the concern regarding the situation where VSM is to be introduced to participants in other contexts, who are not necessarily familiar with military organisations, such as participants in the UK. When this is the case, I suggest that some additional efforts should be made to develop another way of introducing the ideas of the VSM to participants in order to make these ideas easily accessible to them.

I would also like to reflect upon the way in which my research project was evaluated. Through the research project carried out in Taiwan, I show an alternative way of “evaluating” a research project. This “evaluation” takes the form of participants’ *reflections* in a workshop upon the whole process of the research project and the researcher’s *reflections* after the workshop upon the project. As mentioned in Chapter Eight, five questions regarding what participants had learned from debating the issue of a purposeless system, and what participants thought of CI and of this project, were raised in a workshop to facilitate participants’ reflections. Therefore, my way of evaluating my research project was to use a workshop to provide participants with the opportunity to reflect upon what they had learned from this project, i.e. to reflect upon the experience of thinking about having a purpose which is not necessarily to be achieved and reconsidering their purpose originally agreed; upon whether or not this project facilitated their learning; and upon the whole process of the project. As a researcher, I did not comment on participants’ reflections in the workshop as these were made by participants according to their situation.

As a researcher, I also learned from conducting this project. My own reflections were made after the workshop, upon what I learned through conducting this project regarding the application of the concept of a purposeless system to organising a research project and a debate around such a concept in that project; regarding what the concept might mean to participants; and regarding what this concept meant to me after the project. Therefore, participants' reflections and my own reflections were made on the basis that there was no idealised standard set up to evaluate and unify participants' actions. Thus, I would term these reflections without an idealised standard set up for depicting and evaluating participants' actions as an alternative way of "evaluation", which is an alternative to the way of evaluating a research project according to how well the project facilitates participants to achieve their defined purpose as suggested by action research.

From this perspective, a work of value for further research is to consider the application of CI in conjunction with action research. When I argue that CI is a research alternative to conventional action research, I mean that CI and action research may learn from each other. Through the CI research project carried out in Taiwan, I showed the possibility of facilitating participants without setting up an idealised standard to evaluate participants' actions. I also provided participants with the opportunity to think about what it is like to have a purpose which is not necessarily to be achieved and to reconsider their purpose originally agreed. However, I by no means suggest that participants must never define their purpose and they must not evaluate their actions according to their purpose defined. What I showed through the CI project was that it is *possible* to facilitate participants through not evaluating their actions according to their

purpose(s) defined. However, as action research studies show, it is also possible to facilitate action according to defined purpose(s). Thus, it seems that it is possible to facilitate participants both through and not through evaluating participants' actions according to purpose(s) defined. From this perspective, I suggest a work of value for further research is to consider the possibility of the application of CI in conjunction with action research in a research project and to explore what theorising may occur through considering this possibility.

Finally, I would like to reflect upon the extent to which the concept of a purposeless system and its practice are practical. As the course of the research process of developing and applying the concept demonstrated, the practicality of the concept and its practice comes from the argument that there can be many opposites of a purpose concealed and excluded by that very purpose. Through showing the concealment and exclusion made by a purpose, I suggest that it is not so self-evidently practical to try hard to achieve a purpose. I arrive at alternative ways of operating in the world and of conducting a research which are guided by the concept of having a purpose (or purposes) not necessarily to be achieved. In theory, the concept of a purposeless system casts light on the components of a purposeless system, referring to the opposite envisaged and taken on board by one's originating rationality and the opposite irrelevant or unknown to one's originating rationality, which tend to be concealed and excluded in the managerial context. The concept also casts light on their systemic link with one's originating rationality, and on the symmetric relationship between opposites. It also shows the possibility of developing a concept and presenting the concept as a debatable concept rather than another idealised standard in the literature. Therefore, I suggest that

the concept of a purposeless system has identified many possibilities for theoretical development in the managerial context, and these possibilities, I suggest, should not be excluded as “impractical”.

As shown in the research project in Taiwan, the application of the concept may in practice facilitate participants to broaden their understanding of the world; to see what would have otherwise concealed and excluded by their originating rationality; to reconsider their purpose originally defined; to make their own decisions regarding further actions according to their own situation; and to remain cautious about their broadened understanding and their decisions and actions. Similar to the way in which the concept of a purposeless system does not present itself as yet another idealised standard which tends to conceal and exclude its opposites, CI which is a practice of the concept, does not claim to address all the problems facing participants in all situations. The practice of the concept is practical to the extent that the practice presents itself as an alternative way of conducting one’s life and of conducting a research project, which might facilitate participants to reconsider their purpose originally defined through showing that so many opposites of their purpose can be concealed and excluded by it.

As mentioned above, the remainder of this chapter is to summarise how I have proposed the key arguments of this thesis.

9.3. THE ARGUMENT OF OPENNESS TOWARDS ALTERNATIVES AND TAKING ON BOARD OPPOSITION

I have proposed an argument for the need of openness towards alternatives and of taking on board opposition in Chapter Two. Through the discussion of some theories regarding the philosophy of science, I argue that they try to exclude each other from their own research concern and possibilities of action although they define each other. Similarly, through the discussion of some theories in the literature of action research, I show that these theories too try to exclude each other from their own research concern and possibilities of action although they can be argued to define each other. Therefore, in Chapter Two, I highlight the danger that we come to believe that there exists one theory which is comprehensive enough alone to direct our research concern and possibilities of action and that our research concern and possibilities of action are complete. At the same time, we conceal completely from ourselves the opposites of the theory which we choose; and the research concern and possibility of action prescribed by them. Openness towards alternatives and taking on board opposition are then suggested in order to see what has so far been concealed and excluded by the chosen theory.

9.4. THE ARGUMENT OF THE LINK BETWEEN OPPOSITES BEING SYSTEMIC

I have proposed in Chapter Three the argument that there is a link between opposites and that the link between opposites is systemic.

In this chapter, I concentrate on exploring what I mean by the opposite that is beyond one's own rational framework. Therefore, one's opposite addressed in this thesis could be, but not necessarily, something apparently opposite which one could envisage,

or it could be something irrelevant or unknown to one's originating rationality. I argue that when one's originating rationality does not envisage and does not take on board the opposite which one could envisage, one's rational framework comprises only this rationality. At that time, the opposite which one could *envisage and take on board*, and the opposite *irrelevant or unknown* to one's originating rationality are *both* the opposite of what I call one's *rational framework*. I also argue that when one's originating rationality could address the opposite which one could envisage by taking it on board, then it is not opposite to one's rational framework. It is because one's rational framework addresses then both one's originating rationality and the opposite envisaged and taken board by that rationality. However, the opposite irrelevant or unknown to one's originating rationality is still beyond what one's rational framework can address and it is still the opposite of one's rational framework at that time.

In this chapter, I also have shown that opposites - i.e., one's originating rationality; the opposite envisaged and taken on board by one's originating rationality; and the opposite irrelevant or unknown to one's originating rationality - are all linked in terms of description and in terms of consequences of purposeful actions. I then continue to argue that describing and achieving something may conceal and exclude from us the description, and the achievement, of its opposites. I suggest that one's identity is presented by one's opposite and yet at the same time by excluding one's opposite. With reference to a number of examples, I argue that describing and achieving something may conceal and exclude from us the description and the achievement of its opposites.

Having shown that there is a link between opposites, I suggest that one need to have some preferences, desires, wills, and purposes, but one should also be able to change them according to what one believes one's situation allows. I suggest that by taking on board the opposition which one could envisage and by having a reserve for the opposite irrelevant or unknown, one has preferences, desires, wills, or purposes, which

are not necessarily to be achieved and that one is able to change them according to what one believes one's situation allows.

Having shown that there is a link between opposites, I introduce the concepts of systems thinking and show that the link between opposites is systemic.

9.5. ADDRESSING THE SYSTEMIC LINK BETWEEN OPPOSITES IN VSM

In Chapter Four, I addressed the systemic link between opposites in the context of using Beer's VSM as an example. The conventional way of addressing what we want and of cutting off what we do not want, has been re-considered. Through the discussion in Chapter Four, I show that opposites cannot be addressed separately because the link between them is systemic.

Two cybernetic concepts - "the black box technique" and "the negative feedback" - may be adopted by an organisation to deal with the problem of extreme complexity exhibited by its environment. As I have shown in Chapter Four, Beer argues (Beer, 1985) that management is a profession of regulation and that what a manager regulates in an organisation is the management of complexity. The measurement of complexity is called variety, which is the number of possible states of something whose complexity one would like to measure. As I have also shown in Chapter Four, to manage the extreme complexity of the environment of an organisation, the variety an organisation is expected to generate does not have to catch up with all the possible states its environment may exhibit, but with those states which may affect the purpose of the organisation.

To apply the black box technique to the environment of an organisation means that the organisation treats its environment as a black box. The organisation is not

required to enter its environment to know what its environment consists of and how the consisting components of its environment function together to produce outputs. Given an organisational purpose, the point is to find out what the desired states of the environment of the organisation are and what the needed inputs are for its environment to exhibit these desired states. The negative feedback functions to eliminate the difference between the actual state and the desired state of a process of concern whenever the difference is detected.

The extreme complexity of the environment of an organisation can be dealt with by the cybernetic concept of the black box technique in conjunction with the cybernetic concept of the negative feedback. The purpose of an organisation can be achieved by providing necessary inputs into its environment in order to obtain the desired outputs from its environment. If the purpose of the organisation cannot be achieved, there is no need to be in a hurry to enter its environment to study what its environment consists of and how the consisting components of its environment function together to produce the undesired outputs. What the organisation needs to do is to manipulate its inputs into its environment until the desired outputs from its environment are re-established. In this way, the extreme complexity of the environment of an organisation is considerably reduced.

Viable System Model (VSM) is a model which applies the concepts of systems thinking to the management of an organisation and which Beer (1985) argues has to be adhered to by an organisation if the organisation is to be viable. The system of VSM consists of five components: System One, System Two, System Three, System Four, and System Five. The concepts of systems thinking are applied where Systems One, Two, Three, Four, and Five, are designed to work inter-dependently on each other rather than independently of each other. The cybernetic concepts of black box technique and negative feedback and the functional roles of Systems One, Two, Three, Four, and Five,

of VSM have to be adopted at each level of recursion of an organisation if this organisation is to be viable.

Applying Beer's VSM to dealing with the extreme complexity of the environment of an organisation can be roughly divided into two parts: the first part is system identification which determines a purpose for the organisation and specifies appropriate levels of recursion; and the second part is system diagnosis which examines if the cybernetic concepts of black box technique and negative feedback and the functional roles of Systems One, Two, Three, Four, and Five, of VSM are adopted at each level of recursion. In Beer's VSM, System One is an operation function; System Two is a co-ordination function; System Three is a control function; System Four is an intelligence function; and System Five is a policy function.

Having determined a purpose for the system in focus and specified the levels of recursion of concern, an organisation may then consider the system diagnosis process to deal with the extreme complexity of its environment by examining at each level of recursion of the organisation whether or not the cybernetic black box technique and negative feedback and the functional roles of Systems One to Five of VSM mentioned above are being adopted. By adopting VSM, the purpose of an organisation is supposed to be achieved by System One; and Systems Two, Three, Four, and Five, are supposed to take care of the collection of the consequences of what System One has achieved and to make sure that the purpose of the organisation is achieved by System One.

However, the originating rationality of an organisation to achieve its organisational purpose by adopting VSM, which applies the cybernetic black box technique and negative feedback to dealing with the extreme complexity of its environment, does not consider the possibility of affirming those undesired states of its environment. Nor does the originating rationality of the organisation consider the possibility of affirming those irrelevant or unknown states of its environment which do

not seem to affect the purpose of the organisation. Despite that the organisation does not consider to affirm those undesired states of its environment and those irrelevant or unknown states of the environment of the organisation, as defined by the purpose of the organisation; these desired, undesired and irrelevant or unknown states of the environment of the organisation are still systemically linked with each other.

By taking on board the opposite envisaged by its originating rationality and by having a reserve for the opposite irrelevant or unknown to its originating rationality, an organisation has a rationality which is not necessarily to be realised and a purpose which is not necessarily to be achieved. When VSM is adopted, the originating rationality of an organisation is to achieve its organisational purpose by adopting VSM. The desired states of its environment and the undesired states which need correcting to the desired states, will be defined according to the purpose of the organisation. The plan regarding how to obtain the desired states of the environment of the organisation should be made. The potential cost and benefit of the plan should be estimated. The resources needed by the plan should be made available. And the plan will be implemented. To take on board the opposite envisaged by the organisation's originating rationality, the organisation may affirm the undesired states of its environment which may affect the purpose of the organisation by adopting VSM to achieve these undesired states of its environment. The organisation may plan for these undesired states, estimate if the potential benefit of the plan is acceptable and its cost affordable, and make available the resources needed by the plan. However, the plan might not be actually implemented. To have a reserve for the opposite irrelevant or unknown to its originating rationality, the organisation may have a reserve of resources for these irrelevant or unknown states. No plan for them will be made. In this way, when the organisation's originating rationality and purpose are not allowed by its situation for whatever reason, the organisation will still have an alternative rationality and purpose available - i.e., the opposite envisaged and taken on board by the organisation's originating rationality. When the organisation's rational framework - i.e., the whole of its originating rationality and the opposite envisaged and

taken on board by its originating rationality - is not allowed by its situation for whatever reason, the organisation will still have a reserve available for its situation which affirms those states of its environment that are beyond the rational framework of the organisation. In this way, an organisation may have a rationality which is not necessarily to be realised and a purpose which is not necessarily to be achieved.

9.6. ADDRESSING THE SYSTEMIC LINK BETWEEN OPPOSITES IN SD

SD applies the concepts of systems thinking to dealing with intuitive actions and to generating *counter-intuitive* solutions for them by providing a holistic and structural view. With the concepts of systems thinking and a holistic and structural view, people no longer look intuitively for the cause of problems or of symptoms in the place where problems or symptoms exhibit and people do not expect to get the best result of a system by asking each part of the system to do their best regardless whether or not they may affect each other.

Applying the concepts of feedback loops and of time delay to a study of systems, SD may deal with intuitive actions and generate counter-intuitive solutions for them by providing the analysis of the character of time delay, of the feedback loops and of the structure of circular causality in the system of concern modelled. In addition to a structure of circular causality which provides a holistic and structural view, SD also applies the concepts of feedback loops and of time delay to modelling particular behaviour patterns of a system of concern in order to achieve the purpose of an organisation. With respect to the purpose of an organisation, SD may be used to model desired behaviour patterns of a system of concern in order to achieve the purpose of the organisation. By analysing the character of feedback loops, of time delay, and of the structure of circular causality of the system modelled, SD may provide counter-intuitive solutions for the behaviour patterns of the system of concern in order to achieve the

purpose of the organisation. In the meantime, SD may also be used to model undesired behaviour patterns of a system of concern to achieve the purpose of an organisation. Those undesired behaviour patterns of the system of concern modelled by SD will be corrected to desired behaviour patterns of the system of concern. This is because SD may provide the analysis of the character of time delay, of feedback loops, of the structure of circular causality of the undesired behaviour patterns modelled, and SD may provide counter-intuitive solutions to change these undesired behaviour patterns to desired ones.

However, the rationality of an organisation to achieve the purpose of the organisation by adopting SD to model particular behaviour patterns of a system of concern may conceal and exclude the opposite which could be envisaged by the rationality of the organisation to achieve the purpose of the organisation by adopting SD. So may it conceal and exclude the opposite irrelevant or unknown to the rationality of the organisation to achieve the purpose of the organisation by adopting SD. SD does not seek to affirm those behaviour patterns of a system of concern which are undesired by the purpose of an organisation. Nor does it seek to affirm those behaviour patterns of the system of concern which are irrelevant to the purpose of the organisation. Meanwhile, despite that these undesired or irrelevant behaviour patterns of the system of concern are not affirmed by the originating rationality of an organisation, these undesired and irrelevant behaviour patterns of the system of concern are still systemically linked with the desired behaviour patterns of the system of concern modelled and with the purpose of the organisation. Therefore, these undesired or irrelevant behaviour patterns of the system of concern may be concealed and excluded by the originating rationality of the organisation to achieve the purpose of the organisation by adopting SD.

I conclude in Chapter Five that the systemic link between opposites is not addressed in SD and that there is a need to address the systemic link between opposites

in SD. I suggest accordingly that there is a need for the practitioners of SD to take on board the opposite envisaged by their originating rationality to achieve their purpose by adopting SD to remind themselves that their originating rationality to achieve their purpose by adopting SD may conceal and exclude from them the opposite of their originating rationality. I have suggested furthermore that there is a need for the practitioners of SD to keep a reserve of their resources available for the opposite irrelevant or unknown to their originating rationality. This may remind them that there are still resources reserved when their situation affirms what is beyond their originating rationality and the opposite envisaged and taken on board by their originating rationality.

9.7. THE ARGUMENT OF THE CONCEPT OF A PURPOSELESS SYSTEM

In Chapter Six, I have presented the concept of a purposeless system which consists of one's originating rationality and the opposite envisaged and taken on board by one's originating rationality - which are both addressed in one's rational framework; and the opposite irrelevant or unknown to one's originating rationality, which is the opposite of one's rational framework. In a purposeless system, one's rational framework is a framework which may be realised, but is not necessarily to be realised and which may be refused, but is not necessarily to be refused. Therefore, the system consisting of one's originating rationality, the opposite envisaged and taken on board by one's originating rationality, and the opposite irrelevant or unknown to one's originating rationality - i.e., one's rational framework and the opposite of one's rational framework - is called a purposeless system.

The concept of Deconstruction is introduced to support the suggestion that opposites are systemically linked. Deconstruction supports the views of the thesis that one presupposes one's opposite, that one needs to conceal and exclude one's opposite in

order to protect oneself, that there is no possibility to know at the moment what opposite one has simultaneously produced, and that when one becomes identified, the systemic link between one and one's opposite has been simultaneously produced.

Despite that Deconstruction supports the view of the thesis that opposites are systemically linked, the proposal of Deconstruction to always seek for the so-far absent, implies that one's rational framework which Deconstruction is deconstructing has an asymmetric relationship with its opposition. Deconstruction supports that opposites are systemically linked; and the component of a purposeless system - the opposite of one's rational framework (the opposite irrelevant or unknown to one's originating rationality) - is emphasised in Deconstruction. But the components of a purposeless system not emphasised are one's originating rationality and the opposite envisaged and taken on board by one's originating rationality which are both addressed in one's rational framework.

In this chapter, I concluded by proposing instead that opposites have a symmetric relationship in a purposeless system. The symmetric relationship between opposites proposed by this thesis suggests that a half of the resources be allocated for one's rational framework and a half of the resources may be reserved for the opposite of one's rational framework - i.e., for the opposite irrelevant or unknown to one's originating rationality. However, by allocating *a half* of resources for each of them, I emphasised *the symmetric relationship* between them rather than *the physically equivalent division of resources* for each of them. What a "half" of resources means was discussed by showing that it might refer to intangible and tangible elements. Having developed my conception of a purposeless system, I emphasised, however, that the concept of a purposeless system is not to be treated as an idealised standard according to which one must act.

This thesis argues that the concept of a purposeless system proposed does not arbitrarily discard people's individual differences and their different situations. After considering the concept of a purposeless system, one may take one's own action according to one's own situation. Therefore, the concept of a purposeless system should be seen as a debatable concept rather than an idealised standard which is utilised to evaluate one's actions.

9.8. THE PROPOSAL OF A PURPOSELESS SYSTEM APPROACH - COMPLEMENTARY INTERVENTION - TO TAKING ON BOARD OPPOSITION

In Chapter Seven, I have applied the concept of a purposeless system developed in previous chapters to organising a purposeless system approach - Complementary Intervention (CI) - and I have proposed CI as a research alternative to conventional action researches.

The word "Complementary" in Complementary Intervention refers to a continuous complementation to our understanding of the world, no matter how broad our understanding of the world has been. By the word "Complementary", it is suggested that our understanding of the world is incomplete and that our incomplete understanding of the world needs complementation. By the word "Complementary", it is also suggested that our understanding of the world will "always" need complementation, no matter how broad it has been.

In line with a constructivist argument, CI argues the need to facilitate participants to become aware that their understanding of the world will never be complete. The way in which CI facilitates participants to become aware that their understanding of the world is incomplete, is to complement and engage consciously

their originating rationality with taking on board the opposite envisaged by their originating rationality and with considering to have a reserve for the opposite irrelevant or unknown to their originating rationality.

In line with a constructivist argument, CI also argues that participants' understanding of the world may be broadened by co-constructing it with its alternatives. CI suggests that the way in which participants' understanding of the world may be broadened, is through engaging their originating rationality with the opposite envisaged and taken on board by their originating rationality and with the opposite irrelevant or unknown to their originating rationality. Participants may see what would have otherwise been concealed and excluded by their originating rationality through consciously encountering the points of view of the opposite envisaged and taken on board by their originating rationality and of the opposite irrelevant or unknown to their originating rationality.

CI also argues that it is important for CI to facilitate participants to become aware that whatever "best" decision they make regarding their further action towards their originating rationality is based on incomplete knowledge and that their decision and action is made accordingly. CI facilitates participants to become aware that there are still many more rationalities which they have not taken into consideration and that they can make the best decision according to the knowledge available for them; but the knowledge available for them to make that decision is incomplete for that reason. Therefore, despite that participants' understanding of the world may be broadened through CI, CI argues that participants should remain cautious about their decision and their further action towards their originating rationality.

I continue to show the way in which participants' understanding of the world may be broadened by co-constructing it with the opposite envisaged and taken on board by participants' originating rationality and with the opposite irrelevant or unknown to

participants' originating rationality in a CI project. CI is an intervention organised by the concept of a purposeless system. CI applies the concept of a purposeless system to organising a CI project. In the meantime, CI further applies the concept of a purposeless system to organising a debate process in a CI project.

When CI applies the concept of a purposeless system to organising a CI project, CI plans for the situation in which the concept of a purposeless system will be utilised as a framework to organise a debate among participants of an organisation regarding reconsidering their original purpose in the CI project. Meanwhile, CI will implement the plan. CI also plans for the situation in which the concept of a purposeless system will be embodied in the participants' organisation in the CI project. CI will also reserve a half of resources for the CI project for a situation which cannot be known in advance.

When CI further applies the concept of a purposeless system to organising a debate in a CI project, CI facilitates participants to discuss the components of a purposeless system in the debate. The components of a purposeless system which are to be discussed in the debate process of a CI project are the participants' originating rationality, the opposite envisaged and taken on board by participants' originating rationality and the opposite irrelevant or unknown to participants' originating rationality.

When CI applies the concept of a purposeless system to organising a debate for the debate process of a CI project by discussing the components of a purposeless system, CI will leave the concept of the rational framework an open question. In the meantime, CI also leaves the issue of having a reserve of resources for the opposite irrelevant or unknown and the definition of symmetry open questions.

I have shown in detail through the plan for my CI project how my CI project was geared to facilitate participants to broaden their understanding of the world through

engaging consciously their originating rationality with the points of view of the opposite envisaged and taken on board by their originating rationality and of the opposite irrelevant or unknown to their originating rationality. These oppositions constituted the components of what I have named a purposeless system.

One preparatory week, eight planned workshops and eight unplanned workshops were located in the plan for my CI project. This plan made provision to organise a debate process among participants which was to discuss the concept of a purposeless system. This debate process was planned to be carried out from Workshop One to Workshop Six. From Workshop One to Workshop Three, the plan was to facilitate participants to identify their originating rationality. From Workshop Four to Workshop Five, the plan was to facilitate participants to identify the opposite of their originating rationality which they would like to take on board and to facilitate them to engage consciously their originating rationality with the opposite envisaged and taken on board by their originating rationality. In Workshop Six, the plan was to facilitate participants to engage consciously their originating rationality with the opposite irrelevant to their originating rationality.

In addition, I planned for the situation in which participants might want to embody a part or the whole of the concept of a purposeless system in their organisation. Workshop Seven was an optional workshop planned for this situation to happen. In Workshop Eight, I planned to facilitate participants to reflect upon what they think about the whole learning process of the CI project. I also reserved a half of my research time for the situation which I could not know in advance. In this plan, Workshops Nine to Sixteen were unplanned workshops and they were reserved for the situation which I could not know in advance.

I continue to show why CI is a research alternative to conventional action researches. CI is not a mere academic research but also an intervention which

emphasises facilitating participants to deal with the problems facing them through raising the issue of a purposeless system and through facilitating the mutual learning among participants. In terms of the way in which participants may be facilitated, CI can be regarded as being oriented to raise the issue of a purposeless system. CI may facilitate participants to broaden their understanding of the world through co-constructing it with the opposite envisaged and taken on board by their originating rationality and with the opposite irrelevant or unknown to their originating rationality, through introducing the concept of a purposeless system and through facilitating the mutual learning among participants in these terms. However, CI does not provide participants with definite answers to the issue of a purposeless system. CI does not provide an idealised standard regarding how participants “should” react in relation to the concept of a purposeless system or the learning process of a CI project. Based on the discussion above, I argue that CI is an alternative to conventional action researches, which puts emphases on facilitating participants to evaluate their action according to their purpose defined.

9.9. A CI PROJECT CARRIED OUT IN TAIWAN

In Chapter Eight, I showed that the learning process of CI might facilitate participants to improve their understanding of options through a CI project carried out in a supermarket chain in Taiwan. Through showing how CI applied the concept of a purposeless system to organising a CI project among participants in the supermarket chain and to organising a debate in this CI project, I have shown that the learning process of CI might facilitate participants in the supermarket chain to operate as follows:

- * to broaden their understanding of the world;
- * to reconsider their originating rationality;

- * to see what would have otherwise been concealed by their originating rationality;
- * to make their own decision regarding their further action towards their originating rationality; and
- * to remain cautious about their broadened understanding of the world and about their decision and their further action towards their originating rationality after the CI project.

I believe that the learning process of CI provided participants with the opportunity to co-construct their originating rationality with the opposite envisaged and taken on board by their originating rationality and with the opposite irrelevant or unknown to their originating rationality, through my raising the issue of a purposeless system and through facilitating the mutual learning among them.

In my project, I applied the concept of a purposeless system to organising a CI project for a supermarket chain in Taiwan and to organising a debate process in this project. I have also shown how CI might affirm the situation in which the concept of a purposeless system might be embodied in the supermarket chain. The way in which CI applied the concept of a purposeless system to organising my CI project in Ai-Guo Supermarket Chain (AGSC) in Taiwan was as follows: the originating rationality of CI was to adopt the concept of a purposeless system as a framework to organise a debate among participants in the AGSC regarding reconsidering their purpose; the opposite envisaged and taken on board by the originating rationality was to embody the concept of a purposeless system in the AGSC; and the opposite irrelevant or unknown to the originating rationality of CI was to have a reserve of a half of the research time of my CI project.

I proceeded to show in my CI project how CI might apply the concept of a purposeless system to organising a debate among participants in the AGSC. The debate

organised by the concept of a purposeless system might facilitate participants to reconsider their purpose (located in this case by making reference to the VSM) and to see what would have been otherwise concealed and excluded by their purpose through discussing the components of a purposeless system. The components discussed were participants' originating rationality, the opposite envisaged and taken on board by participants' originating rationality and the opposite irrelevant and unknown to participants' originating rationality. At the end of the debate, participants in the AGSC did not insist on their originating rationality. Nor did they adopt the opposite envisaged and taken on board by their originating rationality. What they decided to do was that they would like to learn from the opposite envisaged by their originating rationality in order to achieve better their originating rationality. However, participants were aware that their decision to achieve better their originating rationality by learning from the opposite envisaged by their originating rationality was based on incomplete knowledge. Therefore, their decision was seen in this light.

In terms of the embodiment of the concept of a purposeless system in their organisation, I have shown that CI also provided participants with the opportunity to decide according to their situation whether or not to embody a part of, or the whole of, the concept of a purposeless system in AGSC. Participants seemed interested in embodying their originating rationality in modified form, that is, by modifying it with the valuable points suggested by the component of a purposeless system referring to the opposite envisaged by their originating rationality and the component of a purposeless system referring to the opposite irrelevant or unknown to their originating rationality.

My reflections following my CI project in Taiwan were made by recognising that to set up an idealised standard of participants' decisions and actions comes from abstracting from participants' individual differences regardless of participants' situations. It also comes from the idea that in nature there might be something besides participants' actual decisions and actions which should be the ideal decisions and

actions of participants. CI does not provide an idealised standard regarding how participants should react in relation to the concept of a purposeless system and my reflections upon my own CI project in Taiwan are based on this argument.

My reflections upon the issue of participants' rational framework after my CI project in Taiwan are as follows. In their situation, participants decided to address one merged and broadened rationality rather than two rationalities in opposition in their rational framework. Hence I suggested that participants' openness towards what was seemingly opposite to their originating rationality makes participants' rational framework an *evolving rational framework* rather than a fixed one.

My reflections upon the issue of the relationship between participants' rational framework and the opposite of participants' rational framework after my CI project in Taiwan are as follows. In their situation, participants decided to achieve their originating rationality better by learning valuable points from the opposite of their rational framework (i.e., the opposite irrelevant to their originating rationality), rather than deciding to have a reserve for the opposite of their rational framework. Participants' openness towards what was seemingly irrelevant to their originating rationality makes the relationship between participants' rational framework and the opposite of participants' rational framework an *evolving relationship* rather than a fixed relationship.

My reflections upon the originating rationality of my own plan for my project (shown below in Figure 9.1 for reference) are as follows. In their situation, participants were quite acceptable towards adopting VSM to achieve their identified organisational purpose and to identify the problems facing them. VSM was adopted because the concept of a purposeless system was developed partly through the discussion of VSM in previous chapters. The result of my CI project in Taiwan shows that the example of the Taiwanese military organisation might make VSM quite acceptable to participants in

Taiwan. VSM did not need confidential statistics of participants’ organisation in order to carry out an in-depth analysis. And VSM and the concept of a purposeless system worked indeed quite well together to facilitate participants to improve their situation by broadening their understanding of the world, making their own decision according to their own situation regarding further actions towards their originating rationality, and becoming cautious about their broadened understanding of the world and about their decision and action towards their originating rationality. Therefore, it is possible to continue to adopt VSM (for example in another CI project); not only because of theoretical but also of practical reasons.

The originating rationality of my own plan for my project to debate the concept of a purposeless system among participants in the AGSC (at Workshop One to Workshop Six and at Workshop Eight) regarding reconsidering their purpose located by making reference to the VSM.

Figure 9.1: The originating rationality of my own plan for my project.

My reflections upon the opposite envisaged and taken on board by the originating rationality of my own plan for my project (shown below in Figure 9.2 for reference) are as follows. In their situation, participants decided not only to debate the concept of a purposeless system, but also to embody a part of the concept of a purposeless system in their organisation. In my CI project in Taiwan, the planned embodiment process was activated in the sense that people did wish to embody valuable points they learned from encountering the concept of a purposeless system. Thus, taking on board the opposite of my originating rationality by planning for the embodiment process to embody the concept of a purposeless system in participants’ organisation, was quite important. Therefore, my next CI project could still take on board the opposite

of the originating rationality by planning for the embodiment process to embody the concept of a purposeless system in participants' organisation.

The opposite envisaged and taken on board by the originating rationality of my own plan for my project: to embody the concept of a purposeless system in the AGSC (at the planned but optional Workshop Seven).

Figure 9.2: The opposite envisaged and taken on board by the originating rationality of my own plan for my project.

My reflections upon the opposite irrelevant or unknown to the originating rationality of my own plan for my project (shown below in Figure 9.3 for reference) are as follows. In their situation, participants did not utilise much of the resources reserved for the CI project. My CI project took up nine workshops instead of the eight workshops planned in advance. That is, my CI project utilised one of the eight unplanned workshops. My CI project in Taiwan went quite smoothly as planned. One of the reasons is that participants demonstrated high acceptance towards VSM. Another reason is that I gained the full support from the director general of the AGSC. Therefore, I need to take into consideration the effect of the full support which I gained from the leader of participants when I do my next CI project in a different setting. That means, if I receive less support from the leader of participants, I expect to utilise more unplanned workshops.

The opposite irrelevant or unknown to the originating rationality of my own plan for my project.

To have eight unplanned workshops as resources reserved for the irrelevant or unknown situations.

Figure 9.3: The opposite irrelevant or unknown to the originating rationality of my own plan for my project.

Referring to the above, what could not be known in advance, did not utilise much of the resources reserved for it - i.e., the eight unplanned workshops. But it utilised "resources" in a different way. For example, after-workshop conversations, outside workshop meetings and my brain energy, utilised between workshops, can also be considered as resources utilised. Therefore, to reserve a half of tangible resources, such as eight unplanned workshops, can also be regarded as one of the many ways in which a half of the resources can be reserved for the opposite irrelevant or unknown to the originating rationality of the plan.

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