DEVELOPING TELEONICS AS A PROCESS-BASED SYSTEMS METHOD FOR PSYCHOLOGICAL PRACTICE

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DECLARATION

I, the undersigned, hereby declare that the work contained in this dissertation is my own original work and has not previously in its entirety or in part, being submitted at a university for a degree.

Signature: Signed by candidate
Signature Removed

Date: 27.2.96

DEDICATION

This dissertation is dedicated to

My brother and father who, through their living and dying, enriched my experiencing in a way that is connected to everything that I do.

My mother, husband and sons (David, Gregory and Robert), for the ongoing connections that are *attractors* for so much that is good and beautiful.

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ABSTRACT

This dissertation is a response to the call for theoretically coherent practical methods which encourage and facilitate systemic thinking in psychology (Boden, 1972; Jordaan & Jordaan, 1984; Lazarus, 1990; Norcross & Grencavage, 1990; Von Bertalanffy, 1968; Winburn, 1991). Teleonics is a developing ecology of process-based systems ideas, where process is foregrounded relative to structure. From a teleonics perspective, structure and process are viewed as inextricably linked, while the foregrounding of process is viewed as having significant implications for how meaning is constructed from observations. Given the dominance of the structure-based orientation to psychology during the modern period, a process-based systems approach is a contribution to the development of postmodern thinking in psychology.

Through a process of reviewing the systems thinking literature, and illuminating those premises that point to a distinction between process- and structure-based thinking, the following process-based systems premises are punctuated:

* *life is essentially of a process nature,*
* *nature is approximate rather than definite,*
* *organization in nature is dynamic,*
* *systems function according to principles of autonomy and integration,*
* *creation is a process of emergence and*
* *teleos is a character of living systems.*

By relating these premises to the field of psychology, further premises of *governance* and *the union of opposites* are punctuated.

A review of selected psychological literature is provided to draw distinctions about how the above-mentioned process-based systems premises relate to psychological theory and practice. In line with the postmodern trend to coherence between theory and practice, teleonics is proposed as a contribution not only to creative theory building but, also to application. In support of coherence between theory and practice in psychology, epistemological tools and tasks for systemic intervention are discussed.

The methodological approach of this dissertation is consistent with the conceptual theorist style (Reason & Rowan, 1981a). A systems methodology, namely that of double description (Bateson, 1979; Keeney, 1983) is used to connect the theoretical and the applied aspects of this study. The theoretical aspect of the double description was formulated by a review, synthesis and integration of the literature. The applied aspect was formulated by means of a report on fieldwork undertaken in the form of a series

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of case studies. A particular contribution of this dissertation is the specification and illustration of three teleonics maps namely, spiral mapping, teleos mapping and telentropy tracing. The application of these maps is presented via an elaborated format case study of an individual adult therapy case, and four further cases presented in a circumscribed format (Carlson-Sabelli & Sabelli, 1984). The circumscribed case studies include a single session intervention and a health enhancement workshop.

The methodology of this dissertation can be located in new paradigm (postmodern) research. The *soundness of endeavour* (Reason, 1988c) of this dissertation can be appreciated in relation to validity in terms of the philosophical ideas supporting new paradigm research. Other contributions are that it promotes convergence and informed divergence in psychological theory, is an example of the development of systems theory at the level of micropractice, explores the concept of levels in psychology, and contributes to the further development of teleonics as a process-based systems ecology of ideas. The introduction of visual maps, as practical non-verbal tools for the communication of concepts and observations in psychological practice, is a particularly useful contribution. In this dissertation, teleonics is demonstrated as a process-based systems model which facilitates the practical operationalizing of process-based systems thinking.

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CHAPTER ONE: INTRODUCTION

In this chapter the position of the dissertation is stated. The main themes of this position are introduced and an outline of the dissertation is presented.

1.1 Introduction

This dissertation has been undertaken in response to the call for practical methods and frameworks which encourage and facilitate systemic thinking (Boden, 1972; Jordaan & Jordaan, 1984; Lazarus, 1990; Norcross & Grencavage, 1990; von Bertalanffy, 1968; Winburn, 1991). In order to achieve the aim of this dissertation, the author has chosen the vehicle of **teleonics** (Jaros & Cloete, 1987; Jaros & Cloete, 1993). Teleonics is an ecology of process-based systems ideas which encourages a perspective in which process is foregrounded in relation to structure. The foregrounding of process has significant implications concerning the manner in which meaning is attributed to observation. Given the structure-based orientation of the modern period on psychology, a process-based systems approach can be considered as a contribution to the development of postmodern thinking. The aim of the dissertation is to show how teleonics can be used as a tool in the application of process-based systems thinking in psychology practice.

In applying process-based systems thinking to psychological practice, many contrasts with mainstream psychology are apparent. These contrasts are far reaching but are particularly relevant with respect to what constitutes the field of focus, ideals of health, goals of therapy and the understanding of pathology. When viewed from the position of Process Theory (Sabelli & Carlson-Sabelli, 1989), i.e. that creative evolution results from the universal intercourse of opposites, one can anticipate many exciting possibilities emerging from the interaction of process-based systems ideas with main stream psychology.

Process-based systems thinking in psychology suggests a shift from structure-based rigidity to a position which invites a fresh look at old issues, an openness to previously avoided areas and a healthy regard for diversity. In many respects process-based systems thinking is close to the existential, phenomenological and humanist traditions, but takes these ideas beyond a focus on the individual to include a perspective of dynamic processes in the context of internal and external relationships. Such a systemic view of human beings provides for the exploration of people's problems and potential with the understanding that they are self-organizing living systems in interaction with other self-organizing living systems.

It will also become apparent that systems thinking and particularly process-based systems thinking, can encourage an inclusivity of ideas, albeit from a particular perspective. In this way a systems perspective could provide opportunities for psychologists to appreciate the rich diversity of psychological

theory in a coherent and logically consistent way. Thus, while it is not the goal of this dissertation to address the issue of unification in psychology directly, it is acknowledged that any development of process-based thinking in psychology would be a strong contribution to the punctuation of convergence and the clarification of divergence of ideas.

1.2 The distinction between structure- and process-based systems thinking

Distinguishing between structure and process implies the adoption of a particular perspective or approach to perceiving the properties of a system (as with the observations of light as a particle or a wave). While prevailing systems thinking conceptualises structure and process as being inextricably linked, the way one perceives their relative organization, influences the meaning ascribed to observations.

Process-based systems thinking has a perspective of living systems where structure is regarded as the persistence in the organization of patterns of processes. Structure can be either material or conceptual. Process-based systems thinking is a perspective in which process is **foregrounded** relative to structure. The relationship of process to structure suggests a **union of opposites** (Sabelli, 1989, 1991a, 1991b; Sabelli & Carlson-Sabelli, 1989) where both empirical and interpretive outlooks are compatible, reflecting a healthy regard for methodological and theoretical diversity (Messer, 1990). Process-based systems thinking promotes a shift from structure-based rigidity, to a position which presents new challenges and invites a fresh look at old issues (Gergen, 1992; Kvale 1992).

1.3 Process-based systems thinking premises

There is an ongoing appeal for theories, models and frameworks that promote theories of systems which has practical applications. In order to contextualize teleonics as a theoretically coherent process-based systems method, six essential premises strongly reflecting a process view of life, are highlighted (elaborated in chapter two). They are punctuated through a process of exploring systems theories and other literature. The selected premises are that:

* life is essentially of a process nature,
* nature is approximate rather than definite,
* organization in nature is dynamic,
* systems function according to principles of autonomy and integration,
* creation is a process of emergence and
* teleos is a character of living systems.

The selection of these premises was strongly influenced by the writings of Gregory Bateson (1979), Arthur Koestler (1978), Ervin Laszlo (1972), Fritjof Capra (1988), Ludwig von Bertalanffy (1968), and the more recent works of Jaros and Cloete (1987, 1993), Sabelli (1989), Sabelli and Carlson-Sabelli

(1984, 1989) and McNeil (1981, 1992a, 1992b, 1992c). It is suggested that these general premises can contribute to the development and application of systems approaches beyond traditional structure-based thinking, especially in the field of psychological theory and practice.

1.4 Process-based systems thinking in psychology

A review of selected psychological literature is provided to draw distinctions about how the above mentioned process-based systems premises relate to psychological theory and practice. The literature is reviewed with a mind to distinguishing how the process-oriented systems ideas have been expressed in psychology. It appears that in terms of the process vis-a-vis structure distinction, psychology as a field is largely modelled on a Cartesian view of humans and a reductionistic, scientific ideal. Much energy appears to have been spent in psychology on seeking scientifically acceptable language, concepts, laws, structures and measurements (Brennan, 1982; Capra, 1988; Hearnshaw, 1972; von Bertalanffy, 1968; Zangwill, 1972). This tendency to emulate science, has contributed to the development of a discipline where language and concepts are centred around entities. Systemic concepts such as levels, which are well developed in many other fields, are almost ignored and the contextual dependency of research findings is not emphasised. In general, there has been the failure of psychological theory and practice to relate to the broad issues and problems of human existence (Jordaan & Jordaan, 1984; White, 1993a).

The process-based systems view of human beings, which has its origins in the work of Heraclitus of Ephesus (Kahn, 1981; Kirk et al., 1983; Wheelwright, 1959), is a radical reversal of the robot view. The process view holds a person as an active personality system where individual uniqueness and creative potential are valued. A systems view of people raises issues largely ignored by science regarding aspects of creativity, self-awareness, unpredictability, multivariable interaction, dynamic organization, self-maintenance and directiveness. New conceptual tools are needed to explore these issues in psychology (von Bertalanffy, 1968), and it is hypothesised that process-based systems thinking can play a role in this regard.

The domination of Cartesian scientific thinking and its associated experimental methodology in psychology had the effect of discouraging the exploration of knowledge that was not closely related to observable fact (Piaget & Inhelder, 1969). It was really only with the development of the humanistic movement that a strong challenge to mechanistic dominance, and to some extent a more systemic view of human beings, emerged. From this perspective, non-experimental methodology and the scientific investigation of non-observable as well as observable phenomenon, are legitimated. While such a shift should be firmly rooted in a holistic world view, it should be able to accommodate partitioning as well as holism (Hill, 1993; McNeil, 1992b), suggesting not the mere combination of mechanism and holism, but the emergence of new integrative systemic perspectives (Thorpe, 1969; von Bertalanffy, 1969; Weiss, 1969).

In the middle of this century, systems thinking in psychology became prominent through research in cybernetics, which illuminated people's potential as goal-directed and self-governing systems (Hunter, 1972; von Bertalanffy, 1968). By the 1970's, the broadening of scientific ideals was further encouraged by developments in applied fields, where psychologists made decisive moves away from rigid theoretical positions toward eclecticism (Messer, 1990; Norcross & Grencavage, 1990). These trends formed part of the emergence of the postmodern period in psychology (Kvale, 1992) visibly moving towards theoretical convergence and a more holistic view of people (Messer, 1990). These trends are also distinguishable by concepts such as purpose, volition, introspection, consciousness and insight being accepted into common psychological usage (Koestler, 1981).

Despite significant contributions to group and family therapy approaches, systems thinking has not been one of the main movements in psychology. Growing eclectism and integrationism (Dryden & Norcross, 1990; Munro 1992) suggest that the time is right for the further acceptance of systems' premises which could contribute to theoretical convergence, as well as to the use of more inclusive and interdisciplinary approaches in psychology (Norcross & Grencavage, 1990; von Bertalanffy, 1968).

Eclecticism has not been a coherent movement, but has been expressed largely through the unsystematic and subjective selection of preferred theories. Lazarus (1990, p. 34) suggests that, because different types and sources of information are valued by various theories, "our current preparadigmatic level of understanding precludes coherent synthesis at present". This is a serious problem for unification in psychology where eclecticism has represented efforts to combine *parts* in order to synthesize new *wholes* (Messer, 1990; Strijbos, 1993).

Thus, it appears that it is time to develop an ecological understanding of psychology and to encourage the emergence of theory which supports such a view. Process-based systems thinking can play a role in the emergence of such theory since it does not encourage working from parts but, encourages a perspective of continuity and connectedness where physiological processes, conscious and unconscious, social, contextual and even spiritual experiences, are accepted as part of the human condition. Teleonics provides such a process-based systems thinking approach.

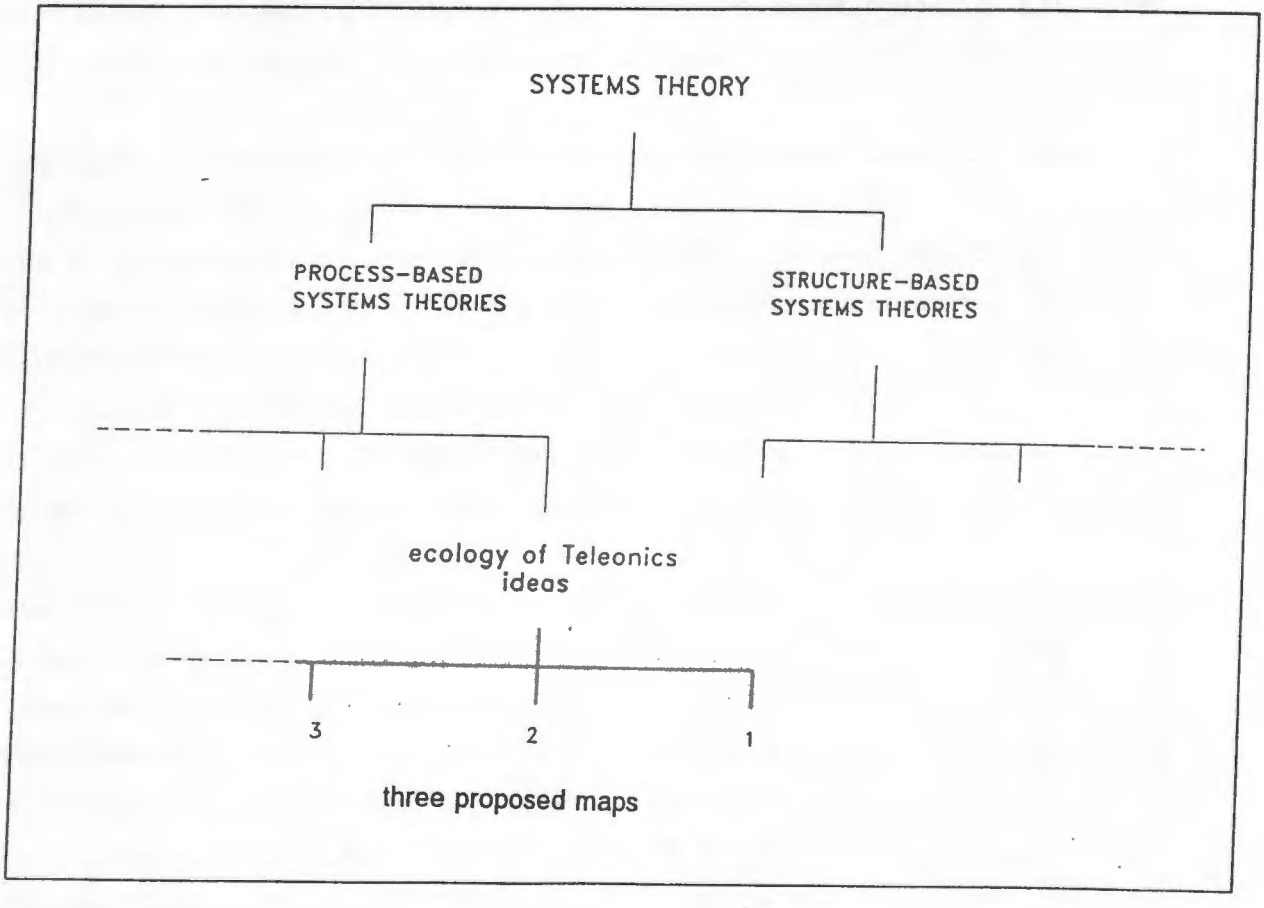
1.5 Introducing teleonics

While knowledge about the nature of people's reality is essential to the study and practice of psychology, due to our limitations we can never fully understand how body, mind, thought and deed inextricably entangle in a complex network of interactions (Capra, 1988; Chopra, 1989; Frankl, 1969b; Gut, 1989; Hughes, 1974). However, theory, frameworks and conceptual maps can go some way to helping us to understand something of the dynamic organization of human psychological experiencing.

In the context of this dissertation, a theory is viewed an explanatory body of ideas that is methodologically, paradigmatically and philosophically coherent. A framework is regarded as a structural metaphor which indicates how things might fit together or relate. A conceptual map is used to refer not to a structural metaphor, but to relationships between entities, processes or interactions. The terms *map* and *method* are used in a similar way to refer to how concepts relate in practice. The distinction is that map refers to the application of concepts in a general sense while the term method refers to more specific guidelines about the practical application of ideas or concepts. An ecology of ideas refers to a set of ideas which points to processes and interactions that are relational rather than static and fixed. It is in this context that teleonics is introduced as an ecology of ideas, and three conceptual maps/tools are proposed which can operationalize process-based systems thinking in psychology.

Teleonics is an ecology of ideas which strongly identifies with Jan Smuts's notion of holism and the importance of putting scientific phenomena into a systemic context (Smuts, 1926). Teleonics is an approach to the study of life that promotes respect for both process and structure but where a perspective on structure is seen to be subordinated to a perspective on process (Jaros, Dostal & Cloete, 1993) (see Figure 1).

Figure 1: A map of how teleonics ideas fit into the larger context of general systems theories.



Teleonics is a process monistic method (more fully discussed in chapter 4), where the unit of study is the goal-directed and governed flow of matter, energy and information (MEI). These goal-directed process units called **teleons**, flow through levels in the web of life (Biomatrix or holarchy) expressing material and conceptual relationships and patterns. Where teleons cohere to form a discernable whole, this is called a **doublet**. Doublets have the characteristic of inward directed and outward directed organizing processes which maintain contextual organization relative to other wholes expressing *patterns that connect* (Bateson, 1979).

The concept of doublet is in many ways similar to that of Koestler's *Janus faced holon* (Koestler, 1978). In terms of Koestler's ideas, each member of the hierarchy in the web of life, on whatever level, is a sub-whole or holon in its own right. Whether they can be described as either wholes or as parts depends on whether you look at them from *below* or from *above*. Koestler's holons are stable integrated structures, equipped with self-regulatory devices and enjoying a considerable degree of autonomy. They are subordinated as parts to the higher centres in the hierarchy, but at the same time function as quasi-autonomous wholes. The term *Janus faced* refers to the face turned upward toward the higher levels (is that of a dependent part), and the face turned downward towards its own constituents. The term holon was introduced to designate those Janus faced entities on the intermediate levels of any hierarchy and to avoid confusion with words like *whole* and *part* (Koestler, 1978). The doublet is distinguishable from the holon in that it emphasises the continuity and flux of teleons (goal-oriented processes) through doublets and has less emphasis on structure.

Doublets and teleons are seen to have **teleos** that can be identified through intended, random or emergent purpose. This purpose can be a goal directiveness (e.g. where an intention is in place), random (e.g. strangers meeting and finding that they desire to develop a relationship), or emergent where the co-evolution of processes results in the emergence of a goal (e.g. reason why animals follow a particular pattern of behaviour over time). There has been a strong resistance in science to the purpose in nature debate (Campbell, 1991), yet this debate is essential to psychology where psychological acts can be consciously or unconsciously directed (Brennan, 1982) and can be related to free will, consciousness, motivation, learning and memory (Skarda, 1991; Winburn, 1991).

Other important concepts in teleonics are **governance** and **telentropy**. Governance is that aspect of a teleon which regulates process and structure in such a way that teleons are oriented to their goals. Governance is a process of dynamic internal and contextual organization which expresses the relationship between teleos and control at all levels of the Biomatrix. Telentropy, a term based on the work on teleonomic entropy by Katakis and Katakis (1982), is the term used to refer to the probability of a teleon or doublet reaching its goal, with high telentropy indicating that the probability is low and visa versa. Telentropy is caused by an interference with the goals, structure, process and/or governance of a teleon. Telentropy can be *passed* within and between teleons and can be destructive (distress) or constructive (eustress) (Jaros, et al., 1993).

Teleonics is a framework which supports a holistic, organized, dynamic and emergent view of the world. It favours the identification of relationships between patterns, processes or structures and is a process-based approach to the study of life (Jaros, & Cloete, 1993; Jaros et al., 1993). It is proposed in this dissertation that teleonics is congruent with the process-based systems thinking premises that have been identified (i.e. approximation of nature and knowledge, process and pattern in living systems, emergence, dynamic organization, governance, teleos and union of opposites eg. tendencies to autonomy and integration), and can be further developed for applications in psychology. It is proposed that the development of teleonics as a process-based method would make a positive contribution to psychological research and practice.

1.6 Methodology, design and method

The methodological approach of this study is consistent with the *conceptual theorist* style of thinking about and doing research as outlined by Mitroff and Kilman (Reason & Rowan, 1981a) in their typology of scientists. Their typology is based on the psychological types proposed by Carl Jung and the *conceptual theorist* type refers to a theoretical and impersonal orientation to science, where the main concern is imaginative and speculative theory building.

Three strong trends are to be applied in the methodology of this dissertation, the first is in line with Ackhoff's suggestion that it is important to proceed from a general position on a perspective of reality, to the process of investigating a particular discipline (Strijbos, 1993). The flow of the dissertation is from a general position to more specific issues, with some general possibilities being revisited as part of the conclusion.

The second trend is congruent with the suggestion by Hill (1993, p. 3) that "we must pay greater attention to the means (the process of learning and development) and less to the more easily measured ends". This has been attempted by maintaining a sensitivity and openness to the emergence of the research process rather than being rigidly outcome-oriented, as well as a welcoming of opportunities for the research process to reflexively inform itself.

Thirdly, fieldwork was undertaken in order to provide an exposition of the theoretical concepts discussed, as applied to psychology practice. This fieldwork was designed with reference to a systems methodology, namely that of double description (Bateson, 1979: Keeney, 1983). This methodology is congruent with a qualitative or naturalistic approach to undertaking research, which emphasises the relational, the experiential, the context-oriented and qualitative analysis and interpretation (Marton, 1983). The theoretical aspect of the double description was formulated by a review of the literature. This review included a historical perspective, synthesis and integration of process-based systems thinking concepts, psychology theory and teleonics. In order to clarify the relationship of general psychological thought with process-based systems premises, the premises were revisited in the context

of psychology. In this process, it was found that some further distinctions provided more detailed illumination of the field of psychology. These distinctions related to the premise of autonomy and integration that were then explored under the larger concept of the union of opposites (Sabelli, 1989, 1991a, 1991b; Sabelli & Carlson-Sabelli, 1989), and the additional concept of governance as a process-based premise of living systems was punctuated (Cloete & Jaros, 1994; Jaros & Cloete, 1987).

Having sought some clarity on general psychological thinking in relation to process-based systems thinking, teleonics is then introduced. Specification of three teleonics maps (tools) namely, spiral mapping, teleos mapping and telentropy tracing, are described. The theoretical basis of the maps is introduced and the methods for their application explained in order to provide a theoretical context within which to analyse and interpret case study material. In addition, the implication for intervention for psychological practice that flow from the paradigmatic position of the maps, is explored. Some important practical applications relate to a model of psychological health, the concept of self, the client therapist relationship, and how problems are understood by both therapist and client.

The applied aspect of the double description was formulated by means of a series of case studies in which particular emphasis is given to the description of the use of the teleonics maps. One case describing an individual adult therapy is provided in **elaborated form** including diagrams of the mapping processes. Thereafter four further cases are presented in **circumscribed form** in order to complement the elaborated case and illustrate a variety of contexts within which teleonics can be applied. Included are a single session intervention and a health enhancement workshop. While the emphasis in these case studies is on describing how the teleonics maps are used, comments on the practical application of systems epistemological tools and intervention tasks is included.

1.7 Dissertation format

The content of the study is organized in the following themes which are distinguishable but which have considerable overlap:

* The punctuation of premises of process-based systems thinking from the general systems literature (chapter 2).
* A brief look at the relationship between the punctuated process-based systems premises in the context of psychological theory (chapter 3).
* Introduction of teleonics as an example of a process-based systems thinking method and the discussion of teleonics as a new paradigm research method, including a brief review of the field of new paradigm research (chapter 4 and 5).
* Development of three teleonics conceptual maps for practical application in psychological practice (chapter 6).
* Implications of process-based systems thinking and process-based systems methodologies for intervention in psychological practice (chapter 7).

* By way of *fieldwork*, an elaborated case study and four circumscribed studies are presented to illustrate the practical application of the teleonic maps (chapter 8).
* As part of the conclusion, the contributions of this dissertation are highlighted. In addition comments on the "soundness of endeavour" (Reason, 1988c) of the dissertation process as well as limitations and recommendations for future research, are made (chapter 9).

While this dissertation has as its goal some small contribution to knowledge, it also attempts to comment on the way in which issues can be viewed. This is done in the context of the notion that we do not improve our knowledge of the world so much through systematic study, as through shifting our way of seeing the world (Bateson, 1973; Kuhn in Gergen, 1992).

CHAPTER TWO: PROCESS-BASED SYSTEMS THINKING: CHALLENGING THE BOUNDARIES OF STRUCTURE

In this chapter it is suggested that a process-based systems theory can highlight general premises that are consistent with the call for new holistic and systems perspectives in science. Distinctions are drawn between process-based and structure-based systems theory.

2.1 Introduction

> "This is a time for controlled but bold theorising - the raising of hypotheses to be challenged and evoked in the heat of constructive controversy" (Laszlo, 1972, p. vii).

Despite calls for unified scientific theories, it is unlikely that "... currently prevailing science is philosophically capable of doing justice to the fullness of reality" (Strijbos, 1993, p. 707). Despite the ongoing appeals by scientists for a general theory of systems, one wonders, given the strong attitudes found amongst scientists and the zeal with which beliefs are defended, whether general acceptance of an integrating science can be achieved at this stage. It might be more practical to formulate some general theoretical premises, which may or may not be traditionally scientific, but which may support systems science, systems technology and systems philosophy, so that rapid progress can be made in the development of applicable theories, methodologies and frameworks. In this way, systems premises would function at a general level of abstraction, maintaining coherence with principles of holistic thinking, providing a basic position from which varieties of theories and methodologies, appropriate to systems of differing logical types, could emerge. The general premises should serve as opportunities, rather than as restrictive rules, in order to encourage systems thinking to become more generally and practically available (Rosen, 1991).

2.2 Science and holism

The Ancient Greeks have left us with a rich legacy of views on the nature of life, many of which are still part of the philosophical and scientific debate today.

Aristotle (384-322 BC) believed in the essential unity of mind and body. This unity concept was generally accepted through to the Middle Ages. Although not the first to promote dualism, the theologian Thomas Aquinas (1225-1274) challenged the unity concept with the idea that the immortal soul must be separate from the body (Brennan, 1982; Jordaan & Jordaan, 1984). The Renaissance followed with greater emphasis on objectivity in the sciences, with René Descartes (1596-1650) presenting the mechanistic view of people which was to influence the scientific approach to science for centuries to come (Jordaan & Jordaan, 1984). This set the scene for the development of empirical science, which was largely unchallenged until the very late 19th Century (Boden, 1972; Thorpe, 1969).

Charles Darwin, in his powerful theory of evolution, identified two elements in evolution, i.e. variation and natural selection. Unfortunately, he mainly focused on the latter, thus endorsing the mechanistic trends of his time, while variation remained something of a mystery to him (Smuts, 1926).

The scientific orthodoxies persisted in the neo-Darwinian theory in spite of contradictions and tautologies and the strong evidence against Darwin's evolutionary hypothesis (Wilson, 1993). In direct opposition to Darwin's notion of random change, the Frenchman Lamarck suggested that purpose in interaction with the environment played a dominant role in evolution and Ernest Haeckel proposed a process of reciprocity and mutuality between organisms and the environment (Greif & Lynch, 1983). Lamarck was ridiculed in his time, yet new research in the fields of biology and genetics has led some to support the idea of evolution as a cumulative process over many generations and not as a random and accidental occurrence established through the survival of dominance (Jantsch, 1979; Koestler, 1978; Smuts 1926).

In the late 19th Century, a great revival in the natural sciences occurred, which was encouraged by Mach's Principle, as reformulated by Albert Einstein (Koestler, 1981). It "involved radical changes in the traditional concepts of time and space thus undermining one of the foundations of the Newtonian world view" (Capra, 1987, pp. 63-64). With the findings that sub-atomic processes have relational properties, the legitimacy of concrete units functioning in isolation from the rest of the universe was questioned (Koestler, 1981; Koestler, 1978; Weiss, 1969). While there are two dominant schools of thought in particle physics, namely the Copenhagen and the Einstein schools, the position as stated above is in line with the Copenhagen school, which has been the most prominent over the past 30 years. The alternative position, as originally held by Einstein and subsequently developed by David Bohm is acknowledged, but a full discussion of these positions is not appropriate to this dissertation. Therefore, in the micro world, the laws of probability have become more prominent than those of causality leading to major repercussions in the way scientists tended to view the world (Weiss, 1969; Koestler, 1978).

According to Koestler, the philosophy of mechanism was a direct offspring of the rationalist illusion and could not adequately answer existential questions (Koestler, 1978; Jordaan & Jordaan, 1984). This illusion supports the belief that reality is comprised of complexity that can be understood through the objective reduction of content, viz., looking at the parts in order to understand the whole. On the other hand, existentialists acknowledge the value of Gestalt and look to the subjective inquiry of spontaneous and natural wholes.

Holism and systems thinking is based on the idea that the real world is structured according to the general principles of the whole enfolded in each of its parts (David Bohm, in Capra, 1988). On defining holism, Smuts (1926, pp. 86-87) states that both matter and life consist of unit structures whose ordered grouping produces natural wholes which we call bodies or organisms. He says that this

character of "wholeness" meets us everywhere and points to something fundamental in the universe. Holism is the term which Smuts coined for this fundamental factor operative towards the creation of wholes in the universe. Wholes are not mere artificial constructions of thought; they point to something real in the universe. As holism is a process of creative synthesis, the resulting wholes are not static but dynamic, evolutionary, creative.

In the mechanistic world view, reduction of complexity to simpler parts has obvious limitations such as the incomplete and sometimes unconvincing explanations on consciousness, creativity, development, ecology and even evolution (Koestler, 1978). On the other hand, Boulding (1978) insists that there is also a randomness besides the patterning and patterns in the seeming randomness, therefore methods dedicated to probability are important in shedding light on our images of the world.

However, the domination of experimental methodologies has had the effect of discouraging the exploration of knowledge that was not closely related to observable fact (Piaget & Inhelder, 1969), and scientists have become aware of their limitations in trying to understand the paradoxical nature of life (Capra, 1987). Philosophically, paradigms should not represent the one right way (McNeil, 1993). They need to be credible, coherent, communicable and able to support application (Hill, 1993). There is a need for an extension of science which deals with qualities rather than quantities and would represent a theoretical, as well as a methodological shift from a mechanistic view of nature to a holistic and ecological vision (Capra, 1988). While such a shift should be firmly rooted in a holistic world view, it should be able to accommodate partitioning as well as holism (Hill, 1993; McNeil, 1993). This is not to suggest the mere combination of mechanism and holism, but by shifting from objects to their interrelations a new perspective emerges and the transition from analysis to synthesis is made (Weiss, 1969; von Bertalanffy, 1969; Thorpe, 1969).

2.3 Structure- versus process-based systems thinking

Process thinking can be traced back to Heraclitus of Ephesus (Kahn, 1981; Kirk et al., 1983; Wheelwright, 1959), the earliest known process philosopher (Sabelli, 1989, p. 237). Many of the propositions that were formulated by Heraclitus can be recognized in contemporary process theory, for example monism, the theory of flux and the union of opposites (Sabelli, 1989, p. 237). Contemporary with Heraclitus, the Eastern philosophers Lao-Tzu (Taoism) and Buddha (Buddhism) also developed general theories of processes. The theories of these philosophers were characterized by materialism and by uninterrupted flux driven by interaction between partially opposing forces (Sabelli, 1989, p. 251). In terms of the development of their ideas, Heraclitus promoted a scientific and rational approach while the ideas of these Eastern philosophers developed into religions rather than scientific pursuits.

Heraclitus' theory of processes was largely forgotten until the time of Hegel and Lamarck. Lamarck developed process thinking in the context of biology and evolution and experienced little support for

his ideas at that time (Greif & Lynch, 1983). In contrast Hegelian dialectics (sociological model of change) played an important role in reintroducing process ideas by laying bare "the fundamental differences between the static, non-interactionist and the dynamic, interactionist frame of reference" (Marková, 1991, p. 83). Hegel emphasised the interconnectedness and reciprocal nature of relationships promoting the systemic notion of feedback and self modification. In addition the modern formulation of the union of opposites stems from Hegelian dialectics (Sabelli, 1989, p. 284).

Marx rejected dialectics as an abstract and ready made system of logic. Through his (and Engels') ideas, dialectics became an empirical and dialectic materialism. Engels developed a general theory of processes that incorporated the new developments in physics, thermodynamics, biology and the materialist philosophy popular in his time (Sabelli, 1989, p. 286). The implication is that this dichotomic view of opposition leads to polarization and conflict rather than the union of opposites. The powerful social influence of Marx and Engels can be see in the rise of Soviet dialectic materialism.

The major difference between process theory and classic dialectics is that dialectics stresses dichotomic polarities obscuring the essential distinction between difference and opposition. Process theory stresses complementing and opposing polarities with opposing polarities seen to create new complexity (Sabelli, 1989, p. 298).

Whitehead who is regarded as the founder of Anglo-Saxon process philosophy incorporated Hegelian concepts fully (Sabelli, 1989, p. 286). In contrast, some contemporary process thinkers incorporate the more ancient, and process-oriented ideas of Heraclitus in including two types of contradictions which he formulated, i.e. opposites co-exist and opposites produce change. This is well illustrated in modern chaos theory (Gleick, 1987) where chaotic attractors "co-exist with the structures they form and in which the union of opposing forces cancel each other out (at least partially), delay the flow and thereby create stability" (Sabelli, 1989, p. 289). Opposites also create tensions which lead to bifurcation and change in (systemic) organization.

There are a number of current theories which fall within process thinking. Some of these theories include Chaos Theory, Thom's Catastrophe Theory, Heisenberg's uncertainty principle and Sabelli's Process theory. Chaos Theory, emphasises the dynamic emergence of an underlying order from apparent chaotic processes. Thom's Catastrophe Theory emphasises the non-linear nature of change and dynamic self-organization of systems. Heisenberg's uncertainty principle points to the complementary relationship between the position and the momentum of a particle in physics which implies that focussing on one aspect (the position) would imply an uncertainly in the knowledge about the other aspect (the momentum). Sabelli's Process theory promotes a strong focus on the union of opposites.

While teleonics does not claim to be a theory it is an ecology of ideas which has a current status of

being a model. A model is defined as an ecology of ideas which provides questions, pointers and directions for inquiry. Teleonics is a model which is grounded in systems philosophy and which operationalizes process-based systems ideas. Teleonics promotes a complementary perspective of process (punctuation of teleons) vis-a-vis structure (punctuation of doublets) where a flux of matter, energy and information (MEI) across levels of organization results in the emergence of stable and interconnect systems. In this dissertation the teleonics model is further developed by the presentation of three conceptual maps which are practical methods by which the teleonics model can be applied.

The movement from dualism to systems thinking requires a conceptual shift in the way one might enquire about the world. Even after this shift has been achieved, it is difficult to make a complete break with established methods, ideas and principles. Perhaps those systems thinkers who focus largely on structure have not (yet) achieved such a break. This statement is made with the knowledge that structure and process are inextricably linked. Whether structure is seen as the basis for understanding process or visa versa, emphasis on one or the other can promote a dramatically different perspective of a system.

To work from a process-based systems approach, it is necessary to have a world view of systems as open and interconnected in a "world of dynamic relations" (Jantsch, 1979, p. 239). From this perspective, processes can be studied as a continuous flow through concrete and conceptual systems and levels, unconstrained by structural definitions. When one works from a structure-based approach, the method of inquiry tends to study processes within or between structures but not as continuous processes through structures and levels.

When concentrating on structure, the first two steps in the analysis are the defining of the boundary of a system and the classification of components. Only when this position has been clarified are interactions (processes), identified and possibly explored. In contrast, the effect of having a process-based approach is that processes would be identified first, and then related structure as it appears to exist at a point in time and space could be considered. An important contrasting effect of these two perspectives is that with a structure-based approach the exploration of purpose tends to be secondary to the exploration of structure. However, with a process-based approach, what the purpose of the process might be tends to be a spontaneous question, i.e. why does the process occur? There are different ways through which teleonomic behaviour can emerge, viz., through intended, random or emergent purpose. Purpose can be a conscious or unconscious striving for a goal (e.g. where an intention is in place), can be random (e.g. conversing with friends after bumping into them at an international airport), or emergent, where the co-evolution of processes results in the emergence of a goal (eg. reason why animals follow a particular pattern of behaviour).

Examples of process-based systems thinkers include Gregory Bateson, with his theories on interrelationship, consciousness and logical types (Bateson, 1973; Young, 1984), Sabelli and Carlson-

Sabelli (1989) with their Integrative Paradigm derived from Process Theory, Katakis and Katakis (Katakis & Katakis, 1982; Katakis, 1989a) with their work on entropy and individuals and families as purposeful systems and Jaros and Cloete (1987, 1993) with their Biomatrix and Teleonic Framework. Examples of systems thinkers who tend to emphasise aspects of structure in their theories (not without subsequent attention to process), are Miller and Miller (1982) with their concrete systems and sub systems, Janoski and Schwartz (1985) with the Synchronous Systems model of spheres, Minuchin with his Structural Family Therapy Model and Maturana and Varela with their theory of Structural Coupling (Burnham, 1986; Hepworth & Larsen, 1986; Maturana & Varela, 1992).

Structure-based systems thinkers tend to emphasise the concrete nature of systems, regarding process as the change in the structure of the system over time (Miller, 1978; Miller & Miller, 1982), while process-based systems thinkers are concerned with relationships, relatedness and process, with structure being seen as a reflection or form of process. An example of how these approaches tend to be mixed is Maturana and Varela who are process-oriented in their notion of "bringing forth a world" in their theory of cognition, yet refer to ontogeny as "the history of structural change in a unity without loss of organization in that unity", where that change is seen to be determined by the structure of the system (Maturana & Varela, 1992, p. 74). Another example is the theory of social work practice (Heap, 1977; Pincus & Minahan, 1973) where systems are defined as distinct entities with intervention seen as a teleological process. Therefore, while the social work process is the means through which attempts are made to change a family or social system, this is done in a structural context even to the extent that the social worker is seen as an *outside agent*.

In the world view of process-based systems thinking, the whole universe is seen as an open system of dynamic processes with nothing existing as separate structure, and even when focusing on structure, one would perceive it as a perspective on process in time and space (Boulding, 1978; White, 1993a). Systems can be seen as processes, or organisations of processes or interactions, which occur in a dynamic matrix, i.e. the *web of life* (Ross, 1965; Jaros & Cloete, 1987) at a particular point in time. In this context, the past the present and the future all meet in "the little structure of the whole" (Smuts, 1926, pp. 103, 114). The processes whereby structures are maintained in dynamic internal balance as well as in contextual balance in the web of life, are themselves dynamic with patterns or relationships and structure providing some constancy over time.

It is not always possible to make clear distinctions between process-based and structure thinkers. In fact they probably form a dynamic *continuum* where systems theorists and practitioners are process- or structure-oriented to lesser or greater degrees, regarding various issues. Process-based premises which reflect the extreme process-based side of the continuum of systems thinking could include an acceptance of approximation, process and pattern, autonomy and integration, emergence, organization and teleos (purpose, goal, attractor, etc.). It is proposed that these concepts can provide general ideas for process-based systems practice.

2.4 Some general premises of process-based systems thinking

The general premises that are briefly outlined in this chapter are:

* Process nature of life.
* The premise of approximate rather than definite.
* Premise of dynamic organization.
* Processes of autonomy and integration.
* Creation as emergence.
* Teleos (Edwards & Jaros, 1994c).

2.4.1 Process nature of life

In the context of the process nature of life, wholes can be observed which represent those interactions of processes which cohere and persist in their organization over time. These wholes are interconnected and continuous with other processes in the *web of life*. The central issues of the process nature of life is well illustrated by the following quotation by Arthur Koestler:

> "Each sub-whole or organ system behaves as a self contained whole towards its subordinated parts, while behaving as dependent to its superior controls. Wholes and parts do not exist in the absolute sense either in living organisms or social organisation. What we find are intermediary structures on a series of levels in ascending order of complexity, each of which has two faces, one turned up (the dependent part) and one turned down (the autonomous whole)." (Koestler, 1969, p. 198).

According to Koestler, *holons* consist of independent and inter-dependent processes/tendencies and are not individual wholes.

All systems are open, although some systems do exhibit (albeit changeable) boundaries, i.e. negligible interrelations with the environment (Weiss, 1969). A process-based systems approach places the primary focus on processes and from this perspective, the relationship between process and structure is acknowledged. In looking at living structures, process refers to the (inter)action of the system as it relates with other systems or within itself, while the notion of structure represents the forms that emerge from arrangements of processes that appear constant in space at a particular point in time. Because systems consist essentially of processes, they are identified by distinguishing them from their contextual relationships in the web of life. Distinctions can only be made between systems or processes which persist long enough, or recur often enough, to deserve a name. In doing this, a shift in thinking from part to whole, from objective to epistemic science and from truth to approximate description is achieved (Thorpe, 1969).

Processes are like everchanging complex fluid streams in the web of life. Some attend to the

maintenance of a structure and some to the integration of a structure and in the process new processes and systems may emerge. Most processes are purposeful, have governance and express their action through the flow of matter, energy and information (Jaros & Cloete, 1987). Because of the repetition and persistence in the outcome of physical processes, it appears that there is some preferred (end) state in physical systems. The function of the processes is the action patterns that they go through to strive to their purpose. At various levels of the living web, processes tend to bunch together to form *doublets* (Jaros & Cloete, 1993). These represent an internal coherence of internally directed processes and outward directed processes at a particular time and space in the web of life. This is not a structural duality but refers to the contextual organisation of autonomous and integrative tendencies.

Patterning represents the tendency for processes to repeat themselves over time either because of teleological or governance (control) forces. Patterns are the complex connections that processes tend to follow or repeat and while they are not inflexible, they tend to persist in their organisation. Because of the tendency to conserve characteristic purpose and governance over time, some patterns appear as concrete structures. Koestler (1969) defines the pattern and structure of the system (holon) as the steady state of the open system. Therefore, while the idea of pattern suggests some sense of constancy, it is in fact dynamic in the creation of new patterns and the maintenance of existing patterns. Patterns are not separate or distinct from the processes which comprise larger systems but are part of the complex arrangement and organisation of those processes.

To illustrate the notion of a process-based systems view, the analogy of a flower is used. The flower is an example of a concrete system or a holon. The process of the opening of the flower is dependent on the maturity of the structure of the bud as it has developed to that point in time. The process of blooming is the actual unfolding of the bud over time. It is obvious that to look simply at process is in itself a kind of reductionism. However, the inclusion of context and emergence, albeit from a subjective perspective, contributes to the attempt at process-based systems thinking. The wider context in this metaphor might include the mother plant, the weather, the insects in the environment, the observer, ecology, etc. Emergence might be the development of the flower into a fruit as a food source, the beauty of the flower, the collective field as created by this and other flowers and plants, and even the ultimate breakdown of the flower and the resulting renourishment of the soil and the maintenance of the ecological balance. The pattern could be interpreted in many ways, for example the tendency of the process to repeat in a species of plant, in different species, in seasonal cycles or in different places at similar or different times. While it is not included in this discussion, it is also suggested that there is a hierarchy of meaning and purpose throughout this example, a concept that is also proposed by Bateson (1973).

It is impossible to describe everything about anything (Laszlo, 1972). This is because life is chiefly process and to a lesser extent substance (Weiss, 1969). Life needs to be understood as probability and in approximations rather than concretely. Processes are the input, output and self-maintenance

actions of systems and are inherently dynamic and variable.

2.4.2 Approximate rather than definite

Essential to the process-based approach is the implementation of contextual interpretation of complexity, the acceptance of the uncertainty of knowledge, the respect for researcher subjectivity and the focus on systemic relationships. Implicit in these requirements, is the position that perception is a deep and complicated matter and that knowledge is subjectively constructed and *approximate* (Katakis, 1989b). In challenging realist and objectivist versions of science, this constructivist approach is a critical departure from the traditional scientific viewpoint and focuses on the well documented holism and reductionism debate (Bateson, 1973; Frankl, 1969b; Koestler, 1978; Laszlo, 1972; Neimeyer & Neimeyer, 1993a; Smuts, 1926; Thorpe, 1969; von Bertalanffy, 1969). Critical arguments against Cartesian reductionism relate to the naïve interpretation that analysis of parts reflects an understanding of the whole and the assumption that knowledge can be definite and concrete (Frankl, 1969b; Thorpe, 1969). While there are obvious benefits for the scientist to analyze complex phenomena into their constituent elements (Koestler, 1978), this has to be understood as a limited mode of enquiry. Holism states that complexity needs to be understood contextually and with an acceptance of uncertainty since there is simply more to body, mind and nature than the apparent structures that emerge as a result of reducing the whole to its parts (Burnham, 1986; Smuts, 1987).

Reductionism is possible in the systems view by maintaining an awareness that any statement holds from a certain reality, and has only relative validity (von Bertalanffy, 1968). That is, in singling out any perspective of a system in need of investigation, one is already guided by ones values suggesting that, not only are findings not generalizable to the whole but, they are inherently approximate because of the uniquely subjective view of the enquirer. While the researcher must constantly be aware of the contextual meaning of findings, he must also be aware of, and maybe even report on, his relationship with the phenomenon/system being studied and the patterns of connections that emerge in the process of investigation. Therefore, a genuinely interpretive systems theory would have to probe the systemic nature of interpretations (Fuenmayor, 1991), and encourage research methods that embrace this premise of approximation rather than deny it. Therefore, research methods previously discouraged by traditional science such as case studies, participant observation, and self report data, are compatible with a process-based systems position.

2.4.3 Dynamic organization

"You cannot step into the same river twice"
(Heraclitus, in Chopra, 1989, p. 4; in Kirk et al., 1983, p. 187).

While systems theory may have been accused of being diffuse and abstract, there is no confusion about the existence of organisation in systems. The laws of unorganised complexity that are found in the theory of probability and the laws of organised complexity, the understanding of which is a critical problem today, are essentially systems laws (von Bertalanffy, 1969).

When considering organisation in systems one might be inclined to think of a structural metaphor, while process-based systems thinking involves the conceptualisation of organisation as actions in time and space. This organisation is *the pattern which connects* (Bateson, 1973) suggesting a very open and dynamic hierarchical organisation, in which systems are part of a complex network of processes without a rigid foundation, i.e. the description of *the subject* can begin at a variety of different places with no clear starting point (Capra, 1988; McNeil, 1993). Hierarchical organisation, termed *holarchy* by Koestler is seen to be integral to living nature (Koestler, 1978; Weiss, 1969) and has been a well recognised core concept in systems thinking (Checkland in Fuenmayer, 1991; von Bertalanffy, 1969; Koestler, 1978). From about the 1960's, philosophies of integrated levels, called scalar hierarchies (Salthe, 1988; Salthe, 1989), overshadowed the earlier structural notions of hierarchical levels. It is now generally agreed that the notion of hierarchy does not represent a top to bottom hierarchy, but is more a concept of network or web dynamics (Weiss, 1969). Geoff Chew (Capra, 1988) a physicist, was the first to propose a scientific theory in which a *web philosophy* was explicitly formulated. Others followed with metaphors such as the tree and the fishing net with even these metaphors seen by some as inadequate in reflecting the complexity of dynamic organization (Baas, 1993). The concept of levels is very much part of the notion of hierarchy and might be important as a source of categorization to structure-based systems thinkers (Miller & Miller, 1982), but to process-based systems thinkers it simply indicates the focus of attention, and in that sense illuminates context.

Dynamic organisation is conservative in spite of the ongoing flow of matter, energy and information through systems. If one focuses on the stability or the flux of systems this is less an indication of the property of that system but rather an indication of the perspective or level in the hierarchy which one is observing eg. at molecular level there is substantial conservation/stability while at other levels structural organization is less stable e.g. the shape of a cloud of steam. It is also a matter of the time frame that is used to observe stability versus instability, everything changes but some processes or structures appear to be conserved (i.e. change slowly) and others appear to evolve. In terms of the research methodologies that follow from these positions, the major distinction is whether one is observing over time (will tend to observe flow and interaction) or space (will tend to observe more stable organization). Ultimately everything is changing and evolving and this issue points to the duality

of process and structure.

The essential invariance of systems beyond the much more variant flow and fluctuations of processes and structure (Laszlo, 1972; Weiss, 1969) is termed *autopoietic organization* by Maturana and Varela (1992, p. 43) and refers to the relatively steady states of living systems maintained by the use of adjustment processes (Laszlo, 1972). According to Miller and Miller (1982), many of these adjustment processes, which allow for degrees of rigidity and flexibility, are negative feedback loops which are found in all living systems. While the feedback model was a technological development (von Bertalanffy, 1969), feedback and equilibrium are phenomena of self-regulation and adaptation found especially in biological systems. The phenomenon of equilibrium has been well used by systems thinkers. Conceptually it refers to a point attractor with the more dynamic and creative notions of strange or chaotic attractors being more congruent with the premise of dynamic organisation. With reference to feedback processes, the simple feedback scheme is a useful yet limited metaphor of what happens in systemic relationships in a much more complex and dynamic way. It is unfortunate that in trying to understand complex and dynamic feedback processes, it seems to be difficult to avoid looking at what appear to be linear and unidirectional feedback systems. Inevitably, the richness of complexity is lost and one has to wonder if it is possible to explore the feedback concept out of the mechanistic framework within which it was developed. A compromise is to accept that while the basic feedback scheme is still the classical stimulus-response scheme, feedback loops are sought so that causality becomes circular and some measure of complexity is approached.

Lastly, dynamic organisation of living systems is further illustrated by the notion of the whole being more than the sum of its parts. In the web of life, interconnections and relationships can occur with the emergence of new organisation, that is qualitatively different to the processes from which it emerged. For example, a swallow repairing a nest is not only a bird putting bits of mud under the eve of a house but, amongst many other things, represents the organisation of cycles of swallow nesting patterns, the cycle of the seasons, a part of a pattern in an ecosystem, a symbiotic relationship with human development as well as wonder and awe in the eye of an observer.

Living systems are essentially open systems (Capra, 1988; von Bertalanffy, 1968; Koestler, 1978) and dynamic organisation is not random nor determined, but emerges with the ongoing creative processes, patterns and interconnecting relationships of systems. Therefore, dynamic organisation is essential to the organisation of inner cohesion and relative stability of systems (tendency to autonomy), as well as the maintenance of interconnections and adaptation to other wholes (tendency to integration), and to the emergence of systems (Weiss, 1969).

2.4.4 Autonomy and Integration

> "Firstly, there is the unity of things whereby each thing is at one with itself. Secondly, there is the unity whereby one creature is united with the others and all parts of the world constitute one world." Pico della Mirandola - 15th Century Platonist (in Koestler, 1981, p.325)

Despite the tremendous biotic potential to reproduce at rates which would quickly flood their environments (Ross, 1965), *uncivilised* living systems tend to coexist in sustainable environments over long periods of time. This is due to the autonomy and integration of ecological processes, sub-systems and systems.

Systems are autonomous wholes, i.e. they have their own intrinsic rhythm and pattern and tend to assert their own laws and characteristic pattern of activity (Koestler, 1969; Maturana & Varela, 1992). Every organism is a whole with a certain internal organisation, measure of self-direction and individual character of its own. Smuts (1926) refers to the urge to self expression as the process of individuation and the urge to ordering and blending unity as the universal tendency, while Koestler refers to these processes as self-maintenance and self-assertion respectively (Koestler, 1969; 1978). Koestler further puts these processes in the context of representing systems as Janus faced holons, the term holon being applied to any stable sub-whole in an organismic, cognitive or social hierarchy which displays rule-governed behaviour and or structural Gestalt constancy (Koestler, 1978).

Conceptually, systems are "seamless wholes with indiscernible boundaries determining qualitative states" (Salthe, 1989, p. 206). Absolute parts and wholes do not exist in the domain of living organisms, in social organizations or in the universe at large (Koestler, 1978). Every system is possessed of two opposite tendencies or potentials; an integrative tendency to function as part of the larger whole (expression of its partness), and a self-assertive tendency to preserve its individual autonomy (expression of its wholeness). While opposites are usually understood to refer to mutually exclusive positions, in this context it refers to the complementary and mutually interdependent coexistence of opposing relationships and is referred to as a union of opposites (Sabelli, 1991b; Sabelli & Synnestvedt, 1991).

Both autonomy and integration are powerful tendencies and are essential to the dynamic processes and interactions that facilitate the functioning of systems as unique *wholes* and as part of existing or evolving larger wholes. These tendencies are by and large conservative, that is they tend to maintain the autonomy of systems as well as their successful integration into larger wholes. If one tendency emerges to compromise the other, this represents unhealthy and even destructive conditions in the web of life (Piaget & Inhelder, 1969).

Therefore, out of the relationship between the tendency towards autonomy and the tendency to

integrate, a conceptual polarity emerges (Piaget & Inhelder, 1969). This polarity can be traced in all phenomena of life (even inanimate nature) and the relative stability of interconnected systems depends on the integrity of these opposite tendencies (Koestler, 1978).

The integrative tendency has the dual function of co-ordinating the constituent systems of larger systems and of generating new levels of complex integrations in evolving social, biological or cognitive hierarchies (Koestler, 1978). This occurs as primarily active, not merely reactive processes so that new patterns of structure and behaviour are created. Thus, as each natural system responds to inputs from its fellows, it in turn provides new inputs, thus constantly challenging other systems by eliciting active, not merely passive, responses (Koestler, 1978; Laszlo, 1972). This reaction and action is subject to an overall regulatory control system with features of continuity and relative invariability of pattern (Weiss 1969).

An important function of the integration of wholes into larger wholes, is adaptation, which implies the closest interaction between the organism (system) and the (contextual) environment. Interaction may lead to accommodation, which is the integration of external factors through modification of the organisms structures, and implies a continuity between earlier and later structures (Piaget & Inhelder, 1969).

Integration on the other hand, is not only about accommodation and survival of the system, but is about actively generating creative, adaptive relationships between systems. This tendency to be part of a larger whole is therefore also the tendency to creativity as integrative relationships are formed and new processes, relationships or wholes emerge.

To summarise, autonomy and integration are conceptual polarities in systems and are both conservative and resilient characteristics. Those like Varela, who stress autonomy tend to focus on organisms and those like Bateson who stress integration, tend to an ecosystemic perspective (Salthe, 1988).

2.4.5 Creation as emergence

One tends to think of creation in the context of novelty and development. The emergence of creation could also be intended through creative design, i.e. it can be designed. While emergence is a creative process which could be random or determined, ongoing emergence of creation can be seen in the process of living systems maintaining themselves. Nonliving systems degrade over time as entropy increases, while living systems are more complex in structure and process and can combat, for varying lengths of time, the inevitable increase in entropy that leads to dissolution of matter-energy of all sorts. It can be said that the organism feeds on negative entropy, also called negentropy, which is the power of living organisms to *build up* instead of running down, to create complex structures out of simpler

elements, i.e. order out of disorder (Katakis & Katakis, 1982; Koestler, 1978; von Bertalanffy, 1968). In efforts to achieve minimum entropy, open systems do not only maintain existing patterns but new processes, relationships, patterns and systems, emerge.

While the idea of telentropy was inspired by the concept of entropy, telentropy is quite different. The main difference is that entropy is a concept that relates to the physical properties of a system, and for example to thermodynamic entropy and entropy relating to information (work by Boltzman and Shannon). Physical entropy is conserved, which means that when it is transferred between systems, the entropy itself is transferred (eg. when a banana peel is dropped to the ground the process of it moving to disorder is inherent in the physical structure of the banana peel). On the other hand telentropy is a probability of a teleon reaching its goal and can be *passed* when teleons interact. When the probability of the *satisfaction of teleos* changes (positively or negatively) with the interaction of teleons, it is said that telentropy is transferred. Thus, telentropy is relative to the teleos of the system **not** the physical properties or the information content of the system and it is not necessarily conserved (which is in fact the main distinction with entropy). It can immediately change from very low to very high if the teleos changes. This is illustrated further by the example of a banana peel. From a physical entropy perspective the banana peel has certain entropy attached to it. If the banana peel is thrown onto the pavement, the telentropy in the commuting teleon of pedestrians is increased because of the lower probability of safe commuting. If the banana peel is thrown on the garden, telentropy of the plant growth teleon is drastically reduced because of nutrients becoming potentially available in the soil. Thus the telentropy is a concept relative to the teleos of the processes being observed whereas, if one considers the entropy in the banana peel it would stay the same regardless of where it was thrown.

In other words, emergence is a manifestation, which is more complex, or in some way more or differently organised, than the context from which it arose (McNeil, 1992a). The emergence of new structure and process could be ontogenesis or phylogenesis, ontogeny being the growth and maturation of the young of self-reproducing species, with phylogeny being the creative advance of nature into novelty (Laszlo, 1972). Three essential factors are involved in the process of the phenotype being *produced*, i.e. matter, energy and information. These factors produce phylogenesis by means of an indissociable interaction between hereditary factors and environmental influences, making it impossible to draw a clear line between the innate and the acquired (Boulding, 1978; Piaget & Inhelder, 1969).

Evolution is a process, where new levels of complexity emerge as systems go from simple to complex (Laszlo, 1972; Smuts, 1926). Each higher level of living system, as it evolved, developed capacities for behaviour qualitatively different from that of lower-level systems (Miller & Miller, 1982). In spite of the ability of systems to respond creatively to the environment, the development of organic species is influenced by the systems tendency to autonomy, i.e. emergence is closely related to self-organization (Baas, 1993; Laszlo, 1972). There is a balance between autonomy and integration that not only conserves the system but contributes to the conservation of larger wholes and even to patterns of

wholes in the web of life.

Another form of emergence is self-creativity or morphogenetic variation of the system which is a response to changing conditions which cannot be offset by adjustments based on the existing structure (von Bertalanffy, 1968). This theory of morphogenetic variation of the organism goes back to the Lamarckian ideas of environmental response and adaptation, and can be understood as the development of complexity and habits adopted under the influence of the environment (Miller & Miller, 1982; Piaget & Inhelder, 1969).

Emergence is also the **more** in the **whole being more than the sum of its parts.** Areas that defy mechanistic and reductionistic explanation but can be fruitfully explored in the context of process-based emergence include artistic creation, appreciation of beauty, and emotions such as love and empathy (Koestler, 1978).

2.4.6 Teleos

> "Purpose is not imported into nature, and need not be puzzled over as a strange or divine something that gets inside and makes life go ... it is simply implicit in biological organisation".
>
> (Nobel Laureate H.J. Muller in Koestler, 1978, p. 213).

The issue of purposeful organization and goal-directed behaviour continues to spur interesting debate (Winburn, 1991). Arguments against teleological reasoning and explanation, are frequently made because of scientific paranoia against vitalism or spiritual forces in systems. The obvious need for explanations of goal-directed behaviour in the life sciences and a growing support for goal-directedness in living systems, has prompted efforts to legitimize their scientific use (Bailey, 1993; Campbell, 1991; Winburn, 1991).

Although, notions of teleology appear to be outside of conventional science, aspects such as adaptiveness, purposiveness, goal-seeking and the like, do exist (von Bertalanffy, 1968). Probably all processes and certainly all systems have teleos, otherwise stated as a goal-seeking tendency (Jaros & Cloete, 1987; Winburn, 1991). Each part of a system operates according to context-sensitive self interest (Van Der Hoorn, 1995). The word teleos is a Greek word meaning *aim, purpose* or *end* and can manifest as intention, as purposeful behaviour (where the goal is unclear), or as an emergent goal. Intention is the expression of free will as desire or in the making of decisions and is a valuable human quality generally associated with consciousness. Purposeful behaviour, where a goal is unclear but becomes apparent over time, might be when a wasp duels with a spider, not because of the apparent aggression, but to eventually provide food for her young. An example of a situation where goals emerge from developing processes over time could be when friends intend spending more time

together, become emotionally closer, plan to be married but quarrel so badly that their relationship deteriorates to the extent that they strive to avoid one another for the rest of their lives.

Contrary to the Cartesian theory of change and structure being totally governed by natural laws, the process-based idea of change and structure is governed by the non-Newtonian concepts of goal-directedness and self-organization. This goal-directedness and self-organization towards a definite inherent inner end or goal constitutes the distinctive character of a whole (Salthe, 1989; Smuts, 1926). Teleos is more about being directed towards, rather than reaching goals and thereby reveals contextual meaning and governance of the processes of a system. Teleos is not separate from a system but, as with governance, is an essential and integral part of all the processes occurring within and between systems (Jaros & Cloete, 1987).

In a process-based systems approach, once a process has been identified the question of why that particular process exists occurs spontaneously. While Cartesian science might explain the how, it has difficulty explaining the why of processes and systems (Young, 1984). The exploration of teleos encourages the enquirer to seek an understanding of the organisation and function of autonomous and integrative processes of systems in the context of time, space and development.

2.5 Conclusion

The process-based premises outlined in this chapter are presented to encourage the development of practical models and frameworks for application in systems practice. While these premises may need to be expanded and clarified in open debate, and others may need to be included, clear statements on some of the critical stumbling blocks to progress in the practical application of systems practice have been made in this chapter. These include promoting a shift from a conventional scientific approach to one which will encourage some new insights and perspectives in our view of the world, including an acceptance of subjectivity and approximate reality. A further statement refers to the need for broader parameters regarding acceptable scientific models and language. Since our models and language are at best approximations of reality, the language of explaining natural systems should be depictive rather than descriptive with the language of metaphor, subjectivity and experience being accepted as valid.

In view of the ongoing calls for the application of general systems theories these premises of process-based systems thinking could bring us a little closer to addressing some of the long standing barriers to progress in applied general systems practice.

CHAPTER THREE: THE RELATIONSHIP BETWEEN PROCESS-BASED SYSTEMS THINKING AND THE FIELD OF PSYCHOLOGY

3.1 Introduction

Psychology as an independent and formal discipline is little more than 100 years old. Before that it was simply regarded as a part of philosophy, with its development having been strongly influenced by the greater trends of philosophy (Jordaan & Jordaan, 1984). During the last 100 years, psychology has tried to emulate science rather than to explore its own unique subject matter. At the same time, apart from the contributions of Sigmund Freud, psychology had very little to offer other sciences (Kvale, 1992). The structure-based study of objects and the notion that conditions that determine behaviour can be elucidated by experimentation have recurred in the history of psychology, with the effect of bringing it closer to the science ideal (Beitman, 1990; Joynson, 1976; Kvale 1992). This science ideal has been referred to as *modernism* and is associated with the belief in a world of orderly and rational laws which can be studied through the experimental method and which would be in the pursuit of happiness and material wellbeing (Gergen, 1992; Strijbos, 1993; Young, 1984). Mitroff (in Reason & Rowan, 1981a, 1981b) suggests that in practice most scientists are flexible, using combinations of rationality and emotions, yet many important connections are still disregarded in orthodox science (Rowan, 1981a). Bohm (in Weber, 1981) argues that science has failed to grasp the meaning of its models and what they imply for human life, confining itself to pragmantic goals. On the other hand, the *postmodern* era of psychology promotes dialectical research paradigms (Rowan, 1981b), and is characterised by process-based subjective and active participation in research and practice, where concepts such as values are respected, thus bringing psychologists into a conscious relationship with the people they work with (Kvale, 1992). In this chapter a brief overview of process- vis-a-vis structure-based thinking in psychology is discussed and then, the process-based systems premises presented in chapter 2 are discussed in relation to the field of psychology.

3.2 Process vis-a-vis structure in psychology: Overview

Process-based thinking can in fact be traced back to the final years of the 5th Century BC when Heraclitus of Ephesus, made his famous remark "you never step twice in the same river" (Kirk et al., 1983, p. 187). To Heraclitus all things were in motion, even though "a complex whole, like the world, might remain the same while its constituent parts are forever changing" (Kirk et al., 1983, p. 187). Heraclitus also referred to the "Logos being the unifying formula for the arrangement of things....of which men are part" (Kirk et al., 1983, pp. 186-187). In the fragments which represent his work, he wrote about the dual nature of things, which can be regarded as wholes or parts. He also stressed the union of opposites, which ensures coherence without which no life on earth would be possible. Unfortunately the work of Heraclitus was ridiculed by Plato and was forgotten for many centuries.

The non-process bias which is still dominant in psychology today can be seen in psychological thought from the Archaic Behaviorism of the Greeks, through the 3rd Century to the 15th Century AD, when reason emerged as a competitor to faith as a legitimate source of human knowledge (Brennan, 1982; Kantor, 1976). In the 17th and 18th Centuries, psychological theorising emerged strongly in France, Britain and Germany where attempts at objectivity further encouraged the process of separation from the provinces of religion and speculative philosophy (Brennan, 1982; Jaynes, 1976). Charles Darwin's influence on all scientific culture, including psychology, saw the eventual triumph of reason over faith, paving the way for the age of modern science. The domination of essentially structure-based determinacy and empiricism was confirmed when in 1879 William Wundt established his laboratory at Leipzig to study the content of the mind through the discovery of basic elements (Goodson & Morgan, 1976; Horgan, 1976). This was continuous with the idea that had endured since Aristotle that "the mind was conceived of as an array of properties or characteristics with which an individual was endowed" (Watzlawick, Bavelas & Jackson, 1967, p. 25). This physiological psychology was a structuralist approach and heralded the beginning of the schools of thought in psychology and the start of psychology as a discipline distinct from philosophy (Chopra, 1989; Goodson, 1976; Goodson & Morgan, 1976; Hearnshaw, 1972; Jordaan & Jordaan, 1984). By 1918 diversity in psychological thought set the scene for the fierce competition between schools on what constituted legitimate psychological study and practice, but the debate was to remain almost exclusively structure-based for some time (Zangwill, 1972). Of the vocabulary that was introduced to explain psychological concepts, most terms were made up of single more or less unrelated concepts which were largely studied in isolation (Watzlawick, et al., 1967).

Behaviourism, represented by John Watson's proposal in 1913 that the sole legitimate subject matter for a true science of psychology was observable behaviour, is perhaps the most extreme example of structure-based thinking in psychology (Boden, 1972; Brennan, 1982; Mindess, 1988; Zangwill, 1972). In Europe, Act psychology and later Gestalt psychology and psychoanalysis, challenged structural psychology with models of mental processes which were clearly aligned with the German tradition of the mind as an active, dynamic and self-generating entity (Brennan, 1982; von Bertalanffy, 1968). The psychoanalytic movement, which took the implications of mental activity further than any other theory (Brennan, 1982), was never close to academic psychology, and emerged as a product of clinical practice (Hearnshaw, 1972; Brennan, 1982; Zangwill, 1972). The broad psychoanalytic movement dominated psychiatry and clinical psychology until the 1960s when behaviour modification, and to a lesser extent humanistic psychology, emerged as alternate models of therapy (Brennan, 1982).

Perhaps, seen from a humanistic perspective psychology is very unsuited to a medical/mechanical input/output model (Jacobson, 1994). Humanistic psychology, together with phenomenology and existentialism, emerged as part of a substantial movement of the 1960s against mechanism and reductionism in psychology and contributed to the opening of attitudes to a postmodern era (Bateson, 1979; Brennan, 1982; Capra, 1988; Koestler, 1978; Kvale, 1992; Miller & Miller, 1982; Smuts, 1926;

von Bertalanffy, 1968). The emergence of humanistic and systems views of people emphasised the unique and holistic notion of man, encouraged a perspective of approaching people as people (Maslow in Reason & Rowan, 1981c), and opposed the psychological techniques and approaches that threatened to robotize man. This idea of human systems being distinguishable from other living systems is well said by Gordon Allport (1981, p. 64) in his statement that "the human system, unlike all others, possesses a degree of openness to the world, a degree of foresight and self-awareness, a flexibility and binding of functions and goals that present a unique structural challenge far more insistent than that presented by any other living system". He also suggests that research in psychology has focused almost exclusively on commonalities in personality which are the horizontal dimensions that run through all individuals. Hardly any time has been spent on considering how they are patterned together with the vertical dimensions of individual experiences (Allport, 1961; 1981).

Systems thinking is congruent with the postmodern era in psychology. Process-based systems thinking, as presented in this dissertation, is congruent with the postmodern movement in psychology in that it points to the movement away from structure/entity oriented thinking associated with modernism. From a research methodology perspective, process-oriented research is more coherent with the qualitative methodologies that have not always been welcomed or supported in the context of modernism. As stated by Robson (1993, p. 438):

> "Conventional laboratory-derived research styles seek to minimize the degree of involvement between the researcher and the researched in the interests of objectivity. This falls foul of much that is known about the change process, and of conditions facilitating change. The discrepancy is not surprising as the task of conventional pure scientific research is to describe, understand and explain - not to promote change. Coming to terms with the dual roles of understanding and promoting change calls for a different view of research."

Systems thinking, especially process-based systems thinking connects the researcher essentially with the subject or object matter indicating an essential relationship of being connected to rather than outside the research process. In this way research in the fields of process thinking connect more closely with the postmodern methodology rather than the more conventional experimental methodology of modernism.

Systems thinking first became prominent in the middle of the century with research in cybernetics increasing understanding of control and communication processes in self-governing and goal-directed

systems (Hunter, 1972; von Bertalanffy, 1968). The post World War II era saw an increased interest in the pursuit of understanding the interdependence between the individual and his environment. This conceptualization of organism-environment interaction differed substantially from the psychodynamic model and indicated a shift in influence from energy theories to information and communication theory in the philosophy of science (Watzlawick, et al., 1967). Systems research, which was aimed mainly at solving practical problems concerning man-machine systems, led to much wider implications highlighting people as the user and creator of countless skills from physical ability to symbolic logic and expert judgement. Therefore cybernetics as a systems approach in the linear feedback model, inadvertently contributed substantially to the growth of systems thinking in psychology.

Systems thinking in psychology supports the view of an individual as an active, open system, as opposed to a reactive automation or robot (von Bertalanffy, 1968). While influential systems theorists such as Miller and von Bertalanffy presented systems models which emphasized structure, Koestler, Bateson and Smuts proposed ideas that were holistic and process-based (Bateson, 1979; Koestler, 1978; Smuts, 1926;). These process-based views of people emphasised the harmonising in an ecological vision, and became better known at a time when rigid systems in psychology began to relax. This relaxation accommodated humanistic and holistic trends which were represented by the emergence of treatment and research strategies oriented towards the enhancement of the process of life rather than to the preservation of theoretical positions. Holism drew critical attention to the highly regarded scientific orientation (Strijbos, 1993), but was regarded by many as anti-establishment and chaotic (Frankel, 1976). Capra (1988), suggests that such a reaction is characteristic of a Western culture where individuals tend to equate their identity with their rational mind rather than with their whole organism, making it difficult for them to appreciate the universe as a highly organised open system.

Part of the postmodern era in psychology is the challenge to established theories by developments in applied fields, where decisive moves are being made away from rigid structure-based theoretical positions, towards eclecticism and responsible convergence in theory (Messer, 1990; Norcross & Grencavage, 1990). Polkinghorne (1992) suggests that, while practical psychology originated under the shadow of academic psychology, through the actual interactions between practitioners and clients, eclecticism has emerged in the form of fragmented and discordant theories and techniques. While a certain degree of borrowing, assimilating and integrating of theory in psychotherapy is probably inevitable and even desirable (Messer, 1990), the disparate logic of many of the psychological theories, means that simple combination or unsystematic synthesis is inappropriate (Boden, 1972; Jordaan & Jordaan, 1984; Lazarus, 1990; Winburn, 1991). There is a need for coherent inclusive and interdisciplinary approaches (Norcross & Grencavage, 1990; von Bertalanffy, 1968) where an individual is viewed in a holistic context and where physiological processes, conscious and unconscious, and social, contextual and even spiritual experiences are seriously accepted as part of the human condition (von Bertalanffy, 1968).

While the holistic vis-a-vis reductionistic debate highlights the distinction between mechanistic and systemic thinking, the important distinction being made in this argument is between structure-based and process-based perspectives and paradigms. A process-based approach is a view of systems as open and interconnected, where processes are in continuous flow and flux through concrete and conceptual levels. This is a view which can only be congruent with a systems philosophy of the world and is in strong conflict with over-simplified linear interpretations of reality (Andolfi, 1979). It must be remembered that not all systems theories and approaches have a view of the world as dynamic relations, and as with mechanistic thinking these systems theories tend to regard the world as essentially structure- rather than process-based.

A process-based system approach includes the acceptance of a contextual understanding of the psychology of people which should not only be ecological, but should include people's internal processes. While some internal processes may have general qualities and characteristics, they are creative psychological, spiritual, organic and developmental novelties in every human being (Smuts, 1926). Process and structure are not antitheses but are essentially interdependent with one being viewed as prominent relative to the other, according to the perceptual position of an observer. A process-based systems approach shares many similarities with an ecosystems perspective. However the ecosystems perspective "focuses on the junction or interface of the organism and the impinging environment" (Greif & Lynch, 1983, p. 36), while a process-based systems approach strives to include relationships not only between the system and the environment but within the organisation of that system, i.e. a perspective of processes flowing through a minimum of three levels. According to Andolfi (1979), in a systems approach, human beings and events are studied in terms of their interactions rather than their intrinsic characteristics.

While such a systems approach encourages the formulation of circular interactional thinking, it includes but does not specifically emphasise continuity of processes through complex interrelations across many levels of interaction. A model which does look at the continuity of processes through levels is teleonics (Jaros & Cloete, 1987; Cloete & Jaros, 1994), which is a good example of a process-based systems approach where structure can be regarded as the physical or conceptual cohering of processes in time and space, and processes as continuous flows through systems and levels, unconstrained by structural definitions.

This foregrounding of process vis-a-vis structure can be traced to antiquity when Heraclitus presented his ideas emphasising interconnectedness, process, the essential unity of opposites and the relationship between wholeness and partness in the dynamic arrangement of *things* (Kahn, 1981; Kirk et al., 1983; Wheelwright, 1959). Interpretations of his writing included the idea that "nor can one grasp any mortal substance in a stable condition, but it scatters and again gathers; it forms and dissolves, and approaches and departs" (Kahn, 1981, p. 53). The brief accounts by historians on the relationship of Heraclitus to his peers (Kahn, 1981) suggests that he was not well received by his fellow citizens and

differed from most of them in the way in which he understood the world to be.

In contrast, a structure-based position defines and emphasises the material or conceptual structure of a system in relation to processes which tend to be regarded as change in the structure of the system over time (Miller & Miller, 1982). A structure-based perspective, even if it is a systemic view, is largely directed at the identification of matter, components, entities or phenomena in the mechanistic and reductionistic tradition (Fielden, 1993). Processes, if they are considered at all, are viewed as secondary to structures. Maturana and Varela (1992) in their proposal that an organism's range of possible behaviour is determined by its structure, albeit emerging out of relationships and processes, represent a structure-based systems orientation of cognition. The synchronous systems model is another example of a systems design which, while accepting the concept of process, works from the essentially structure-based position that it is design and not intention that creates the future (Winchester, 1993). In the structure-based systems perspective processes are usually given some attention but are *backgrounded* relative to structure, thereby emphasising the structures that are connected rather than the process and continuity of connectedness.

While it is not the intention of the present author to debate epistemological and ontological issues directly, the distinction being suggested between process-based and structure-based (systems) thinking reflects an epistemological position defined as *how we know about the world* and an ontological opinion on *how things are what they are* (Dell, 1985). In the process of *foregrounding* process relative to structure the perspective taken tends to deal with epistemological questions, while when *foregrounding* structure one is directed to ontological issues. It is suggested that epistemology and ontology are essentially interrelated and interconnected in that they inform, explain and challenge one another, eg. a position on *how we think we know* relates to how we experience the world and what that world *is* for us. Congruent with process-based systems thinking, Gregory Bateson (Bateson, 1973; Dell, 1985) denied that objectivity was possible, suggesting that it is only in relationship with the world we seek to know that we make assumptions about that world. In making those ontological assumptions we are engaging in a process of expressing our epistemological beliefs. While it is not within the scope of this dissertation to expand on this issue, it is accepted that epistemology is vital to any coherent science of the living (Bateson, 1973; Dell, 1985), and is therefore critical to the development of coherence in psychological theory and practice.

3.3 Premises of process-based systems thinking in psychology

A systems view of man, and especially a process-based systems view, raises issues largely ignored by science regarding aspects of creativity, self-awareness, unpredictability, multivariable interaction, dynamic organization, self-maintenance, directiveness, etc. (von Bertalanffy, 1968). New conceptual tools are needed to reflect process-based thinking in a holistic world view, where human systems are approximately and subjectively defined (Fielden, 1993), and structures are seen as defined coherence

in a multidimensional web of ongoing processes (White, 1993a). Some essential premises to process-based systems thinking in the context of psychology include: systems as approximate rather than definite, the process nature of life, dynamic organization, the union of opposites and the premises of governance, teleos and emergence in systems (Edwards & Jaros, 1994a, 1994c, 1995).

3.3.1 The approximate nature of systems

Because experimentally rigorous research along the lines of the physical sciences has been valued in mainstream psychology, research has been biased to study easily observable behaviours and the approximate or *messy variables* that abound in therapy and life have been neglected (Hill & Corbett, 1993). The human organism as a bundle of conditioned reflexes is an abstraction (Joynson, 1976), each human individual is an illusive system with a blur of unpredictability at its core, rendering it impossible to generalize human behaviour, experience or emotions, confidently (Blanchard in Blanchard & Skinner, 1976; Koestler, 1981; Smuts, 1926).

The unpredictability of the contextual, goal-directed and approximate nature of processes suggests that observation and explanation in research can only be contextual and subjective viewpoints of the *here and now*, making ecology rather than genesis the point of departure (Walrond-Skinner, 1980). In addition to the *observed* being somewhat *approximate*, so is the perceiver who is an active and independent responder constructing his own understanding of the world through the lens of his or her theoretical and personal framework (Bateson in Dell, 1985; Feixas et al., 1993; Katakis & Thomassin, 1988; Kendler, 1976; Kendler & Spence, 1976; McNeil, 1992b; Rice & Saperia, 1984; von Bertalanffy, 1968).

"Nature as approximate rather than definite" refers to the process nature of the objective, i.e. position of process monism. While this premise is not centred on the issue of objective/subjective, it has implications for the subjectivity of observation. The priority of the objective and supremacy of the subjective as described by Carlson-Sabelli and Sabelli (1984) and Sabelli (1989) explains how the subjective versus objective can be understood and used in the psychotherapy situation.

Thus, the notion that what we know is largely due to the distinctions that we make (Keeney, 1983) with no one correct interpretation of a process or relationship being possible, is part of the rapidly emerging field of constructivist theory. Constructivist theory is "a diverse interdisciplinary family of constructivist orientation sharing the common premise that we do not have direct access to a singular, stable and fully knowable external reality" (Neimeyer & Neimeyer, 1993a, pp. 1-2). Constructivist metatheory focuses on the purpose and self-organization of human knowing and since it also includes perspectives on types and levels of change (Lyddon & Alford, 1993) it can accommodate interpersonal as well as intrapsychic approaches to counselling (Neimeyer, 1993).

There has been an emphasis in modern psychology on experimental and quantitative research as desirable methodology. It is, therefore, interesting that the most profound influence on modern psychological thinking should come from a man such as Freud, whose research was not quantitative, and whose main source of inspiration was clinical practice and his own self analysis. Yet resistance to the premise of approximation of process might be shown because of the fear of legitimising chaotic, unsystematic and disorganized research. This fear is unfounded with reference to the process-based systems view which regards systems as highly, albeit dynamically, organised.

3.3.2 The process nature of systems

The essentially process nature of living systems postulates that processes are everchanging, complex action patterns in the web of life, and represent the flux and flow of living systems (Jaros & Cloete, 1987). Non-tangible psychodynamic processes have generally been reframed in objective language or excluded from mainstream psychological theorising (Skinner, 1976; Piaget & Inhelder, 1969). In the process-based view processes that form the personality system are continuous with the biological dimension (eg. neurophysiology), the social dimension (eg. interpersonal relationships), ecological dimension (eg. development and function) and even the spiritual dimension (eg. enlightenment, upliftment, inspiration, etc.). In contrast to strict psychoanalytic and behavioural theory, the process-based view of personality is of an ongoing emergence and transformation of patterns of process, which tend to persist in particular contexts. Therefore, since individuals need to be understood in their relationship to larger wholes, it is held that personality does not rest on individual foundations alone but on the whole universe (Smuts, 1926).

In mainstream psychological terminology the concept of process has had limited use (Hill & Corbett, 1993; Mindell, 1988), and where processes such as transference, counter-transference, learning and conditioning, etc. have been studied, this has been within a paradigm which has emphasised the rigidity and predetermination of behaviour (Brennan, 1982; Hughes, 1974; Mindell, 1988; Munro, 1992). Such structure-based paradigms do not illuminate or emphasise our limited ability to understand complex processes and experiences (Piaget & Inhelder, 1969). From the process-based perspective, the conventional notion of structure of personality is merely a limited view on how the patterns of psychodynamic processes which appear to be organized in a particular time and context, facilitate conscious and unconscious human expression and experience.

The implications of the contrast between viewing psychopathology in a process- vis-a-vis a structure-based approach is illustrated in differing models of mental health where structure-based thinking is congruent with the medical model (Mindell, 1988), while process-based systems perspectives appreciate psychopathology as a process of emergence, patterning and subjective experience. Process thinking extends traditional systems theory by emphasising the continuity and dynamism of the psychology of individuals and the interconnectedness of the psychological processes within the web

of life. Therefore methodologies and theories that are congruent with the subjective, infinite and approximate nature of people need to be legitimised and developed so that psychotherapy can be expressed as a systemic connection with the individual, his helper, his community, city and even the world (Mindell, 1988).

Trends in conventional psychology have been to explore the general characteristics of the human psyche, while many have rejected the study of individual uniqueness as unscientific, with nonphysical explanations of behaviour regarded as fictional (Blanchard in Blanchard & Skinner, 1976; Goodson, 1976; Smuts, 1926). This scientific orientation in psychology has not been confined to researchers, but has also been expressed through strong resistance to any therapies other than deductive models, to the extent that the first family systems therapists worked in secret to avoid censure from their colleagues (Hill & Corbett, 1993). Family systems therapy with its interdisciplinary ethos and definition of the family as a whole was strongly influenced by General Systems Theory and represented a substantial variance from conventional psychiatry. Systems therapy expanded into community work, social work and social psychiatry, contrasting sharply with the dominant mechanistic causal view, and introduced novel concepts such as interactions in systems, circular causality, and active self-regulation (Andolfi, 1979). Family systems therapy must be appreciated as being congruent with many process-based systems ideas, but their ideas must be appreciated in the light of a deliberate conceptual shift from an individual to a family approach. In process-based thinking no such shift is necessary as processes across levels of systems are identified as important. Distinctions between systems are of heuristic value and are made subjectively, depending on the question being explored.

While constructivist metatheory explicitly includes perspectives on both process and structure (Neimeyer, 1993), much research has focused on the development of measurement instruments for assessment of meaning or patterns of meaning (eg. content analysis scales, repertory grid), thereby tending to objective views, albeit of subjective constructs (Neimeyer, 1993; Viney, 1993). The areas where systemic thinking has drawn on constructivist theory relate more to its process orientation towards family therapy, and counselling techniques such as narrative therapy, metaphoric constructions, journal work, characterization sketches, etc. (Feixas et al., 1993; Neimeyer & Neimeyer, 1993b).

A particular construct of reality is a subjective explanation (as punctuated and distinguished) of a structure or process as perceived at a particular time and place/space, and from a particular perspective (Burnham, 1986; Cloete & Jaros, 1994). The therapy process is punctuated in the same way by the therapist who understands the experience of the individual or family by observing how their reality is punctuated (Keeney, 1983). Not only does this require that the therapist has an epistemology of how people make their punctuations (how they distinguish what they select as important), but it also suggests that therapists have a responsibility to participate both personally and theoretically in the therapy process. It also proposes that the concept of a *problem* in human systems should be understood in the context of shared responsibilities rather than the linear *culprit or problem searching*

approach (Burnham, 1986; Wolrond-Skinner, 1980).

As therapists punctuate and organize their experience into a coherent pattern, experiences tend to be framed or reframed in such a way that existing views are verified (Keeney, 1983). Davies and Humphries (1993, p. 15) warn that "a point of view constitutes a kind of limitation upon what is conceivable for an individual" and the constraint of this must be appreciated. While it is therefore a strong tendency for people to organize new experiences to be congruent with existing patterns of distinctions, we can choose whether we will regard our views as partial and open or as complete and closed to correction (Keeney, 1983). Certainly the latter position has characterised the schools of thought in psychology and a general adoption of the former position can go a long way to promoting unification of ideas in postmodern psychology.

3.3.3 Dynamic organization

Living processes and relationships are dynamically organised through the governance, attractor forces (i.e. teleos), and the tendency to autonomy and integration of wholes. While organization is of an essentially self-organizing nature, the structures and patterns which emerge and cohere in time and space maintain contextual organization relative to other wholes which are "the patterns which connect" (Capra, 1988, p. 78). These patterns connect in a complex network of processes which show varying rigidity and flexibility in the holarchy (von Bertalanffy, 1969) as expressed through the relative willingness or resistance of systems to change in organization, when matter, energy and information (MEI) flows through that system (Cloete & Jaros, 1994).

Such systems are defined as autopoietic, as the structures and organization of the system are produced by the very process and activity of that system (Winchester, 1993). Maturana and Varela (1992, pp. 43, 48) refer to autopoiesis as the self creating and autonomous nature of living systems. They postulate that the mechanisms that makes living beings autonomous systems, is autopoiesis. As processes and activities emerge, they do so as an organization of relationships in relative levels (Bateson, 1979), also known as scalar hierarchies (Salthe, 1988; Salthe, 1989), which represent integrated levels in a multidimensional, dynamically organized network of open systems (Koestler, 1978). While the notion of relative levels is possible in the concept of scalar hierarchies, the conventional linear perspective of levels is obsolete when we talk about *circuits of interaction* as in dynamic organization (Bateson, 1979). While some attempts have been made to understand psychological processes which *flow* through conceptual levels in the holarchy, the nature of the *flow* or *linkage* is usually obscure because of the absence of conceptual frameworks of dynamic organization (Munro, 1992).

The concept of levels has also been used to explain the organization of patterns within mental process and structure, through the identification of hierarchies or domains. Such stratification models of mental

functioning have been incorporated by systems thinkers such as Miller and von Bertalanffy, not forgetting Freud's model of the id, ego and superego which is also a stratification model (Miller & Miller, 1982; von Bertalanffy, 1968). While stratification of levels has been used by many to refer to levels of consciousness eg. Stan Grof, Freud, Adler, Rand, Jung, Reich and many others, Grof (in Capra, 1988) says that much of the confusion in psychology comes from efforts to focus attention primarily on a particular level (mainly the unconscious level), and then erroneously trying to generalise findings to the human mind and experience in its totality. The concept of levels encourages a structural and spatial image, but the central statement by Maturana and Varela (1992, p. 26) that "every act of knowing brings forth a world" suggests a flow of process that is continuous with the cognitive level, through relationships, the environment and eventually the experiential impressions that are subjectively accommodated by that individual's brain.

While in the process-based systems view the flow of MEI through open systems reflects the connectedness of systems, a structure-based systems view is suggested by Maturana and Varela (1992) who define living systems as organizationally closed, with well defined boundaries. On the other hand, Bateson's view that the boundaries of the human living system, if real at all, will not be spatial boundaries (Bateson, 1979), is more supportive of the process-based view where system boundaries are subjectively and contextually defined.

Besides the biological and ecological context of dynamic organization, the patterns of psychological organisation include the organisation of individuation as well as socialization. Otherwise stated, conceptually systems are seamless wholes which are possessed of the tendencies to integrate with, and to function as part of larger wholes (expression of partness), and to preserve autonomy through self-assertion (expression of its wholeness). While tendencies to autonomy and to integration are tendencies of all living systems, they are illustrated in human psychology by the maintenance of both a sense of self and a sense of belonging. These apparently opposing tendencies are essentially complementary characters, one individual and the other universal, whose *unity in opposition* is perhaps represented in the essential unity of conscious experience (Koestler, 1978; Smuts, 1926; Sabelli & Synnestvedt, 1992).

Therefore, a process-based systems view of self needs to be understood in the context of the dynamic organization of processes expressing experiences of isolation, and relatedness, and aloneness, and connectedness, in the relationship of a union of opposites. Such processes of self are not distinguishable from the complex organization of a human system but are essentially part of the evolution of that system, with the "perishing parts" organizing in unity with the "living present" as patterns persist in the evolving of self (Alfred Whitehead in Levin, 1992, p. 166). This view of self is in contrast to the mainstream mechanical (Cartesian/Newtonian) views of self which suggest a perspective of normative structures and functions of self. A process-based systems concept of self refers to dynamically organized, reflexive processes (Søren Kiekegaard in Levin, 1992) which express

the act of relating to itself as a self conscious internal dialogue (George Mead in Levin, 1992). The suggestion of self dialogue indicates the important role of narrative and language in the determining of the nature of any particular relationship of self. The question of an ideal of a healthy or unhealthy self system can only be answered subjectively in terms of the perceived quality of relating that is expressed in the dynamic processing of the self system. However, it is suggested that healthy living systems are flexible in their organization to the extent that tendencies to autonomy and integration can be maintained in a relatively harmonious union of opposites. The term *relatively harmonious* refers to dissonance in the system which is experienced as challenging rather than destructive.

3.3.4 Union of opposites

Autonomy and integration can be seen as a *union of opposites* (Sabelli, 1991a; 1991b; Sabelli & Carlson-Sabelli, 1989) in a relationship of tendencies to maintain both a sense of self and a sense of belonging (Jung, 1954). While opposites have been regarded as mutually exclusive in mainstream science, in the process-based view, the potential harmony in the coexistence of opposites is accepted and refers to the complementary and mutually interdependent, but opposing relationship which increases the energy of the system and creates bifurcation (Sabelli, 1991b; Sabelli & Synnestvedt, 1991). This is in contrast to a structure-based systems position where autonomy and integration is generally seen to be provided by the recursive structure of the system (Bateson, 1979).

In the process-based systems view, psychological processes are seen to be continuous across systems, while simultaneously cohering as part of the structure of those different systems. For example, people might be behaving in a friendly and confident manner which serves to enhance their esteem at the individual level, but at the social level that same process attracts people to them thereby, enabling integration on the social level. In psychology the area of interest is processes of autonomy and integration in the context of the internal as well as external organization of an individual as a systemic whole. The goal-directed nature of systems can express many levels of the internal organization of people through physical, spiritual or psychological process which assert themselves in relation to larger wholes with which they simultaneously strive to integrate. Simultaneously, the integrative tendency reflects the *more than the sum of its parts* idea, and can be illustrated by those processes that reflect the psychology of people as imbedded in their social biography, society, and their wider environment (Mills, 1978). Internal and external organisation is reflected in the structures and patterns of conscious and unconscious processes as they develop over time. Some processes are attracted to form patterns much like the strange attractors of chaos theory, while the attractors in other patterns might be less strange and more observable.

The relationship between structure and pattern is one where structure refers to form at a point in time, while pattern refers to the establishment of order and form which tends to persist over time. On order, Young proposes a relationship between governance and teleos where he refers to order as necessary

to facilitate the striving for goals (Young, 1984). Stated in the context of Sabelli's process theory (Sabelli & Carlson-Sabelli, 1989), the relationship between the order of structure and the process of teleos is one where structure has priority and process has supremacy in a union of opposites.

Therefore, the interconnectedness of living systems is reflected in the relationships between the psychological, sociological, ecological and biological processes in the model of relative levels of conceptual or material structures. The union of opposites in many instances refers to related processes with different goals or functions within a particular system. For example, psychological supremacy and biological priority distinguished two qualitatively different levels in human systems organization which are logically different in their process and function but where they are both indispensable to the larger whole (i.e. the individual). In addition, the rationale for the priority of the body is that the psyche is matter at the level of the neurophysiological system, with this lower (not lesser) level being an important material and chemical basis on which psychological well-being is largely dependent (Sabelli & Carlson-Sabelli, 1989). On the other hand the mental level is supreme relative to the organismic level for at least the reasons that it encompasses the uniquely human expressions of concept of self and symbolism (Salthe, 1988; von Bertalanffy, 1968).

3.3.5 Teleos in systems

While teleos plays a critical role in the process-based systems view of the dynamic organization of systems, in the "quarrel between determinism and teleology" (Watzlawick, et al., 1967, p. 30), mainstream psychology clearly belongs to the deterministic school with widespread disagreement still dominating as to the conceptual status of teleos in psychology (Boden, 1972). Behaviourists have generally reformulated goal-directedness in the concept of operant reinforcement and have either ignored values or regarded them as defence mechanisms and reaction formations (Boden, 1972; Blanchard in Blanchard & Skinner, 1976; Koestler, 1978; Skinner, Blanchard & Skinner, 1976; Mouton, 1985). Even the most antibehaviourist tradition such as Freudian psychodynamics, with the exception of Alfred Adler who stated that goal-directed behaviour was central to mental life (Adler, 1927), was markedly reductionist in its philosophical views on purpose despite its reliance on purposive vocabulary and explanation (Boden, 1972).

The contentious issue of teleos is hardly new and has been debated since antiquity. However in *modern* psychology the debate revived briefly in about 1874 when Brentano, in contrast to Wundt, defined psychology as the science of psychic phenomena expressed as acts and processes. He said psychology was differentiated from other sciences by intentionality, i.e. that the psychological act is directed, intentional, unique and purposeful (Brennan, 1982, p. 180). Some years later William McDougall campaigned relentlessly but somewhat unsuccessfully for the inclusion of dynamic process and the concept of purpose into psychology, although by the time of his death in 1938, psychology had become overwhelmingly behaviourist, positivist and reductionist (Hearnshaw, 1972; Boden, 1972).

Notwithstanding the strong resistance in science to the *purpose in nature* debate (Bailey, 1993; Campbell, 1991; Winburn, 1991), this debate is essential to psychology where the psychological act can be directed and intentional (albeit unconsciously) (Brennan, 1982; Oatley, 1993), and related to free will, consciousness, motivation, learning and memory (Skarda, 1991; Winburn, 1991). In the process-based systems view teleos can be identified through intended, random or emergent purpose. It can be a goal-directiveness (e.g. where an intention is in place), random (e.g. a conversation with a friend on bumping into them at an international airport), or emergent where the co-evolution of processes results in the emergence of an apparent goal-directedness (e.g. reason why animals follow a particular pattern of behaviour over time).

Keeney (1983) supports the distinction which foregrounds different orders of goal-directed systems, i.e. taciturn systems and language-oriented systems. With respect to this distinction, teleonics holds a view of percipients relating to systems as *language oriented systems* where this level or order of recursion refers to the map, which is constructed by a percipient, and the *taciturn system* refers to the territory.

Jung refers to the flow of energy having a goal or gradient based on the concept of relations between substance vis-a-vis the mechanistic view where the moving of the substance itself is the basis of explanation (Jung, 1954). Jung regarded the explanatory principles of causality and teleology as having equal validity (Levin, 1992), while others, such as Hull, objected to purposive explanation on the basis that when the situation is not known to the theorist he is then helpless to identify (know) purpose (Boden, 1972). Consistent with the conventional scientific perspective, this objection serves to deny that the method of outside observation is a limitation of the observer and not of the subject matter.

We are creatures of multiple motives, and conflict between motives or goal-directedness is common (Oatley, 1993). Human teleos is expressed in a complex (scalar) hierarchy of goals with the dominant goals of the *self* being organized to govern the competing demands on the human system's resources (Boden, 1972). The notion of human teleos or goal-directedness is closely related to the role that meaning and associated values play in the organization of psychological, social and biological processes. Being human entails seeking purpose and significance in events around us as we construe and construct our reality (Neimeyer & Neimeyer, 1993a).

In this way meaning functions as an attractor from which emerges purpose, goals, and goal-directed behaviour (i.e. called teleos). The term attractor is used in the context of when a system is in dynamic equilibrium there is continuous deviation, but the attractor serves as a teleos to maintain the preferred state. The teleos persists (appears to be in a stable state), but only because of the attractor. The point of preference is an attractor, which is one of the concepts in a teleos field. The field of teleos concepts include purpose, objective, goal, function and attractor. Besides meaning being implicit in thoughts, in monitoring their own behaviour, human beings look beyond themselves for meaning (Frankl, 1969b), indicating a *meaning seeking view of man* which can be tension increasing or tension reducing.

Responsibility is always judged within a symbolic framework of meaning and values as accepted in society under given circumstances (von Bertalanffy, 1968), eg. killing is legitimate in the context of war but not in peace situations, while at the level of conscious purpose, one is introspectively aware and responsible (Boden, 1972). Free will refers to the clear conscious experience of being able to direct attention and action to definite goals (Smuts, 1926), and this goal-directedness is logically connected to the concept of responsibility where an individual is held morally responsible for the actions he performs freely. Choice is an expression of human values and represents the *will to meaning* which according to Victor Frankl is the most basic motivational force in humans (Frankl, 1969b). Both Twerski (1991) and White (1993b) suggest that man's capacity for self-reference includes searching for an understanding of the self's relation to a vaster purpose, termed by some as innate human spirituality. While science has been criticised for not being able to deal with the spiritual side of man, its prestige and power is vested in the philosophy that science can account for all mystery (Twerski, 1991; Young, 1984). Gregory Bateson, (1979, p. 144) asks "what limits the self, if anything?" From a process-based systems position, the self is a system which is not limited by anything other than its own teleos, governance and by the organisation of processes of autonomy and integration in the web of life.

3.3.6 Governance in systems

As the priority of structure is represented in the physiology and conceptual structures of personality, so the supremacy of process is expressed in self-reflection, free will, and teleos. Human teleos is expressed in a complex (scalar) hierarchy of goals with the dominant goals of the self being organized to govern the competing demands on the human system's resources (Boden, 1972). In the process-based systems view this governance is expressed through complex circular feedback processes where novel organization emerges through tensions generated from conflicting teleos. This emergence of organization through the generation of tension and energy is also referred to by Sabelli in his explanation of the emergence of bifurcations from the relationships between unions of opposites (Sabelli, 1991a; 1991b), and Jung with reference to the idea that "there is no energy unless there is a tension of opposites" (in Sharp, 1990, p. 20). This is in contrast to the homeostatic models of personality, for example Freud's, where a system of energy seeking equilibrium in the mechanistic model was proposed (Brennan, 1982; Andolfi, 1979; Walrond-Skinner, 1980; Watzlawick, et al., 1967). Freud's model was in keeping with the epistemology that was prevalent at the time of its formulation, i.e. the laws of conservation and transformation of energy in physics (Watzlawick et al, 1967). Even Andolfi (1979, p. 12), a pioneer of family systems therapy, suggests that "change is seen in terms of the liberation and rechannelling of the energies existing in a system so that they can be utilized for self-therapeutic purposes; that is so that they can be directed toward the active exploration of new personal and interactive areas", emphasising goal-directed action but including the idea of energy needing to be released.

Andolfi (1979) also proposed the use of the concepts of tendency to homeostasis and equilibrium in

the context of the continual active self-regulation and transformation potential of family systems. Levi-Strauss (in Andolfi, 1979), points out the difficulties in appreciating the equilibrium point in a family group because of the infinite and complex variations which depend on time and society. While he emphasises the social control of equilibrium he does not emphasise the infinite variations in the inner experiences of the individual family members that, in terms of process-based thinking, are also continuous with the organizational processes of the family as a system.

The equilibrium principle misses the point that psychological and behavioural activities are more than relaxation of tensions (eg. sensory deprivation experiments), and is not applicable to processes of dynamic regulation, spontaneous activity, processes of growth, development or creation, i.e. morphostatic or morphogenetic processes (von Bertalanffy, 1968). While the biological models of homeostasis and equilibrium have been widely used to explain stability in psychosocial health and wellness, the notion of some kind of optimization process whereby people not only seek optimal environments for themselves but tend to be *self-restoring* is more acceptable in the context of process-based systems thinking (Janoski & Schwartz, 1985; von Bertalanffy, 1968).

The popularity of homeostatic models in the human sciences has been led by prominent figures such as Freud. This is not surprising in view of his pessimistic view of his fellow man's potential (Hughes, 1974) and has been encouraged by the obvious organization of shape and form of living organisms which we take for granted, frequently without an adequate theory of what constitutes form (Varela & Frenk, 1987). Both conceptual and material form are defined by making distinctions (Varela & Frenk, 1987). Living form is a collection of spatial distinctions and the identification of largely non material processes and patterns such as interactions and relationships being possible through *punctuation* (Burnham, 1986; Varela & Frenk, 1987). Through punctuation, it is also possible to distinguish problems as difficulties which matter (Bateson, 1973; Dell, 1985; McNeil, 1992c), processes or *detailed pathways* which tend to repeat in living systems over time and emerging patterns (Weiss, 1969). While patterning does provide material or conceptual structures, flexibility rather than rigidity of patterning is healthy in living systems where rigidity and inflexibility tend to be synonymous with dysfunction (Andolfi, 1979).

Thus, if organization is not governed by homeostatic and equilibrium principles, then how is the organization of the complex processes and patterns of living systems maintained? In the process-based systems view this organization is maintained through the essential relationship between teleos and governance of processes, and the complex feedback interactions and circuits that emerge from this relationship. The concept of feedback is usually associated with a system that can be decomposed into inputs and outputs with the feeding back resulting in circulatory and recursive behaviour patterns (Kauffman, 1987).

In the human system the ongoing self-reference is a sophisticated circulation of the feedback loop

where the self-pointing arrow forms a directed circle (Kauffman, 1987), and can be in constant (conscious or unconscious) relationship with the teleos of the individual. An example of this are the pleasure and pain feedbacks which can be consciously reflected upon in relation to teleos (for example a soldier choosing to endure torture), rather than being springs of action themselves as suggested in behavioural theory (Boden, 1972). Feedback loops can express resistance to change which can serve to define boundaries in human behavioural systems (White, 1993b), while feedforward loops tend to contribute to organization through their expression of teleos. Feedback and feedforward are essential to the premise of self-organization or autopoiesis (Young, 1984), and suggest how human systems can have the capacity to maintain their own unique and dynamic governance and organization.
Governance is expressed through processes both within and between systems because dynamic organization of systems is expressed in the context of the web of life where living systems are open systems which have a preponderance of stability or adaptation as expressed by self assertive and integrative tendencies (Koestler, 1969; White, 1993b). Thus, in the process-based systems view dynamic organization is maintained through the essential relationship between teleos and governance of processes, and the complex feedback interactions, recursive behaviour patterns, and circuits that emerge from this relationship (Jaros & Cloete, 1987; Kauffman, 1987).

3.3.7 Emergence in systems

Living systems have the unique characteristic of negentropy which is the ability to grow, repair, maintain themselves and to build up to higher levels of organization (Greif & Lynch, 1983; Katakis & Katakis, 1982; Young, 1984). Emergence refers to processes of development and growth where maturation is not the simple unfolding of a predetermined genetic blueprint but is the creativity that emerges out of dynamic relationships between emotional, biological and ecological levels.

Examples of emergence, which are of particular interest for psychology, include intelligence and consciousness. Consciousness can be defined as "that strange experience whereby we (and perhaps other mammals) are sometimes conscious of the products of our perception and thought but unconscious of the greater part of the processes" (Bateson, 1979, p. 100). As argued in the consciousness movement, free will as a process of consciousness is something that emerges with the more highly developed life forms and is part of each individual's development (Hughes, 1974; Young, 1984). Jung referred to the emergent quality of values when he argued against Freud's explanation of repression which presupposed a counter position in the conscious mind. He used the issue of creativity to illustrate his point that the conscious mind is not a counter position but, is favourably disposed to relate with unconscious processes, and the emergent relationships have essential values that represent the values or energies that are involved (Jung, 1954). White (1993a) adds that through the process of consciousness, the experience of a negative or positive self evaluation is dependent on the relationship that individuals have with values that have emerged in their development.

Such creative thought as well as the ability to reflect on oneself, provides each individual with the potential to make (conscious or unconscious) value judgements, and in the process, develop a hierarchy of values and teleos which can effectively govern the process of free will. The emergence of values occurs with the emergence of complexity in relationships (Thorpe, 1969), and while some values might relate to the physical world, many transcend that level. Yet despite the major psychological impact of these non-physical values (eg. humour, art, music, belief, moral choice and play), they have not received a great deal of attention in the psychological literature (Koestler, 1978; von Bertalanffy, 1968). Two processes which well illustrate the emergent essence of human behaviour beyond deterministic or stimulus response schemes, are play and language. (von Bertalanffy, 1968). The purpose of play appears to be emergent pleasure, while language is not only a creative medium of communication, but is also an expression of the world as it emerges in our experience. We are constituted in language in a continuous becoming that we bring forth with others (i.e. social co-ontology) (Maturana & Varela, 1992). The Whorfian Hypothesis states that different linguistic systems will result in different views of the world (von Bertalanffy, 1968), and illustrates the interconnectedness between individual and contextual levels of relationships in the web of life.

The premise of emergence challenges mainstream psychology on issues such as the definition of problems, diagnosis, and treatment processes which follow the medical model of cure. The process-based systems idea of a problem is that it is dynamically sustained as part of a flow or flux of repeating patterns of processes, and therefore embodies context, intention, anticipation, frustration, action, future consequences and decision making (McNeil, 1992c). Psychological changes emerge in the context of pre-existing processes, patterns and structures. When trying to observe patterns of relationships, we may need to provoke them in much the same way as suggested by Heisenberg, who said in 1925 that to observe an electron it must be disturbed (Young, 1984). This systemic and emergent view of psychotherapy and problem solving is in contrast with the traditional dependence on mental norms in criterion of psychopathology (von Bertalanffy, 1968).

3.4 A process-based systems approach to psychology

Process-based systems thinking encourages and invites the exploration of generally unpopular and previously avoided issues and perspectives in psychology. A distinctive challenge of process-based systems thinking to mainstream psychology is the perspective of levels of analysis and the emphasis on action in a context rather than on isolated structures (Munro, 1992). Structure and process are regarded as inextricably linked, but structure is regarded as material or conceptual form at a level of analysis *backgrounded* relative to process which indicates what a system is doing. Such a paradigmatic change has implications for psychology regarding views of man, pathology, therapy and a value system for research.

To summarise some of the distinctions between process- and structure-based positions; in mainstream

psychology the unit of study/focus tends to be individuals, there is a medical view of diagnosis, the therapist relates as an expert *outside* of the treatment of the individual, and control and prediction in research is favoured (Messer, 1990; Walrond-Skinner, 1980). In contrast, a process-based systems approach regards individuals as systems in the context of relationships, living systems as goal-oriented, symptoms as having a systemic context, flexibility and change rather than stability as essential to health, and therapists as participants rather than experts in the therapy process.

The therapist provides a context whereby new meaning can be attracted (Lötter, 1994), that is, a difference which makes a difference (Bateson, 1972). In contrast to the traditional scientific orientation of individual psychology, the systems view of personality is of a dynamic biological, social, and environmental context (Hearnshaw, 1972). This is not to say that systems orientations are not scientific, but rather that they are not always regarded as such by dominant schools of thought. In such a context, all qualities of personality such as the capacity to reason, to will, to love, to worry and interact, constitute an "integrated personality syndrome" (Laszlo, 1972, p. 32), or an "organizational unity constituting an irreducible whole" (Boden, 1972, p. 237). The psychological system emerges through gradual integrative processes of experience and the inner and contextual dynamics of decision making (Boden, 1972; White, 1993a). This interconnectedness of man's psychology with his world is reflected in statements by writers such as Gregory Bateson that, relationships should be the basis of all definition (Capra, 1988), and by Janoski and Schwartz, who describe human living as dynamic process in the conceptual model of biopsychosocial and ecological structures (Janoski & Schwartz, 1985).

In the process-based systems view the therapeutic relationship is seen as part of the context of the client's place in the web of life. Therapists such as Carl Rogers and R.D. Laing insisted that in order to understand a patient, the psychiatrist/psychologist had to understand that person in the context of their relations with other human beings including the psychiatrist (Brennan, 1982; Capra, 1988). Problems with conventional psychiatry and psychology include the tendency to be strongly oriented to pathology rather than to potential (Capra, 1988), and to very "dramatic or peculiar disturbances" (Russel, 1987, p. 138). Through this tendency to function along the lines of a medical model, few perspectives that are strongly oriented to wellness or enhancement of psychological functioning have been developed. Goals of therapy are implicit to theoretical orientations and most treatment goals are based on the uniformity thesis (i.e. all clients respond similarly to therapeutic interventions) (Hill & Corbett, 1993). The implications of the uniformity thesis is that, until very recently, attention in psychology has been directed to determining *correct* interventions on the assumption than all clients responded similarly to intervention with little attention being paid to differences among clients or therapists for that matter; this is known as the uniformity myth (Hill & Corbett, 1993).

There is a growing acceptance of views of mental dysfunction as a system disturbance rather than a loss of single functions (von Bertalanffy, 1968). Process-based systems thinking regards the evocation

of creative potentialities rather than passive adjustment, the exploration of present as well as previous conflicts, and an orientation towards goals (i.e. symbolic anticipation, meaning and purpose), as important treatment considerations. To promote systemic goals of health, the therapist must also cultivate an awareness and respect for the interconnectedness of mind, body, ecology and spirit (Woody & Springer, 1985).

Beitman (1990) states that psychotherapy is a process which proceeds over time and that rather than being outcome centred, the acceptance, trust and nurturance of this process is essential to the emergence of changes which serve treatment goals. This emergence and integration of change over time is not a closed process but is one which is open to randomness without which there can be no new thing (Bateson, 1991). The ability of small differences to cause major consequences, or that the same results may spring from different origins, is termed the principle of equifinality (Linstone, 1994; Watzlawick et al, 1967). Put into a psychological context, the same psychological symptoms can be the result of diverse etiological processes and pathways (Levin, 1992). Equifinality indicates that we cannot predict the long term or associated consequences of our actions; we can only direct our energies to the goals of the therapeutic process and be open to the process of emergence over time. Such a time-phase model is based on the assumption that new processes and patterns of relationships emerge in the treatment process and can inform the ongoing intervention in a process of continuous development. Watzlawick et. al. (1967) also refers to the alternative possibility that there can be several final states, each attainable by different paths, and this is termed multifinality (Gharajedaghi, 1985).

While Gharajedaghi (1985) suggests that the systems view accepts the principle of multifinality as opposed to equifinality, it is suggested that a process-based view accepts that equifinality and multifinality are not antagonistic concepts but refer to different types of processes and relationships in the holarchy/Biomatrix. While equifinality suggests the arrival at fixed and final states though different paths and through different initial conditions, this refers to those processes and patterns that are strongly governed by the conservative self-organizing nature or structure of a particular system. Such conservative self-organizing resists change and promotes rigidity of process or structure which encourages the emergence of certain patterns of processes. On the other hand, multifinality refers to the more flexible and fluid processes and structures which are less rigidly governed (internally or contextually), thereby providing opportunity for creativity and emergence of novel processes, relationships and patterns.

Therefore, where the psychophysical organism is viewed in the conceptual framework of a system, conventional psychotherapy is challenged in the following ways. Evocation of creative potentialities will be more important than passive adjustment, it will be more important to explore present rather than previous conflicts, there will be orientation towards goals and the future, i.e. symbolic anticipation and there will be an active client-therapist relationship (von Bertalanffy, 1968). The concept of symbolic

anticipation raises issues related to meaning and purpose. One such therapy which focuses at the symbolic level is logotherapy (Frankel, 1976; Frankl, 1969a), where individuals function in terms of their own meaning system while they also have to function within a socially (culturally) determined framework. Therefore, a dependence on rationality is not enough and the undervalued faculties of intuitive perception also need to be united with the intellect (Fielden, 1993).

Perhaps conventional psychology is most challenged by process-based systems thinking on the issue of research methodology, where the demand for measurable outcomes in assessment and treatment have done much to encourage the uniformity thesis and the dominance of empirical research. Methods of empirical experimentation have contributed to the development of psychological research, but have also resulted in the poverty of theory (Marx & Goodson, 1976). Theory in psychology is essential for increasing understanding and also for pragmatic purposes. However, psychological theory has generally failed to accommodate and represent the unique and divergent complexity of human psychology (Jaynes, 1976). Process-based systems approaches encourage researchers not only to ask questions relating to relationships and processes, but also challenge them to include into their repertoire of methodologies those more appropriate to this perspective. Such methodologies include self-reporting of experiences and relationships, biographies and autobiographies, case studies, analysis of individual psychological processes and patterns, etc. (Goodson, 1976; Joynson, 1976; Smuts, 1926).

3.5 Conclusion

"Man is, in the final analysis, a coordinating interface system in the multilevel hierarchy of nature" (Laszlo, 1972, p. 79). By his existence he is a biological organism, by work and play he is a social carrier and by conscious and unconscious personality he is a Janus faced whole (Koestler, 1978), integrating and coordinating the biological and the social worlds. The age of the dehumanisation of people is coming to a close in the history of psychology as is seen by the growing acceptance of purpose, volition, introspection, consciousness and insight into common psychological usage (Koestler, 1981). There are also visible trends to a more holistic view of people, with moves to promote the coherent integration of similar theories in psychology (Messer, 1990).

The movement to unification in psychology should not be to eradicate differences or achieve a single theoretical outlook (Messer, 1990). Rather it should be a movement to promote the coherent integration of similar theories and to stimulate constructive debate around conflicting ideas. It is proposed that process-based systems premises can make a contribution to psychology by encouraging the development of ideas, which more accurately reflect the unique and complex psychology of human systems while having the potential to accommodate the necessary diversity of theory. In addition it is proposed that process-based systems methods such as the three proposed teleonics maps can make a strong contribution to the practical application of theoretically coherent process-based systems thinking psychology.

Process-based systems premises of the process nature of life, systems as approximate rather than definite, dynamic organization, the union of opposites, and the premises of governance, teleos and emergence in systems, are proposed to encourage the development of process-based systems perspectives, paradigms and models in psychology. These premises have emerged through the ideas of philosophers such as Heraclitus and through the contributions of theorists, practitioners and researchers who have punctuated their understanding of systems with process-based systems distinctions.

In this chapter, the relating of these ideas to the field of psychology highlights where process-based systems thinking can make a practical and theoretical contribution. These ideas also provide a valuable epistemological basis from which contributions to the development of a systems view of man in psychological theory, research and practice can be made.

CHAPTER FOUR: INTRODUCING TELEONICS, A PROCESS-BASED ECOLOGY OF IDEAS

4.1 Introduction

The teleonic approach to the study of complex living systems (teleonics) was first proposed by Jaros and Cloete (1987) and has been further elaborated by them and their co-workers (Jaros & Cloete, 1993, 1994; Dostal & Jaros, 1994a, 1994b; Edwards & Jaros, 1994a, 1994b, 1994c, 1995; Dodds & Jaros, 1994; Pastoll & Jaros, 1994). This chapter represents a circumscribed exposition of the theory of teleonics. This is not meant to be a full exposition of the theory but serves to place the three conceptual maps in a theoretical context.

It is suggested in this chapter that teleonics can contribute to process-based systems thinking, according to which the world is regarded as an ensemble of ongoing processes, interrelationships, and transformations. This contribution could be of special importance in psychology where the process nature of the world is very evident.

Teleonics is essentially a process monist viewpoint of life. Unlike eclectic theories that use many theories to work across levels, look at manifestations in levels of organization or contexts, teleonics regards everything as reducible to one thing, i.e. process. Therefore, like Process Theory as presented by Sabelli (Sabelli, 1989), teleonics is a monistic theory which holds that process is central to explanation. In contrast to Sabelli's Process Theory, where process is related specifically to energy (Carlson-Sabelli & Sabelli, 1991, p. 9) and material dialectics, where materialism is foregrounded, in teleonics no distinction is made between matter, energy and information (MEI), i.e. a unity of MEI is emphasised. Teleonics integrates different viewpoints into a unified framework (process monism). The concept of the spiral (see sections 6.3.3 and 6.3.5) refers to the desire to integrate everything around the central theme of process in teleonics. At the same time teleonics recognizes the two different perspectives of reduction and synthesis.

Teleonics is essentially a heuristic model where the teleonics maps that are proposed point and direct the enquiry process in such a way that process-based systems thinking is foregrounded. The maps encourage a process-oriented perception and understanding of a situation or problem and consequently points to solution strategies which are of a process nature.

In this chapter the theoretical teleonics concepts that are focused on are the teleon, teleos, Biomatrix, governance and telentropy. Table 1 provides a summary of these, and a few other teleonics concepts. These concepts are described as part of the methodology of double description as used in this dissertation. The methodology of double description is a systems methodology which is described by Bateson (1979, 1981) and Keeney (1983). In this dissertation the first description of the three teleonics maps is from a theoretical perspective, while the single elaborated case study and the four circumscribed case studies outlined in chapter 8, provide the second part of the double description.

TABLE 1: Summary of main teleonics definitions.

TELEONICS TERMS	EXPLANATION
Teleos	Teleos is a Greek word which means end, aim, goal, purpose, etc. It is used to indicate the various forms of "attractors" which can exist on the different levels of life.
MEI	An abbreviation for the inseparable, complex combination of Matter-Energy-Information. The three letters are pronounced as "em-ee-ai".
Teleon	A teleos-directed process system, viz. a coherent ensemble of actions and behaviours directed at achieving a teleos.
Bundle of teleons	A number of teleons which interact while contributing to a whole, eg. nutrition, social and cultural teleons interact to constitute a cultural celebration.
Process	Flow, flux or passage of change of MEI.
Structure	Conceptual or material arrangement of MEI relative to the perspective of the percipient and the period of observation.
Function	The function of the teleon refers to what it does.
Governance	Governance of the teleon are the processes whereby the teleon is able to give effect to the dynamic organization necessary to support its goal-directedness.
Endoteleon	Endoteleons are teleons whose goals are directed towards the internal environment of the system of which they are part.
Exoteleon	Exoteleons are teleons whose goals are directed towards their external environment.
Doublet	A doublet is a cluster of endo- and exoteleons (two conceptual poles), which cohere at a level in the Biomatrix and form a conceptual or material whole.
Biomatrix	The web of interconnected teleons extending over the entire range of life on Earth.
Telentropy	Uncertainty in a teleon about reaching its goal.

4.2 Teleonics; a process-based ecology of ideas

The process-based nature of the teleonics model is illustrated by the congruence of these concepts with the process-based premises as discussed in chapters two and three.

4.2.1 Approximate and relative nature of knowledge

> *The approximate and relative nature of knowledge refers to process and structure as constantly reorganizing rendering exploration only possible in the context of a particular time and space and even then, due to the autopoietic nature of human systems, only from a subjective perception.*

In teleonics, there is a clear position that a percipient is a subjective selector of relative positions of observation in the Biomatrix. In addition, it is held that not only does the percipient select the position in relation to the question being asked but, methods are subjective and findings an emergence. The emergence of the findings occurs on the basis of the relationship between the percipient and the teleon being studied. Therefore, not only is the process of observation unavoidably relative and certainty about reality impossible (Jacobson, 1994), but the eventual findings and interpretation are essentially approximate, and need to be understood in the context of the research process itself. This relationship of the percipient to the object of observation can be illustrated by the example of food which might appear as structure to a hungry person, while to a sociologist it is regarded as a cultural habit.

In teleonics, the perspective on structure is not only influenced by time but also the level at which the percipient focuses attention, eg. if the questions being explored relate to the biochemical level, the food would be understood for its chemical composition and value to the body, while if considered at the societal level community methods of preparation and presentation might be relevant. It must be emphasised that the *level* of focus is always understood as being *bundles of teleons* which are continuous with inner and outer levels (i.e. three or more levels should always be included). In this respect teleonics is also similar to Process Theory (Sabelli, 1989) in that it views the integration of biological, familial and social processes. Teleonics goes further to include all levels in the biosphere and sociosphere as an essential process monism. Therefore, reconsidering the example of understanding the social eating habits of a community, this can be better understood in the context of an appreciation of processes such as the agriculture of the region, the health status of the community, the nutrient quality of the food and how these processes are interrelated. It can then be understood that depending on the question being asked, the interrelated conceptual systems of analytical and explanatory schemes are useful (Harré, 1981), especially when one is viewed in contextual relationship to the other.

The relative and approximate nature of knowledge is a limitation of our perception and not of our

subject matter, indicating that a healthy respect for the limitations of an unavoidably autopoietic therapist is called for. The autopoietic nature of both client and therapist suggests that their perceptions and descriptions are inherently limited by existing structures (Maturana & Varela, 1992; Sluzki, 1992) as expressed by the patterns of organization of neurophysiological, intrapersonal, psychosocial and other processes.

The implications for the field of psychology of this premise relates to an appreciation for the importance for a researcher or clinician to be aware of and comment on the epistemology of the therapeutic relationship and how that epistemology relates to the epistemology of the client. The way in which researcher or therapist connects with the client is essentially an extension of the unique history of relationships experienced by each individual and the way in which those experiences are constituted in language in "bringing forth a world" and in social relating (Maturana & Varela, 1992, pp. 233-234). Maturana & Varela also state that "it is by languaging that the act of knowing, in the behavioural coordination which is language, brings forth a world" and as we are "constituted in language" so is the therapeutic process part of the constitution of both the therapist and the client. It must also be appreciated that in constituting a therapeutic or research process, the clinician or researcher becomes interconnected with the systemic organization of the client and in this way can never really be an outside observer.

The relationship that the client and clinician construct for themselves interconnects with the extended network of relationships within which the therapist and the client are uniquely embedded. Where appropriate and possible, the widest possible inclusion of the client's systemic context into the therapeutic process will broaden the ecology of the therapeutic relationship. Distinguishing and punctuating is based on the subjective and autopoietic perception of the therapist or researcher, making it important for them to reflect recursively on their subjective process. It is also important for the therapist and client to reflect on **their** therapeutic relationship as it emerges as the interconnecting of therapist and client. This reflection on the therapy process is in itself an intervention, in that it challenges the client to confront their own process of punctuation and distinction-making.

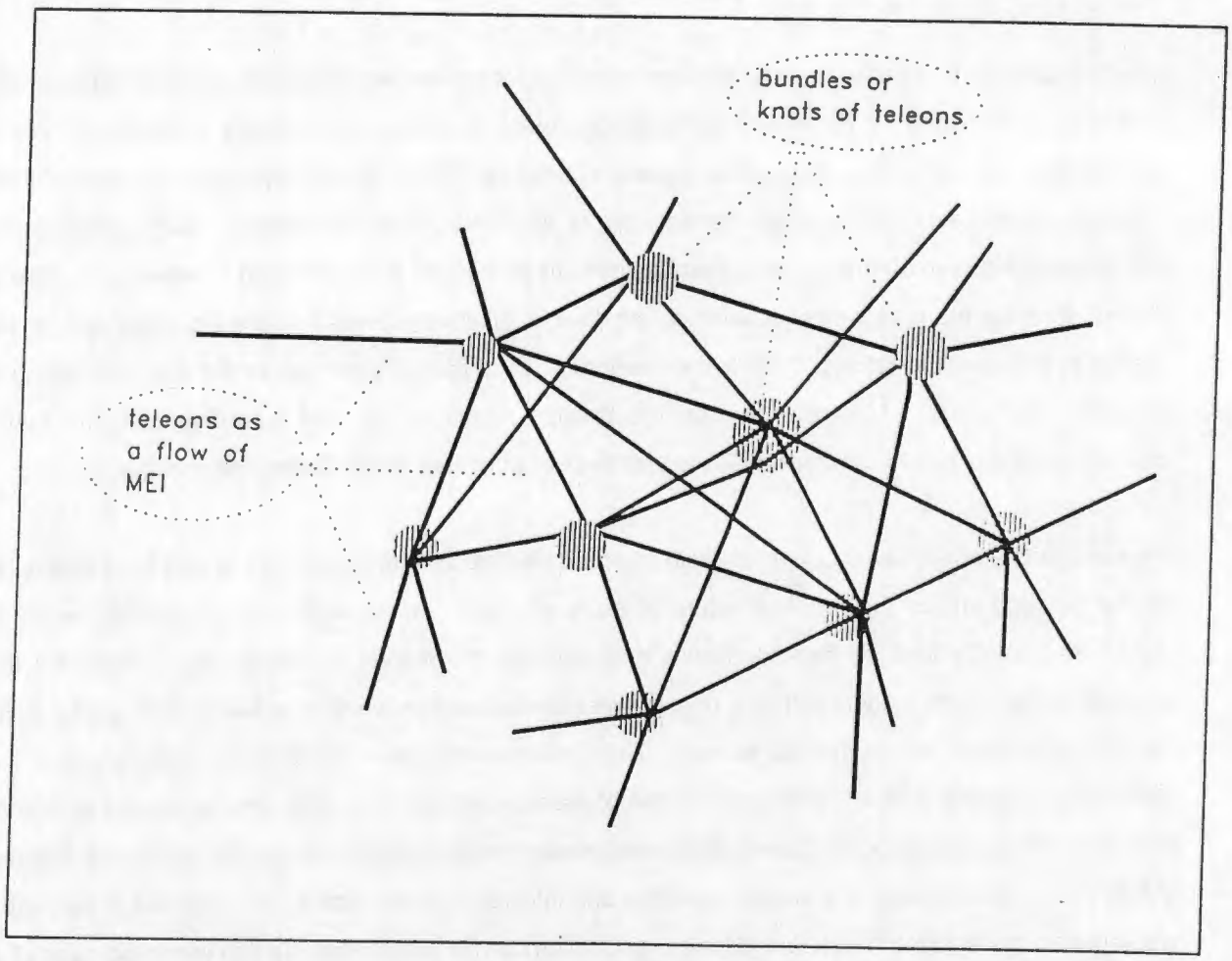
To summarise, teleonics is congruent with a process-based view of knowledge in that the subjectivity of our perception and the process nature of life is accepted. As we explore the Biomatrix we try to construct a reality that we believe closely approximates the subject of our enquiry. Therefore, an enquiry process can only result in a description and explanation which is more or less useful in its context, but cannot be understood as truth. This systemic view draws attention to the limitations of the conventional cause and effect medical model of assessment and diagnosis, and promotes a view of symptoms as an expression of the on-going and unique relationship between people and their contexts. While these relationships are unique, complex and infinitely interconnected, it is possible to construct a subjective metaphor through which their organization can be appreciated. In this way processes and emergent patterns are foregrounded, thereby highlighting the essential process nature of life.

4.2.2 The essential process nature of life

The essential process nature of life refers to an understanding of the world as comprising a complex network of processes from which structure emerges as the persistent configuration of conceptual or material form in time and space.

In teleonics, this premise is expressed through the concepts of teleon, doublet and Biomatrix. For example, if the *web of life* were made of string, the strands would be the teleons, doublets would be the knots where strands become denser and relatively more complex, and the Biomatrix would be the overall multi-dimensional net arrangement. As with the strands of the string in the net, teleons always occur in an internal and external context, i.e. the inner organisation of a piece of string, and its direct or indirect interconnectedness with other strings. Although teleons are constantly in a state of internal flow of matter, energy and information, as a string has to be continuous through a knot for that knot to maintain its organization and configuration, teleons are regarded as continuous through levels in the Biomatrix (see Figure 2).

Figure 2: Figure illustrating teleons as continuous through levels in the Biomatrix.



In teleonics, process rather than structure is foregrounded. For example, in trying to understand a tree,

bundles of ecologically continuous processes which constitute the tree are emphasised. Bundles of processes would include processes such as photosynthesis, respiration, nutrition and water circulation, wood production, reproductive processes, etc. While the continuity of MEI flow between these interconnected processes (strings) through systems (knots) is emphasised, this is done with appreciation for the material and conceptual structure of the tree as it persists over time. Therefore, bundles of processes which comprise the tree as it is connected in the web of life are foregrounded, while the structure of the tree is regarded as engrained patterns of processes which are developed and maintained in circular relationships of interconnectedness and is relatively backgrounded.

Teleonics accepts the autopoietic nature of organization. The neural pathways and patterns which are seen to emerge at the physiological level are essentially continuous with processes of the human system interrelating and interconnecting with the world. The conceptual level of perception, might reflect a different logical type, but is nevertheless connected with the biological level. Distinct patterns and structures also cohere in the process of a reality being autopoietically perceived and created.

Ideas which represent an opposing perspective, as in process backgrounded relative to structure, eg. Maturana and Varela's structural determinism (Maturana & Varela, 1992), can also inform a heuristic process-based ecology of ideas such as teleonics. An appreciation for the essential interrelationship of process and structure is essential to many ideas such as structural determinism and structural coupling. The former argues for a view of structure which is comparatively more rigid and inflexible than proposed in teleonics.

Teleonics has a view of structure as being an organizational pattern of processes where that organization is more or less rigid. An example of stable patterns of processes might be the maintaining of cultural traditions, the expressing of moral values or the endurance of our physical features. Examples of a pattern of processes which have some consistency but are less rigid might be the way in which friends tend to interact socially, the rich variety of mood states that people experience, or the way in which the body responds to physical exercise (the unpredictability of a jogger having a good or a bad run). It is suggested that teleonics represents ideas on structure, especially with reference to very rigidly organized patterns of processes that are similar to that of Bateson's notion of patterns of redundancy (Bateson, 1973, 1991). In the context of structure vis-a-vis process, the structure of teleons can be perceived as relatively constant over a period of observation suggesting that the distinction between process and structure is arbitrary and relative to the subjective perspective of the observer and the period of observation (Cloete & Jaros, 1994). The terms foregrounding and backgrounding are chosen to illustrate that despite the distinction being made between process-based and structure-based systems approaches, their essential connectedness is respected.

In teleonics, the primary unit of study is the **teleon,** which is defined as *an integrated goal-directed action-unit* or system (Cloete & Jaros, 1994; Jaros & Cloete, 1993). Teleons are *process systems* which exhibit tendencies of autonomy and integration and express a continuity through levels in the web of life. At the various levels such as in molecular structures, cells of the body, individuals, families, social organizations, the cosmos, etc., a dense coherence of teleons, occurs.

The implications of teleonics for the field of psychology relate to the acknowledgement that human experience is essentially of process nature, within the context of physiological and ecological structures, rather than being determined by structures of personality or external stimuli or responses. Teleons can be distinguished from their interconnected contexts, while at the same time they cannot be understood out of the context of their inner and outer connectedness or organization. The level at which a teleon is punctuated can vary, depending on the question being explored, and is thus part of the context of a particular enquiry process. This notion of level is compatible with Bateson's premise of logical types, and his ideas on the continuity of process and the discontinuity of the products of process (Bateson, 1991).

A teleon can be analyzed in a reductionistic metaphor, or a metaperspective can be taken and the teleon can be seen in its inner and outer contexts. To take a metaperspective of teleons in interrelationship with other teleons is to see the continuity of process, or the flux of the teleon, through levels of organization in the web of life. An example would be a perspective of the *emotions teleon* taking into consideration processes at the physiological level (eg. genetic predispositions), the experiential level (eg. processes of appreciating the meaning of emotional experiences and choosing from response options), the social level (eg. processes of relating with friends and family), the community level (eg. processes of cultural norms, expectation) and even spiritual processes relating to belief in ones place in the cosmos, needs to be appreciated as part of the process of being directed to emotional contentment. Therefore, while teleonics is in many ways similar in its epistemology to an ecosystemic perspective, it is distinguishable in that it emphasises the continuity of self-organized but interconnected process systems as continuous through levels, while an ecosystemic perspectives emphasises interrelationships.

If the question being asked requires that a teleon be analysed to enhance understanding of its organization and coherence, this can be done as with a photographic metaphor, where relationships are artificially frozen in time and space. Such an analysis must be done with caution to avoid coming to *out of context* erroneous conclusions on which one might then act, yet can provide information on the substance of the teleon. The substance of the teleon is the interrelationship of teleos, governance and the flow of matter, energy and information (MEI) as reflected in its material or conceptual structure. An illustration of the substance of a teleon can be seen in the example of an emotions teleon. In such a teleon, the teleos would be a goal-directedness towards achieving experiences of contentment. The governance would consist of dynamic feedback and feedforward processes which represent a range

of possible response options reflecting the relationship between teleos, MEI flow, and the structural and other constraints of the teleon. What has to be responded to is the flow of MEI which is the essential interconnectedness of teleons in the web of life and the governance of the teleon. This is comparable to what Maturana and Varela refer to as the system's efforts to structurally couple or fit (Maturana & Varela, 1992).

Therefore, teleonics suggests that when trying to understand human experience, both an analytical and a metaperspective of teleons can be useful depending on the subjective question being explored. By foregrounding the essential process nature of life, emphasis is placed on processes in the context of structural determinants and on the continuity of process in the web of life. It must also be emphasised that a teleon is only a conceptual distinction that is made in the mind of the percipient who could be a person reflecting on themselves, or an outside observer such as a therapist.

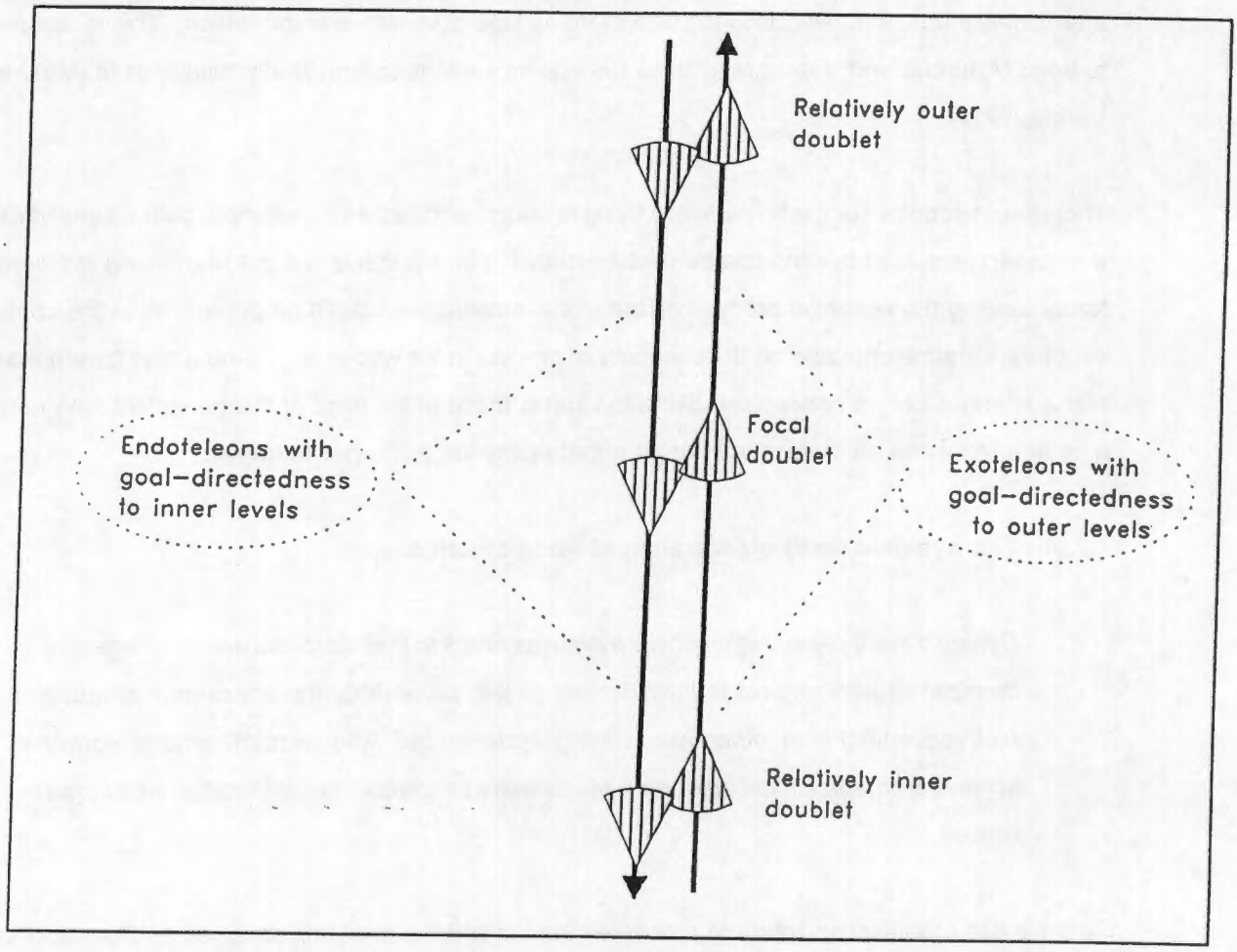
4.2.3 The dynamic (self) organization of living systems

> *Dynamic (self) organization of living systems refers to their essential ability to organize themselves with respect to their internal as well as contextual process and structure (self-regulation). In other words living systems can (and should) simultaneously achieve a organizational autonomy and as well as organizational integration with larger wholes.*

Dynamic self-organization refers to processes around which a structure emerges as the result of the interaction of processes rather than through predetermination. Dynamic self-organization is not chaotic but continuously regulated through the ongoing interrelationship of teleos and governance in teleons. These interrelationships are expressed through feedback and feedforward processes whereby governance is the process that gives effect to the goal-directedness of the teleon.

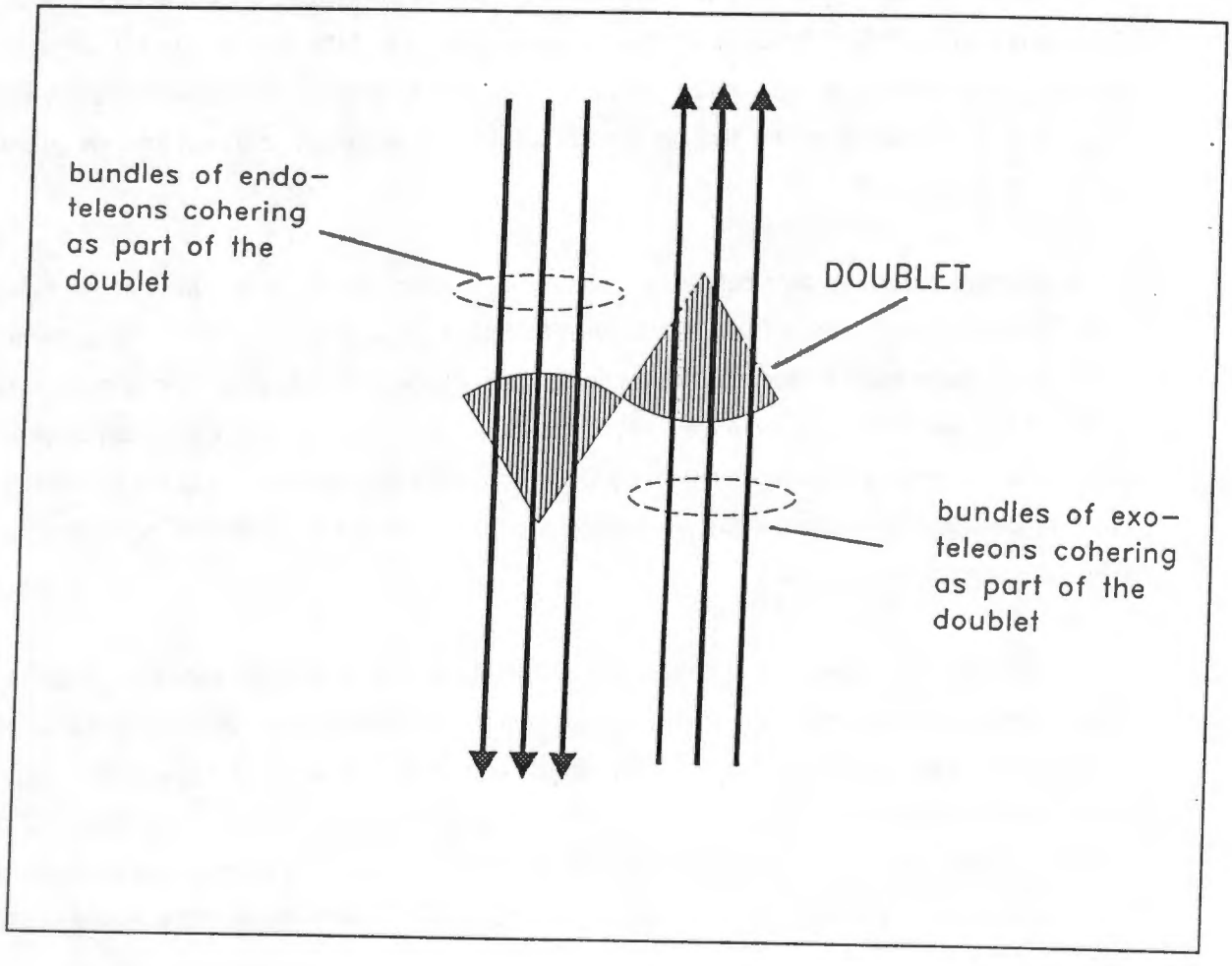
In the Biomatrix, a duality in the nature of teleons is identified in that some teleons (exoteleons) are directed to the promotion of the goals of outer contextual systems, while others (endoteleons) are directed to the inner goals or maintenance of that system. It is not always possible to make simple distinctions between endo- and exoteleons as is illustrated with the example of eating supper where the individual is nourished (endoteleon) yet family cohesion is being reinforced (exoteleon). The distinction of endo- and exoteleons is made on the basis of the primary goal-directedness of a teleon (see Figure 3).

Figure 3: Figure illustrating endo- and exoteleons.



The bundles of endo- and exoteleons represent the emergence of conceptual or material coherence, which exhibit goal-directedness, and are called doublets. Examples of doublets would be individuals, families, society, organizations, etc., and represent distinguishable conceptual or material systems where teleons are directed towards outer systems as well as to inner organization (see Figure 4).

Figure 4: Figure illustrating a doublet.



A further distinction is made between exoteleons that contribute to higher levels and those that *tap* from resources to serve the goal of the doublet of which the teleon is part. An example of a *tapping* exoteleon would be the *tapping process* of choosing from a selection of food that is placed on the table as part of the nutrition teleon of the family (refer Figure 3).

The tapping exoteleons can be viewed as promoting autonomy and the *contributing* teleons can be viewed as promoting integration. If viewed in this way, the essential *union of opposites* (Sabelli, 1989; Sabelli, & Carlson-Sabelli, 1989) of autonomy and integration and the way in which *inner* and *outer* coherence of processes is organized can be appreciated. For example, in the accepting of an invitation to a party, which would be the tapping of the invitation by a person, a simultaneous process of integration is expressed.

Thus autonomy cannot be seen out of the context of integration with these two tendencies being in a relationship of a union of opposites (Sabelli, 1989; Sabelli, & Carlson-Sabelli, 1989). Watzlawick et al. (1967, p. 66) make the statement that "convictions, traditions, hopes, prejudices and above all, certain adamant assumptions have the strange ability to generate, self-reflexively, their own practical proof and justification". In making this statement, they point to how autonomy emerges in union with integration when processes of self-reflexiveness, via positive feedback from the environment, operate to further develop and entrench our ideas.

In the dynamic self-organization of the human system there is a distinction between psychological growth and development, where growth is an increase in size (Gharajedaghi, 1985), while development is the process where individuals increase their abilities and desires to satisfy the needs and legitimate desires of themselves and of others. The level of development of an individual is the status of his or her current ability and desire to satisfy those needs and desires, where need is seen as something that is necessary for survival while desire is the pursuit of fulfilment or satisfaction (Gharajedaghi, 1985).

In growth and development, the tendencies towards autonomy and integration continuously inform and confirm one another in an ecological context of inner and outer organization. In this way, people and their worlds co-constitute one another (Valle, 1981) with living systems being organizationally open. This idea is in contrast to Maturana and Varela's proposal that living systems are organizationally closed and recursive systems, whose products are internally generated via processes of self-reference, self-regulation and self-transformation, i.e. autopoiesis (Maturana & Varela, 1992; Dell, 1985). In teleonics, the concept of autopoiesis is also seen to be the emergence of autonomous organisation through processes of self-reference, self-regulation, and self-transformation, but this is seen to be in the context of open and not closed living systems.

The teleonic view of self (Pastoll & Jaros, 1994) is very much in line with the distinction that R.D. Laing (in Levin, 1992) and Maturana and Varela (1992) make, that the self is something that can only be

subjectively constructed from a unique standpoint. Thus each unique *structure of self* emerges out of experiences which are ongoing throughout life and is directed to support the teleos of an individual's *sense-of-self* (Pastoll & Jaros, 1994), or *nature-of-being, teleon*. In this context, personality and behaviour are no longer thought of as rigid attributes. They are terms that describe characteristics that come into being through repeated interactional experiences (Andolfi, 1979).

In the process of trying to answer the question as to the purpose of the nature-of-being teleon, clergy, scientists and philosophers seem to have been looking for a general or universal answer. The essence of the nature-of-being is perhaps the unique engagement with the matrix of processes representing the ever moving and variable conceptual precipice through which the past and present distinguish themselves, i.e. the now! This *purpose of being* might be construed as the survival of the species at the biological level, the development of society at the societal level, or universal harmony at the cosmic level. Yet, at the individual level purpose of being must be an individual purpose based on the collective field of teleos of all teleons in the organization of the self. Foucault (in White & Epston 1990) suggests that under external scrutiny, people can become their own guardians by perpetually evaluating their own behaviour and attempting to change to comply with perceived requirements and standards. Foucault calls this the on-going evaluation experienced by such people the "ever-present gaze".

There is substance in the self, i.e. at the level of neurophysiological structures which is conceptually continuous with the flux and flow of process at levels of experience. This is well expressed by Dennett (in Levin, 1992), a leading cybernetics theorist, who defines self as a biological self that is "prewired" to distinguish between the self and world and a "narrative centre of gravity". Due to the central role of narrative and language in the constituting and maintaining of self-consciousness it can be a useful clinical technique to encourage people to tell different stories about themselves, by making more material available for story telling, re-defining experiences and by inviting changes in perspective in their nature-of-being teleon.

Maturana also refers to language as central to self, and contends that "since we exist in language, the domains of discourse that we generate become part of our domain of existence and constitute part of the environment in which we conserve identity and adaptation" (Maturana & Varela, 1992, p. 234). Words have an inherent structural bias and meaning and their use encourages one into a particular way of construing reality. Whitehead refers to "the bewitchment of language" in his statement that "the subjective-predicate syntax of the Indo-European languages" is isomorphic and an inadequate guide to reality and its ultimate nature. He calls this a fallacy of simple location, where the subject-predicate syntax and it philosophical derivatives see reality comprising some sort of solid stuff-substance that has enduring qualities, attributes or characteristics that somehow adhere in that enduring substance (Levin, 1992). This inherent structural bias is well illustrated by a language such as English where nouns are basic concepts connected by verbs, while a language such as Hungarian where verbs are dominant and central, is more easily expressive of teleonic thinking.

Language is a collection of signs (Foucault, 1972) which enables humans to symbolize their particular experiences in terms of general concepts, thereby facilitating mutuality of understanding, where signs can be understood in similar ways (Heron, 1981a). Therefore, the use of language is validated by interpersonal experiential knowing, suggesting that the use of language contains within it the paradigm of co-operative inquiry.

> "The general form of this argument is that human beings are symbolizing beings. They find meaning in and give meaning to their world, through symbolizing their experience in a variety of constructs and actions. This notion of symbolizing activity as an explanatory concept is irreducible to any other, since it is presupposed by and transcends any reductive argument. It points both to a determinant and to an explanation of human behaviour *sui generis*. To explain human behaviour you have, among other things, to understand this activity, and fully to understand it involves participating in it through overt dialogue and communication with those who are engaging in it" (Heron, 1981a, p. 22).

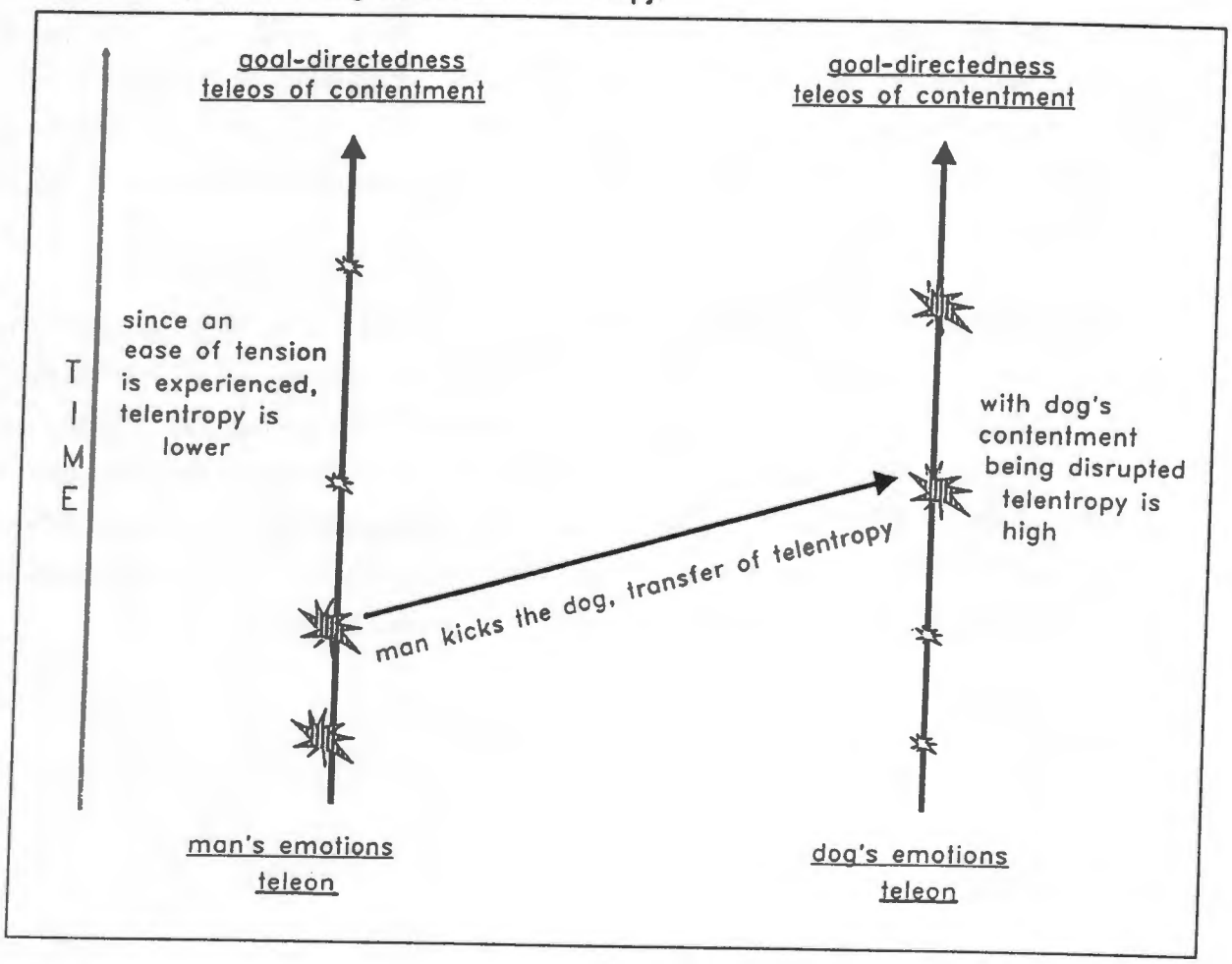
Thus, it is contended that an important process in the way in which we organize conceptual experiences and create and establish patterns of organization, is through the use of language. Words are essentially empty, being linked to patterns of meaning (Bridger, 1995). As words are used, their patterns of meaning are reinforced and confirmed. Therefore, as distinctions are autopoietically made and punctuated, a matrix of teleons that is metaphorically constructed in language, is also created. While such processes of defining and punctuating in language inform us of the exciting possibility that, as the use of language is changed or developed, the possibility of changing, expanding and developing relationships, can emerge. On the other hand such processes of defining and punctuating in language are also inherently constraining, and in the light of this, psychologists must ensure that their research and clinical work is cast in a linguistic theoretical framework which is broad enough to encompass a person's visions and experiences: this being the essential subject matter of psychology (Bannister, 1981).

A further teleonics concept is *telentropy*, which is of importance when the goal-directedness of teleons or doublets become frustrated. The concept of telentropy has developed from the concept of teleonomic entropy as proposed by Katakis and Katakis (1982), and refers to the uncertainty of a teleon reaching its goal at any point in time. High telentropy in a teleon suggests a high uncertainty about the success of a teleon in reaching its goal as estimated at a particular point in time.

It is usual to have a degree of telentropy in any teleon where a certain amount of frustration or interference can be accommodated (Dodds & Jaros, 1994) or even positively used (Gharajedaghi, 1985). For example, when one feels anxious about performing in a race (high telentropy in the emotions teleon), this can trigger the release of adrenaline which is a physiological response to a crisis yet can potentially enhance performance. By being conceptually transferable, telentropy represents

information being communicated through the interrelating of teleons which provokes adjustment and reorganization. An example might be a situation in which a person is frustrated due to problems at work and on arriving home, kicks the dog whereby telentropy in the emotions teleon is reduced and the dog's *being contented teleon* is frustrated because the dog is in pain (see Figure 5).

Figure 5: Figure illustrating the transfer of telentropy.



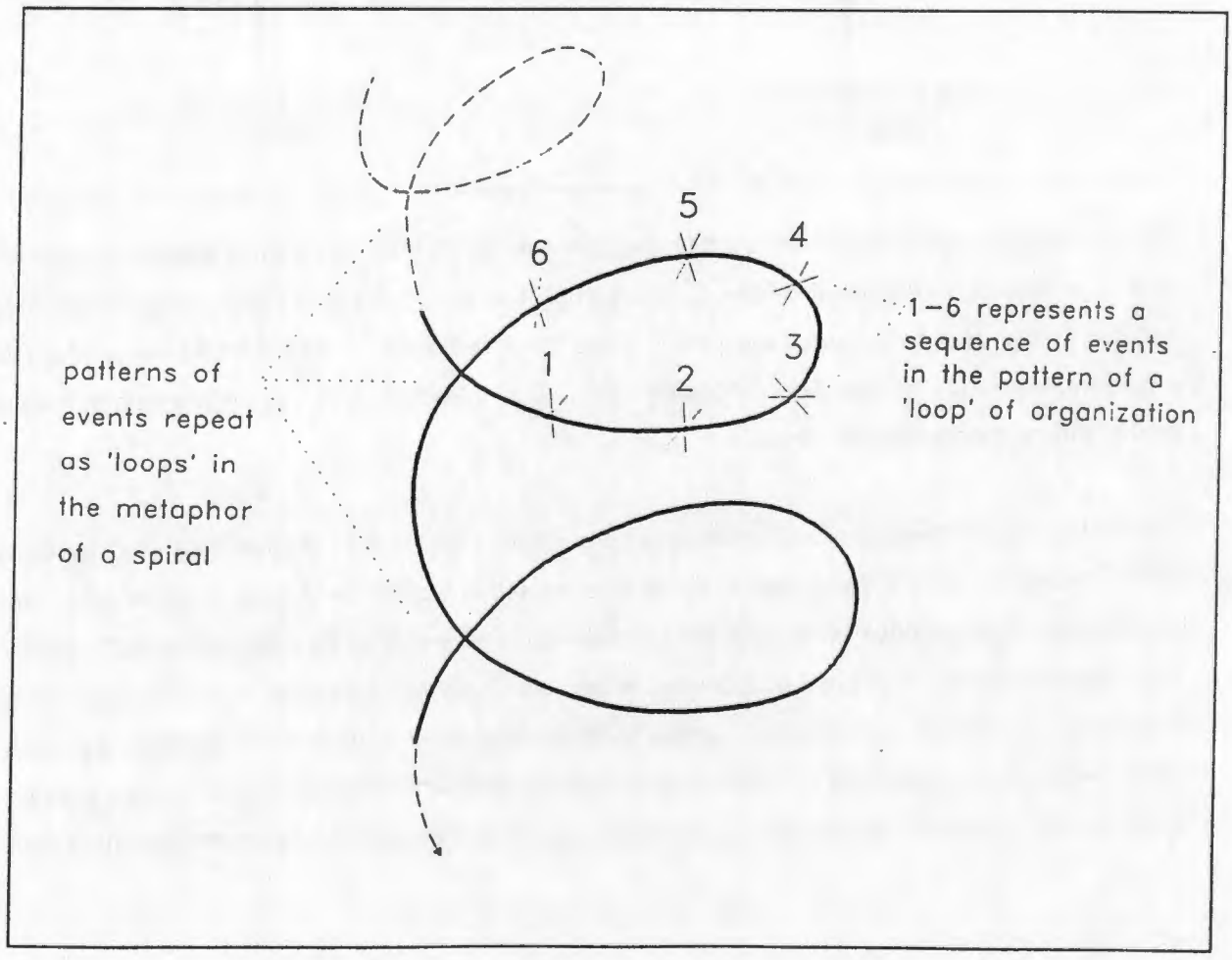
The systemic re-organization that could for example emerge from this transfer of telentropy between teleons is that on hearing the dog howl, the person might be remorseful or the dog, being fearful, does not run to the door to welcome the person home for a few days. While it might be possible to represent telentropy in statistical probability terms, it is intended as a descriptive rather than a mathematical concept at this stage.

The implications of the premise of dynamic self-organization for the field of psychology can be seen in the concept of *self*. In the system of the psyche the self is that sense of inner purpose and outer boundary that is experienced (Pastoll & Jaros, 1994). This sense of inner purpose and outer boundary is an ongoing process system (i.e. a teleon), which recursively changes itself and influences other systems with which it is in relationship. Jantch (in Winchester, 1993, p. 659) refers to self as a system which "becomes involved in the creative interpretation and evolution of the (self)image". Thus, in trying to understand a person, it is necessary to focus on dynamically organized interrelationships rather than

on personality structures, types or traits. Due to the interconnectedness, continuity and essentially recursive organization of teleons the principles of equifinality and multifinality illustrate Werner Heisenberg's uncertainty principle (Valle, 1981), where the essential uncertainty of the dynamic self-organization of living systems is emphasised. Equifinality refers to the notion that different actions in systemic organization can lead to similar outcomes, while, multifinality refers to the systemic notion that similar actions can lead to different outcomes. The systems approach to idealization is to design ideal-seeking systems not ideal states (Gharajedaghi, 1985). While this suggests that prediction is impossible, if viewed systemically it might be possible based on knowledge of the relationship between the system and its environment rather than on knowledge of the characteristics of one or the other (Jacobson, 1994).

The relationship between teleons and doublets in their environment are of an essentially circular nature, where the interconnections are organized through complex and ongoing feedback and feedforward processes. While it is acknowledged that to a large extent an organism is constrained by its structure, the recursive and mutually transforming essence of the substance and flux of teleons suggests more flexibility and change potential than structural determinism proposes. Despite this potential flexibility, dynamic self-organization is maintained through organizational patterns. Such patterns represent structural coherence where interactions and relationships tend to repeat (see Figure 6).

Figure 6: Figure illustrating patterns of *structural* coherence.



Patterns repeat because of the recursive nature of feedback and the reinforcing effect that this can have on encouraging connections to persist in given organizational contexts. An example of this is cycles of eating habits where, due to a complex matrix of teleons which are interconnected at many levels in the web of life, this pattern can be persistent, largely predictable and also very difficult to change.

In summary, dynamic self-organization is expressed in teleonics through the emphasis on interconnections of teleons and doublets and the self-organizing function of teleos and governance. Telentropy plays an additional role in the ongoing processes of dynamic adjustment and response to the flow of MEI through the web of life. Concepts of pattern, feedback and feedforward, equifinality, multifinality and language can contribute to our understanding of the dynamic self-organization of human systems specifically. The essentially united but opposite tendencies of autonomy and integration are expressed through processes which govern the doublets and teleons as they interconnect in the web of life.

4.2.4 Union of opposites

The premise of union of opposites refers to the complementary and interdependent coexistence of opposites whose interaction increases the energy of the system, thereby producing evolutionary, cyclic and creative change.

The union of opposites is not the only process of change in the web of life. It also refers to the creative potential of conflict which is always in coexistence with harmony. There is no change without exchange, or action without interaction (Sabelli, 1989); opposites are different, yet share basic commonalities and essential similarities. For example, while being opposites, reality and fantasy reflect characteristics which closely approximate each other, i.e. some aspects of fantasy are real and some aspects of reality are fantastic.

In teleonics this premise can be illustrated by the union of opposites of endo- and exodynamic processes and the essential tension between tendencies to autonomy and to integration. The tensions which emerge through interrelationships of opposites can be understood as bifurcations through which novelty can emerge, as well as a balance of tension between opposites which contributes to stability in dynamic organization (Gharajedaghi, 1985).

This concept is of particular interest in the field of human experience, where for the past 23 centuries, since Aristotle first taught that knowledge of human nature must be acquired through objective observation (Jordaan & Jordaan, 1984), synergistic pairs were distinguished as opposites representing incompatibility and disconnectedness. As suggested by the union of opposites, all social roles are

synergistically paired where people learn about one from the other, eg. husband-wife, teacher-student, driver-passenger, etc. (Sabelli, 1989). Sabelli (1989) raises the issues that while opposites are mutually dominant, more complex processes have a supremacy of control relative to a priority of less complex organization. Such relationships of priority and supremacy seem to be major principles of organization (Sabelli, 1989) in their relative contexts. This can be illustrated in the examples of starving people stealing to eat (priority of biology) while others might fast for religious beliefs (supremacy of psychology). This example also illustrates an argument against Maslow's hypothesis (Gerdes et al., 1981) that *higher levels* of human needs cannot be satisfied before *lower* levels. Viewed in the context of a union of opposites it is obvious that higher needs cannot be satisfied without respect for lower level needs (one can die of starvation if biological priority is not respected), while for a short length of time, hunger pains can be tolerated so that emotional or spiritual wellbeing from fasting can be enjoyed.

It is suggested that opposites are of two different kinds. Firstly there are the opposites, like hot-cold, big-small and ugly-beautiful, which are characteristics which represent opposite ends of a scale and are therefore quantitatively different. Secondly, there are characteristics, concepts or entities which are qualitatively different. These can be represented by two separate axis, rather than by the two extremes of a range. Examples of this second class are male-female, autonomy-integration, endoteleons-exoteleons. These could be better designated as synergistic pairs or dichotomies. The latter term which means cutting through, automatically indicates a natural unity which might have been temporarily broken but can be reestablished at any moment.

While the union of opposites is emphasised in teleonics in terms of autonomy and integration, teleonics acknowledges the more general application as is reflected in the perspective of reduction and synthesis, process and structure, exo-teleons and endo-teleons (phase plane of opposites). Carlson-Sabelli et al., (1992) go even further and argue the union of opposites as the central premises of Process Theory.

4.2.5 Teleos

The process-based systems premise of teleos refers to the essential goal-directedness and related self-organization within and between living systems.

The process-based systems premise of teleos is strongly promoted in the teleonic model, where a concern for a teleos can be expressed either as goal-directedness or goal-seeking (teleos). Teleos is a collective name for a field of related concepts referring to desired end states or preferred emergent states. Teleos is a preferred end state which may or may not be associated with action. Teleos is always identified as an abstraction in the biosphere whereas in the sociosphere it is more frequently observable or intended. In teleonics, a distinction is made between the goal-directed nature of processes and the actual outcome of processes (Cloete & Jaros, 1994). A teleon is a process system which shows plasticity and persistence towards a goal, which is a point in conceptual space. Plasticity

refers to the idea that there is more than one way to strive for a goal, and persistence refers to the maintenance of the system in its goal-directedness where coherence with the concepts of equifinality and multifinality can be seen.

A teleon must have or develop a single goal relative to the observation of the percipient. A number of *state variables* may represent a particular goal, for example, states that could represent a teleos of positive thriving for the emotional-development teleon of a person. Depending on the state being experienced, the goal might be contentment, satisfaction, enjoyment, accomplishment, etc. A further example could be the employment teleon, where the goal of being satisfactorily employed can be expressed with the state variables of earning a good salary, job satisfaction, compatibility with colleagues, etc. contributing to the probability of that teleos being attainable.

A further point is that the teleos of a particular teleon can be transformed as it flows through different levels of organization in the web of life, and the different context and nature of connectedness of the teleon emerges. Goal-seeking processes can become engrained to become goal-directed processes or teleons which emerge in the web of life. An example might be where one is interested in being more active, is invited to play a sport, through enjoyment becomes more interested, eventually competetive even striving to achieve excellence or some particular goal.

Not only can teleos be transformed in given contexts but one must remember that teleos is a distinction made in the mind of the observer, even when it has been observed. As with all perceived knowledge, teleos is essentially subjective and approximate in nature. Not only is it subjective and approximate, but in answer to the statement by Keeney and Sprenkle (1982, p. 17) that "conscious purpose, with its aim of achieving specific goals, cannot always take into account the whole ecological context and that this cognitive deficiency leads to ecological disconnections", it is suggested that it is not possible to **ever** take a whole ecological context into account. Goal-directed processes are ecologically connected whether we are aware of the connections or not; one can only subjectively punctuate and make distinctions based on the observer's perception.

Punctuation and distinction-making may highlight the complex relationships between processes which might co-produce the teleos of a teleon. The extent to which the complexity of relationships of processes and teleos is explored is determined by the questions being asked, otherwise stated by the goal of the enquiry process. The goal-directedness of enquiry is to create a context out of which the meaningful *findings of order* can emerge (Jacobson, 1994). Congruent with this is Valle's (1981) suggestion that meaning arises from relationships with the whole, and Bateson's suggestion that nothing has meaning except that it be seen as in some context where such contexts "are a hierarchy whereby all events become informationally relevant to the whole universe" (Bateson, 1979, 1991, p. 143). Goal-directedness is part of the enquiry process which not only encourages the emergence of information in a particular context but informs our understanding of the meaning of observations.

Contrary to J.B. Watson's definition of meaning as reactions conditioned to a stimulus or word (Paivio & Begg, 1981), the concept of teleos can perhaps be understood by the model of the semantic field theory. Semantic field theory was developed by Trier in the early 1930's (Paivio & Begg, 1981), and proposes concepts of meaning which are understood in the context of conceptual spheres and semantic fields of meaning. This model proposes that with respect to meaning, a word is simply the smallest unit in a total mosaic in which the significance of each element is determined by its relation to its neighbours and its position in the overall structure or field (Paivio & Begg, 1981). This explanation can perhaps be related to teleos where the *meaning system* which is essential to all teleons can be understood as a contextual field of teleos where teleos is transformed (or shifts) in different contexts (or at different levels) as a teleon *flows* through the web of life.

Thus the goal-directedness of a teleon is related to the relative *meaning* and *value* in the context of a teleon. White and Epston (1990 p. 3) state that "it is the meaning that (people) attribute to events that determines their behaviour". Meaning can be defined as the subjective appreciation and understanding that a percipient has for something, and value is the relative and contextual positive or negative weighting that the meaning holds for them at a particular point in time and space. For example, satisfaction might become more important than money if the job becomes boring or personality clashes occur in the workplace and could encourage a person to change their employment to achieve a goal of greater contentment even if this means less income.

Because of the complex way in which processes are interconnected and relate to different levels of experience in the web of life, teleos is not always clearly distinguishable. Therefore, teleos is not a simple final state or purpose but is the complex process of evaluating information, knowledge and understanding in relation to processes of governance, autonomy, and integration. It can be that there is unclear or conflicting teleos within or between closely related teleons. The response to this incompatibility or conflict can be for systems to dynamically reorganize (reducing telentropy), or to respond with organizational rigidity (telentropy is maintained or increases). A good example of unclear or incompatible teleos in or between closely related teleons is the situation of the double bind which Bateson (1973) suggests is a break down in an individual's ability to discriminate between logical types.

A double bind (a) asserts something, (b) it asserts something about its own assertion, and (c) these two assertion are mutually exclusive (Watzlawick et al., 1967). Such a double bind indicates an internal incoherence in the teleos of a teleon which may be explicit or subtle. For example, if in a therapeutic relationship a therapist suggests that a client must avoid *listening* to what others say and *listen* to their own instincts, a paradox is established. In order to comply to the therapist's request, they will have to listen to the therapist thereby not following the therapists instructions. While this can be useful in encouraging people to try out novel behaviours, frustration in the goal-directedness of that person's autonomy teleon is inevitable (i.e. high telentropy in the teleon). A further example is when a father feels that he must demonstrate independent behaviour to his son; his very efforts deny his son the

opportunity to make independent discoveries.

Teleos of processes can be supportive of other teleons (eg. the emotions teleon might be supported by the employment teleon due to successful financial management), or they can be in conflict (eg. one might anticipate that an expensive car would provide emotional contentment while the associated loan is a financial and emotional burden). Therefore, the organization of teleos within and between teleons is complex and even when distinguishable can never be understood out of the context of other contributing processes.

4.2.6 Governance

> *Governance refers to complex circular feedback processes through which a teleon is able to self-organize in the context of its teleos and whereby novel organization can emerge through the tensions of conflicting teleos.*

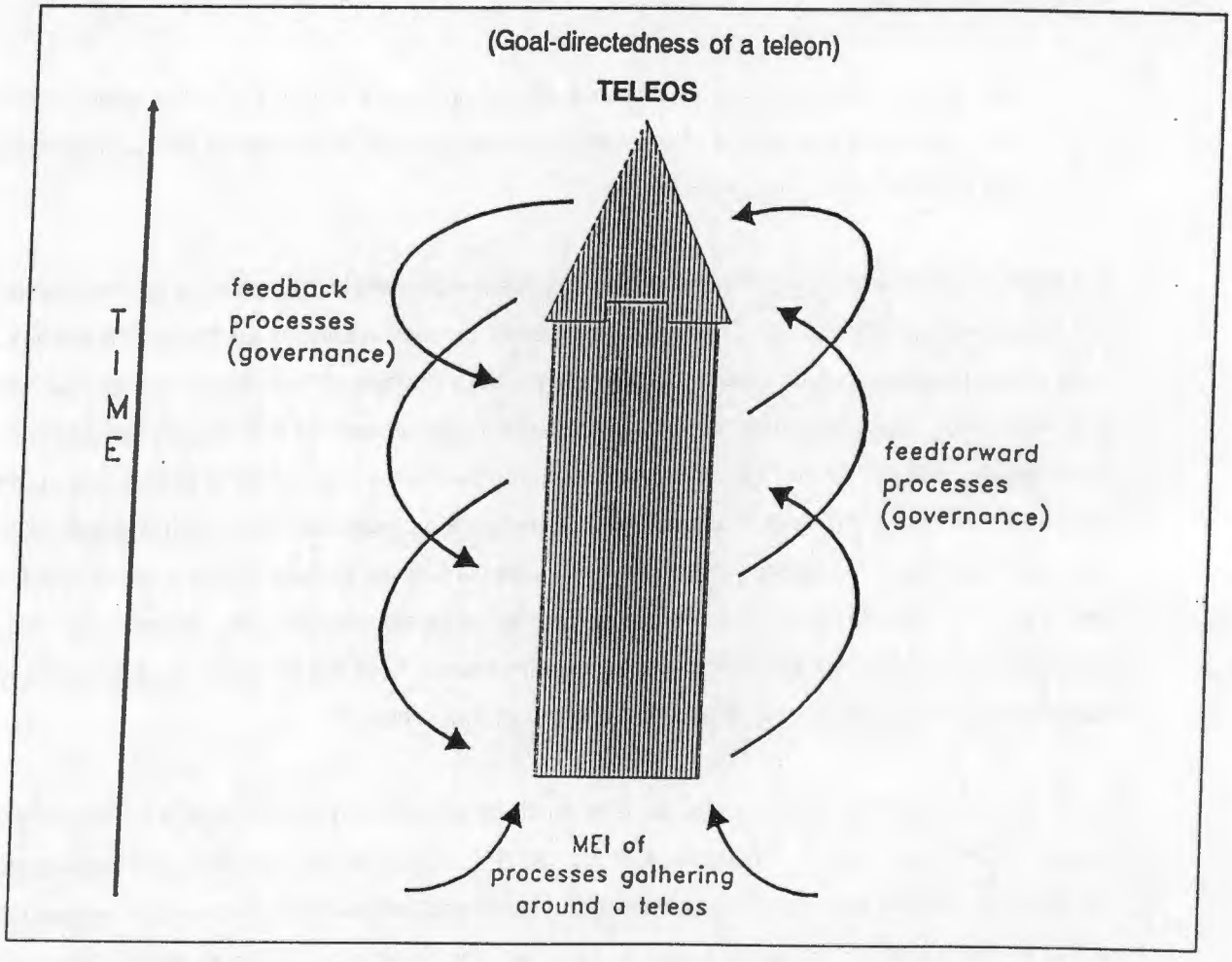
The internal and contextual organization of relationships is expressed in the relationship between teleos and governance within teleons. Teleos and governance are inextricably linked through feedback and feedforward processes which enable the teleon to persist in its goal-directedness and yet be flexible in its functioning. Governance promotes organization through persistence in the direction of the goals of the teleons, and while being essentially a process, represents the interaction of teleos with structure as well (eg. of such a structure would be DNA). Feedforward processes relate to the governance of the goal-directedness of a teleon, while feedback processes function to keep action aligned with teleos (see Figure 7). An example of a feedforward process would be strategic planning in organizations and an example of a feedback process would be monthly reports from the various departments giving indication of how the functioning relates to the teleos of that company.

The specific nature of a feedback process is of much greater interest than origin, and frequently of greater interest than outcome (Watzlawick et al., 1967) in understanding dynamic self-organization. This dynamic ordering through the interrelationship of teleos and governance facilitates self-preservation as well as integration. Feedback is known to be either morphostatic or morphogenetic. The former being stability promotion and characterizing homeostasis or steady states, and the latter being transformation promoting leading to the loss of stability or equilibrium.

The governance of teleons is the emergent relationship between the teleos of interrelated teleons and the engrained structural configurations that limit their potential to reorganize. These engrained structural configurations have a substantial governing function in the potential for flexibility in the organization of a teleon. When related to Maturana and Varela's ideas of structural determinism and structural coupling (Maturana & Varela, 1992), teleonics emphasises structure as essentially process where some interrelationships have become organizationally engrained and can only *couple* very

specifically, while others are organizationally less engrained and more free to couple. The acceptance of free will and intention is central to teleonics where, albeit in the context of structural constraints, change can take place through internally initiated process reflecting the self-governing potential of living systems. Heron (1981a, p. 21) refers to this as relative determinism, where "antecedent conditions delimit and determine a range of possible outcomes. The width of this range is a function of the position of an entity in the hierarchy of chemical and biological types from the atom to the human being: the human being, if not seriously damaged, has a significant degree of freedom and can bring intelligent, rational principles to bear on the direction of his or her activity within nature".

Figure 7: Figure illustrating the feedback and feedforward in teleons.



When discussing flexibility in relationships and change processes, the structural limitations of systems are decisive. The autopoietic nature of teleons and doublets is understood as the evolution of structure through the interdevelopment of teleons and the interaction of feedback and feedforward processes. Thus the interaction of feedback and feedforward processes as they relate to the internal organization of the teleon, facilitates the recursive relationship between teleons or doublets and their contexts. In this way the teleon is able to adjust to its ever-changing ecological context in such a way that the goal-directedness of the teleon is served. The process of the teleon constantly reorganizing its inner and outer relationships in order to promote its goal-directedness is called governance.

4.2.7 Emergence

Emergence refers to processes or properties that develop or occur through interrelationships, i.e. the more that emerges from the sum of the parts.

A central theme in teleonics is the goal-directed (not goal determined) nature of processes. As processes persist in their goal-directed tendencies, functions, structures, governance, MEI flux and flow are seen to emerge in a process of dynamic self-organization. Emergence is always seen to occur in the context of three levels of organization: an outer context, an inner context and an emergent level of organization. Emergence, in the teleonics view can be seen as the process of dynamic organization that occurs as teleons interconnect and relate. Emergence refers not only to dynamic self-reorganizing but also to the potential for creative and novel organization to emerge as teleons interconnect in their larger contexts, and their tensions (telentropy) are transferred, exchanged or resolved.

Creativity can emerge from structural reorganization where new teleons emerge; eg. where individuals in a community are experiencing problems with the poor conditions of the roads and form a lobby group to represent the community interests. In this example the individuals as teleons in a community formally set a new process into motion (community lobby group) which displays teleos, self-governance, autonomy and integration in the Biomatrix (Cloete & Jaros, 1994).

The role that the interrelationship between teleons can play in creativity can be understood in the context of telentropy where, transfer of telentropy between teleons can co-create conditions whereby novel organization, teleos and governance is *invited* as an emergent response to the low probability of the success of goal-directedness. Thus, in the above example of the emergence of the community lobby group, it could be said that the high telentropy in the motor-safety teleon as well as the high telentropy in the community satisfaction teleon, represented interrelationships which were a context that encouraged a novel community response in order that telentropy was to be reduced in those teleons.

An example of artistic creativity is the case where a person relates to a canvas through the medium of paint. In the exchange of matter (paint, canvas, hands, etc.), energy (physical effort, passion or emotions) and information (knowledge of technique, knowledge of subject, skill, talent, etc.), a structure can emerge which is much more than paint on canvas but is a message or impression which has a contribution to make to the world, i.e. it is an emergent property of the process of painting.

Teleonics clearly accommodates the process-based systems premise of emergence with ideas on the emergence of new processes, structures, goals and contexts as part of the ongoing dynamic re-organization of relationships in the Biomatrix. The implications for the field of psychology of this premise relates to concepts of health and possibilities for encouraging the emergence of healthy patterns of systemic organization. Teleonics suggests a model of health in which a flexible and creative

response to telentropy allows the autonomy seeking and integrative tendencies to be in some kind of dynamic balance. Telentropy, or uncertainties about processes being effectively goal-directed, can serve to encourage creative reorganization and confirm goal-directedness. However, telentropy can also become so high that goal-directedness can become damaged to the extent that the system responds with rigidity rather than creativity.

Therefore, in the teleonics model of healthy systems, feedback processes need to express dynamic self-organization that is of a constructing and expanding rather than of a restrictive and rigid nature. While rigidity and persistence of organization is also important in healthy living systems, in most cases it is acknowledged that flexibility rather than rigidity is a healthy property of dynamically self-organizing systems. An example of how being flexible can facilitate the emergence of novel processes is if one shifts from a rigidly held position of seeing issues as incompatible, to the more open position of accepting the essential relationship between issues. Through this flexibility it becomes possible for novel processes to emerge which incorporate both issues, rather than a promoting a rigid win\lose situation where the gain of the one reflects a loss for the other (Gharajedaghi, 1985).

Thus due to the close interrelationship of all processes in the web of life, it is logical that the effect of behaviour emerges as a criterion of prime significance in the interaction of closely related individuals (Watzlawick et al., 1967). In this context an individual may develop a symptom which functions as a constraint, a rule (Watzlawick et al., 1967) or a metaphoric expression of the dynamics of a particular relationship or interaction. This premise suggests a view of the diagnosis and treatment of emergent symptoms which is radically different to the conventional medical method of diagnosis and treatment.

4.3 The relating of teleonics ideas to an example

The individual is used as an example to describe how teleonics concepts can be applied. In this example, the individual, as the doublet, interacts and couples with other doublets. Some of these doublets are located *outside* of the individual, eg. the family and society, while others are located *within* the individual, eg. cells. This perspective of the doublet in relation to other doublets, represents a punctuation of structure in the Biomatrix.

In terms of teleonics, doublets are constituted as bundles of endodynamic and exodynamic teleons. The doublet represents the organizational coherence of these bundles of teleons as they cohere around a shared teleos, i.e. become doublets. Through the continuity of teleons through levels, doublets interact and couple at various levels in the Biomatrix. When viewed from the doublet perspective, the individual is understood to be comprised of bundles of teleons which are directed towards goals that are relatively external (exodynamic teleons) and internal (endodynamic teleons) to that doublet.

Examples of exodynamic teleons of an individual would be the employment teleon, recreation teleon,

home-making teleon, community-service teleon, communication teleon etc. While the teleons cohere in relation to the teleos of the doublet, seen from a process perspective, they each have their own teleos which directs the interaction of their processes. For example, the community-service teleon of an individual might have a teleos of making a useful contribution to community welfare. This teleos interacts in the context of the broader teleos of the individual as a doublet, which might be to achieve social approval. Examples of endodynamic teleons of an individual would be the nutrition teleon, sleeping teleon, exercising teleon, personal-hygiene teleon, etc. As with exodynamic teleons, endodynamic teleons each have their own teleos to provide goal-directedness, but are also attracted to cohere in relation to the teleos of the doublet.

Both endo- and exodyanmic teleons are continuous through at least three levels in the Biomatrix as is well illustrated by the example of the nutrition endodynamic teleon. In this example, the goal-directedness of the teleon is to nourish the body. The nutrition teleon can be traced to where sunlight (universal level), interacts with water and plants (environmental level), the fruits of which are then harvested, marketed (societal level), eventually bought, cooked (family level), and eaten by the individual (individual level) and metabolized (cellular level).

Like the endo- and the exo- characteristics of teleons, the tapping and contributing teleons illustrate the union of opposites of the doublet. The union of opposites points to the role that tensions play in both change and stability in dynamic organization. For example, while endo- and exo-teleons cohere around the teleos of the doublet, each is also attracted by their own teleos, which can lead to conflict and competition. This can be demonstrated in the example of the individual wanting to change his diet to improve health (teleos of nutrition teleon thereby changing). Where the individual is engaged in a pattern of social activities which revolve around unhealthy eating and drinking, then the nutrition teleon is likely to come into conflict with the social teleon. This conflict can bifurcate existing patterns of interaction with the possible emergence of new organization. An example of the emergence of new patterns of organization could be if friends decide to be supportive to the extent that they shift their social activities to be more supportive of a healthy lifestyle. While conflict can encourage the bifurcation of systemic organization, it can also reinforce the stability of existing patterns of organization. An example of this would be if the individual finds that the aspiration to eat a healthy diet is incompatible with the eating and drinking that is part of social interacting, and chooses to abandon goals of healthy eating. In this situation the organizational status quo is confirmed.

The flux and flow, as well as the stability, of the individual as a doublet is governed in terms of the field of teleos that attracts the organizational coherence of that individual. The way in which teleons are governed is by feedback and feedforward process. For example, in choosing a course of study, an individual is projecting a feedforward of what might be useful in order to achieve career goals. If the individual fails an exam, this is a feedback that teleos is being frustrated (high telentropy in the studying teleon), and that some changes in the functioning of that teleon are required to reduce telentropy.

The level of telentropy indicates high or low frustration in goal-directedness of a particular teleon. By considering the interaction between teleons, it is possible to explore how difficulties in one teleon might relate to complex interactions rather than to a single cause. For example, if in preparing for the examination the student found that concentration was difficult and that tensions emerged in a close relationship then, because of the interconnectedness of the web of life, one can appreciate an interaction between these events. Even further perspectives can be explored or connections sought, for example the individual might have had a low tolerance for examination stress might have led to irritability with *all* friends and family. In the context of systemic thinking, it is useful to consider multiple interactions and processes as they relate to problems, and not to try to reduce understanding to a cause and effect relationship. In this way, attempts can be made to appreciate and attend to the systemic nature of problems in the context of their complexity.

With respect to the issue of flux and stability of organization, this is influenced by the level of organization that is being observed, and the period of observation. For example, the individual appears to be a generally stable doublet with predicable appearance. If one considers the cellular level of the individual, there is constant flux with cells interacting, deteriorating and reproducing at a rapid rate. In the same way societies appear to be stable doublets in that social habits persist, clothing styles appear constant from day to day, etc. If one considers that both social habits and clothing styles over a period of time, it is obvious that change does occur, but at rates that are very different. Change in systemic organization can occur though structural change (eg. if an individual hurts their back they can no longer perform in their usual manner), or through changes in teleos (eg. a person experiences a religious conversion and aspires to a different way of being in the world).

When considering the individual from a perspective of process, such as with the model of teleonics, the essential flux and flow of the interacting patterns of organization are emphasised. The teleonics approach not only has heuristic benefits through the operationalization of process-based systems thinking, but also indicates and points to solution strategies that are systemically coherent.

4.4 Conclusion

Besides the strong emphasis on process vis-a-vis structure in systems, a contribution of teleonics is that it attempts to reconcile analysis and synthesis in a synchronous view of reductionism and holism (Cloete & Jaros, 1994). It holds particular possibilities for development for application in the field of psychology where process-based systems models have not yet been well developed, and where process-based concepts such as processes, relationships and conceptual systems are particularly relevant. A further point worth specific mention is of the assessment and treatment processes that are appropriate to process-based psychology practice. Teleonics accommodates a perspective where subjective interpretation is appropriate to the understanding of assessment methods and treatment processes in psychological therapy by being a framework which can accommodate variations in

perspective of the percipient position.

While being a systems model of enquiry, teleonics does not promote an antireductionist position, but rather a position where processes of reductionism must be understood in their larger systemic context. Teleonics is essentially **a heuristic model** which offers the opportunity to open up different perspectives on existing approaches and problems. As a heuristic model in the Foucaultian sense, this is not meant as a "set of determinations imposed on the thought of individuals, but rather as a set of conditions in accordance with which a practice is exercised" (Foucault, 1972, p. 208). Teleonics is presented as a model which can add to our understanding of living systems by, metaphorically speaking, throwing some more light on the subject area.

CHAPTER FIVE: METHODOLOGICAL CONTEXT

5.1 Introduction

In reviewing the methodology of this dissertation, the research process can be described within the critical self-reflexive model and consistent with **new paradigm research** as proposed by Paul Diesling (Reason & Rowan, 1981b), which is part of the postmodern or post positivist approach in social science. In line with the methodology of double description, the theory of teleonics is described and the practical application of teleonics in the field of psychology is demonstrated by means of an elaborated case study (this description is augmented by further circumscribed case illustrations). The case study method has been chosen essentially to illustrate the practicality of teleonics and also to support the notion of case study method as a valuable way to explore complex and naturally occurring real-world events (Bromley, 1986; Harvey, 1990). This is coherent with the philosophy of new paradigm research where "even though case studies are unique and not generally comparable, this does not render them scientifically worthless. On the contrary such cases are analogous to unexpected discoveries following exploratory investigations and may force a revision of accepted ideas or stimulate creative thinking through puzzlement and interest they arouse" (Bromley, 1986, p. 277).

5.2 Philosophical ideas supporting new paradigm research

The assumptions of postmodern methodology that are at variance with commonly held modern social science models include holistic and participatory knowing, critical subjectivity, knowledge in action, and the complementary-diversity thesis.

5.2.1 Holistic and participatory knowing

Conventional scientific inquiry has been of the deductive or definition rather than the elaboration or extension mode (Bannister, 1981). In order to obtain a broad and holistic picture of systems within contexts, one needs to probe beyond *surface* features and be working in an appropriately inductive mode (Parlett, 1981). Such an appropriately inductive mode needs to be of a nonlineal epistemology, emphasising ecology, relationships, and whole systems (Keeney, 1983; Reason, 1988b). As a heuristic method, teleonics provides explanatory and descriptive insight of processes and systems *in context*. This is in line with postmodern inquiry philosophy where the extension of understanding of processes in a holistic context, rather than precise definition of isolated specifics, is encouraged. Moustakas (1981) suggests that the dimensions of heuristic research are intellect, emotions and the spirit, which are integrated through experience, literature and validations (feedback). He also suggests that rather than methodology, the term disciplined personal commitment could be stressed in a research process where intuition, spontaneity and self-exploration are seen as components of a unified experience.

According to Reason and Rowan (1981c), being holistic rather than reductionistic depends to a large extent on the relationship between the knower and the known. This can be seen as the politics of who makes decisions and in what manner, where the inclusion of subjects with authority into the research process suggests an ethos of power-sharing (Heron, 1981a). This notion of research namely, research with and not on people, is accommodated in teleonics where collaborative interpretation of people's action, in which the researchers can check their version against the *subject's* intentions in a more holistic process of understanding the research process, is regarded as important (Bannister, 1981). Such inquiry is called co-operative inquiry where the contribution of the subject may vary, being strong or weak at various stages of research. The researcher is a self-directing or intelligent person and therefore his or her "behaviour is not fully subsumable under the causal laws of the natural order, but the expression of self-directed activity within that order" (Heron, 1981a, p. 21). In co-operative inquiry there is opportunity for corrective feedback between researcher and subject whereby they can illuminate and clarify the human process for one another. Parlett (1981) takes this point even further in his opinion that, representing unique perspectives, each participant in an enterprise is a theory builder, explainer, advocate, observer, and informant, amongst others.

Stated differently, it could be said that analysis should be both deductive and inductive. In this context deduction refers to the researchers' constructs which are operationalized to provide maps or frameworks for the punctuation and distinction making of the field being investigated. Induction refers to the process of using insights or information that is punctuated and distinguished to review and develop the original constructs (Sowden & Keeves, 1990). However, despite this "union of opposites" of deduction and induction, when viewed in isolation, deductive models essentially involve phenomena being explained through the use of general laws and in this way is distinguished from the more holistic pattern model of explanation (Reason & Rowan, 1981b). The pattern model involves a number of phenomena all of equal importance, where prediction is not important and explanation lies in demonstrating connections. The **spiral method** which is one of the conceptual maps suggested in teleonics (to be discussed later in this dissertation), is a pattern model of explanation. As indicated by Reason and Rowan (1981b) the development of a pattern model is where a conceptual map is developed through a process of information being gathered in the field and being connected in a network or pattern expressing particular themes. In teleonics, the conceptual map of patterns is in the metaphor of a spiral, which serves to both describe and explain repetitive and stable interrelationships in the context of continuity over time.

Pattern models rarely, if ever, *finish* and their pattern is subject to change in the course of development (Reason & Rowan, 1981b). They describe the kind of relations the various parts have with respect to each other. The pattern can be indefinitely *extended* or *filled in* as more knowledge is obtained (Reason & Rowan, 1981b). The essential quality of a pattern model is that it creates *a dense web of knowing* whereby we can appreciate networks of understanding (Reason 1988a).

Owing to the continuity of processes through this dense web, the inner and outer context of any behaviour is inextricably part of a larger social system as well as a complex inner system with at least three distinct, yet interrelated, levels of explanation needing to be distinguished. In teleonics it is proposed, that at least three levels must be included in the inquiry process with the perspective of the observer being also of a flexible metaperspective level. This is compatible with Russel's theory of types (Levin, 1992), where the importance of a metaperspective (or level of discourse), which is above the level that applies to members of the class being studied is essential for meaningful understanding. Because it is assumed that there are many valid ways in which a subject of inquiry can be approached, it is essential to new paradigm research that not only holism but the personal construction of perceptual orientations and research decisions is appreciated.

Congruent with new paradigm research, teleonics encourages the appreciation of scientific issues as part of a personal construct system. In such a personal construct system the field of inquiry is subjectively defined and constructed and personal experience is valued as a rich and relevant source from which to derive and argue issues (Bannister, 1981). The researcher needs to be purposefully aware of *thinking processes* as part of ongoing personal development, and of the relationship between experimenter and subject as one of participant observation (Bannister, 1981). In this respect, teleonics can accommodate experiential research methods where subjects contribute to creative thinking and management as well as participating in activities being researched (Heron, 1981b). While the relative strengths of contributions can vary depending within and according to each research process, the model of experiential research refers to strong contributions by researcher and subject alike (Heron, 1981b). In such a complex process it is a basic requirement for one to be acutely and critically aware of one's own experience (Cunningham, 1988). Cunningham (1988) suggests that this is not a totally self-absorbed introspection since it requires linkages between one's self and the world around especially in the *making sense* phase of the research.

5.2.2 Critical subjectivity

Postmodern methodology represents a shift from objective consciousness to critical subjectivity (Reason 1988a). In this shift one goes beyond the split between subjective and objective to a quality of awareness where we do not suppress our primary subjective experience, nor do we allow ourselves to be swept away by it, rather we raise it to consciousness and use it as part of the inquiry process. In teleonics not only is rigor with respect to mindful construing and intending demanded but intuition and spontaneity are also encouraged in the context of critical subjectivity. Therefore, important issues in research methodology are the thinking processes of the researcher. Bannister (1981, p. 192) suggests that "what is missing from most research methodology is any indication of how the psychological researcher is supposed to think".

This method of thinking relates to the process of construing-and-intending the research process which is seen as part of the larger process of living, through which original and creative human activity emerges (Heron, 1981a; Rosen, 1981). Not only are researchers consciously aware of their research intentions as they engage in decision making and overt action, but the content emerges based on its personal meaning or significance in the opinion of each researcher (Heron, 1981a). Thus since the teleos of the research process is intended and the process of implementing is construed by the researcher (albeit using a conceptual map such as teleonics), the researcher should acknowledge and comment critically on their personal experience so that their unavoidably subjective bias can be seen as a contribution to the research process (Heron, 1981a; McNeil, 1993; Neale & Liebert, 1980; Reason 1988a).

The need for intense self-reflection as a researcher can be understood in the context of the notion that science cannot be value free. Teleonics principles encourage the notion that researchers as people hold values which they express as they engage in a research process (Heron, 1981a). This has particular relevance for research with people with their rich variety of subjective perspectives, where holistic and participatory knowing needs to be carefully and critically managed. This is because where statements are made about people who may not contribute to their formulation, they are "sets of alienated statements hanging in an interpersonal void: statements about persons not authorized by those persons in relation" (Heron, 1981a, pp. 26-27). Heron further suggests that one must appreciate that "my considered view of your reality without consulting you is a very different matter from our considered view of our reality" and this is important to remember in suggesting and interpreting the **meaning** of research findings.

The importance of critical subjectivity is further emphasised when considering the dialectical relationship between concepts as referred to by Sabelli and Carlson-Sabelli (1989). These authors suggest that semantic unions of opposites reflect epistemological unions of opposites where the meaning of words is a collective process, not an individual choice. Their further suggestion that we mean what we say, whatever we think we mean to say, indicates the importance of critical subjectivity since the method that we use to communicate in the research process is essentially one of language.

5.2.3 Knowledge in action

In the research process, cycles of activity and reflection occur (Marshall & Mclean, 1988) in a complex interrelationship of theory, action, ideas, experience, planning, research initiatives, critique, feedback and discussion.

Postmodern methodology represents a further shift to a view of knowledge as formed in and for action rather than as in and for reflection (Reason, 1988a). This perspective encourages research which has meaning for individuals rather than groups or populations. This raises the issue of general theory which

is central to conventional scientific philosophy but, where it is also contended that if developed in the context of holistic inquiry, can also be brought to bear in a systemic way (Reason & Rowan, 1981b). Diesing (in Reason & Rowan, 1981b) finds three general characteristics of such research, namely a guide for holistic appreciation, empirical concepts which are usually complex and rich in content, and theories which are concatenated rather than hierarchical. Despite this possibility for the application of general theory, the primary interest in teleonics is not in generalizing to other settings, but rather in applying knowledge to improve effectiveness in a situation (Torbert, 1981) as it fits into life's ongoing matrix of process.

5.2.4 The complementary versus diversity thesis

While there is a tendency in postmodern philosophy to recognize that no one single paradigm can accommodate all the challenges of research, there appears to be a range of opinions, from those who accept complementarity, to those who propose oppositional diversity of paradigms (Walker & Evers, 1990). The core of the argument seems to come down to the validity and reliability of the research process and findings where the rich data of qualitative inquiry poses problems with respect to general application and replicability (Sowden & Keeves, 1990). Generally experimental scientists view that qualitative research is lacking in objectivity, rigor and scientific controls (Walker & Evers, 1990) which is inevitable given its very different basic assumptions about objectivity, validity and reliability.

These differences in views about objectivity, validity and reliability are embedded in a fundamental epistemological difference. This difference relates to the position of quantitative research that an independent reality exists *out there* which is accessed by means of disciplined observation. In contrast, qualitative research assumes that reality, or at least social reality, is something that we construct with our minds as a product of our theorising (Walker & Evers, 1990). Thus it is regarded that theorising, as a level of abstraction, tends to shape reality rather than the other way round. The implication of this for the assessment of validity is that there is no mind-independent, theory-independent or value free way of checking the validity of *findings* (Harding, 1993). Therefore, appropriate theoretical requirements need to be developed to capture the relation between the human mind and social reality (Walker & Evers, 1990), so that qualitative research can have an integrity and validity that is congruent with its epistemology.

5.3 Validity in new paradigm research

New paradigm research often involves dealing with large bodies of qualitative *data.* It is important to address the issue of whether the procedures that have been used to distinguish *data* from a field of inquiry are sound (i.e. valid and reliable) (Sowden & Keeves, 1990). Notions of validity and reliability, as used by experimentalists, are meaningless to the holist in their implication of some impersonal automatic truth (Reason & Rowan, 1981b). This notion of being able to be certain of truth is challenged

in new paradigm research where, absolute certainty is regarded as a myth (Harré, 1981), and the viability (utility) rather than the validity (truth) of an individuals world view, is emphasised (Neimeyer & Neimeyer, 1993a). With appreciation for the idea that absolute certainty is a myth with some things essentially unknowable, it is better to work with an acknowledgement of imprecision and bias than to bog the whole thing down in attempts to be prematurely *correct* or *accurate* (Reason, 1988d).

Since it is important to explore what happens reliably as well as randomly (Greenberg, 1984b), Reason's broad reference to validity as the *soundness of endeavours* (1988c) is useful. In this context the soundness of each unique research process needs to be assessed according to measures of soundness that are valid in the context of the philosophy of new paradigm research. Such measures relate to issues of relative meaning, practical validity, individual and consensual judgement, and a holistic fallacy (Reason 1988a; Reason & Rowan, 1981b; Sowden & Keeves, 1990).

5.3.1 Relative meaning

Relationships express meaning in the way in which related concepts inform and enlighten one another. Such relationships can exist between dialectical opposites as highlighted by the union of opposites thesis (Sabelli, 1989), an example of which can be the research process, as a dialectical engagement in the world (Reason, 1988a). Such relative value can be used in assessing validity by comparing different evidence as it relates to the same point and by evaluating a source of evidence by collecting other kinds of evidence about that source (Reason & Rowan, 1981b).

Relative validating can also be useful when working with qualitative findings such as patterns, lattices and fractals as well as the wide variety of forms of data, findings or knowing that may be expressed in poetry, drama and art as well. These forms of expression have their own validity (Reason 1988c) which can be assessed in relation to internal coherence, comparative works, or evolved standards as they have emerged in the development of that particular discipline.

With respect to subjective reporting or personal accounts such as story telling, etc., validity can be assessed through contextual matching of events or phenomena with other sources of information as well as an assessment of the coherence of a personal account or report with the inner and outer (personal and social) context from which such a report emerged. Maslow (in Reason, & Rowan, 1981c) also suggests a notion of relative value, where subjective knowledge can be checked out by comparing it with other people's subjective knowledge. But such a phenomenological approach (using subjective and first-person experience as a source of knowledge), requires high standards of the knower (Reason & Rowan, 1981c). The bias of the researcher in expressing their feelings and translation must be appreciated in the context of having its own integrity and its own validity (Marshall, 1981). This bias is not only valid in the contribution that it makes to the research process, but also necessary, as a researcher needs to engage in the data collection process in order to try to do an adequate analysis

(Marshall, 1981). This translation and processing of information by the researcher may involve a process of *chunking and sorting* of meaning (Marshall in Reason 1988c) by using traditional qualitative inquiry methods such as description.

Coherence as a criterion of validity of research conclusions refers to the need for conclusions to be consistent, interdependent and mutually illuminating, and for inquirers to be in agreement about conclusions (Heron, 1988). In addition, coherence between the propositions asserted by the research conclusions with the experiential knowledge of the researchers, can also provide indications as to the validity of conclusion (Heron, 1988).

5.3.2 Practical worth

A very important criterion of validity in new paradigm research is empirical usefulness. General theory is indirectly testable by its empirical usefulness (Reason & Rowan, 1981b), which perhaps says more about the contextual congruence and fit (structural coupling) than about the validity of the general theory itself.

In trying to enhance the validity of new paradigm research, the process of encouraging the interplay between reflection and experience as part of the research process can be enhanced by the method of research cycling. Research cycling is an interplay between reflection and experience where a 2-way feedback loop clarifies and corrects the developing research propositions (Heron, 1988; Miles & Huberman, 1994), and allows one to respond to incoherence so that the process can be critically monitored.

In practice, a balance of divergence and convergence is required in order to encourage a broad/holistic view of the inquiry, during which a simultaneous divergence and convergence refines and clarifies important issues (Heron, 1988). In teleonics, the process of divergence and convergence are encouraged in order to promote analysis in the context of a larger holistic perspective. The coherence of these two perspectives contributes to their mutual validity.

5.3.3 Individual and consensual judgement (inner and contextual coherence)

New paradigm research supports the notion that there is no absolute truth or reality but rather numerous different perspectives which may enjoy consensual validity, but which may or may not be widely supported (Parlett, 1981). In view of this the application of validity procedures ultimately comes down to human judgement of what is practicable and what is *good enough,* given the aims and purposes of the project, the situation, and the existing status of the research process (Reason, 1988d). This contextual view of validity does not pretend to some common goal of validity, but relies on the subjective individual and collective judgments of those assessing the integrity of individual research

processes and findings.

Given the limitations of principles of empirical validity for application in a holistic paradigm, one must be aware of the danger of sinking into methodological inconsistencies, epistemological speculation and abstraction (Reason 1988c).

5.3.4 Triangulation

This is a method of validation which comes from the fields of surveying and navigating. This method suggests that particular information, facts or punctuations of events can be placed in relation to other information, facts or punctuations of events (Denzin, 1990). Where a number of sources of evidence point to a common conclusion then one's confidence in that conclusion is strengthened (Bromley, 1986), thereby providing information on reliability rather than validity (Miles & Huberman, 1994).

There are four types of triangulation; methodological triangulation, theory triangulation, investigator triangulation and data triangulation (Sowden & Keeves, 1990, 524). The teleonics maps that are proposed in this dissertation include method triangulation as well as investigator triangulation. Method triangulation is represented by the use of three different teleonics maps to explore a field of inquiry, and investigator triangulation is represented by the premise that subjects are observers together with the researcher, in the researching process.

5.3.5 Holistic fallacy

A holistic fallacy involves interpreting events as being more patterned and having greater congruence than they actually possess. Ways in which one can avoid such distortion is to look for exceptional events, contrasts and comparisons, rival explanations, and negative evidence, and to obtain additional support for insights about patterns of relations (Miles & Huberman, 1994; Sowden & Keeves, 1990). This approach encourages attention to be paid to the meaning of outliers or extreme cases. This can test and strengthen findings and protect against self-selecting biases, thereby helping to build better explanations (Miles & Huberman, 1994). The use of a variety of cases in this dissertation, including a one session problem solving case and a workshop case study is an example of how outlier or extreme cases can be represented.

The teleonics maps proposed in this dissertation depend on methods of punctuation and distinction making (which involve the discerning of differences) for their practical implementation. Such distinction-making encourages consideration of contrasts, comparisons, and exceptions as understanding of teleons, interactions of teleons and their contexts, are sought. In teleonics, negative evidence and rival explanations can play a role in assessing the potential and the limitations of the teleonics inquiry method as it tries to approximate reality as closely as possible, and not to just try to fit reality into its

map.

5.4 Conclusion

While the movement to promote new paradigm research is a significant one, it will be some time before the fears relating to the loss of *classical* standards in new paradigm research (Lather, 1992) are resolved, and confidence in non-experimental approaches to science are generally welcomed. While this is no reason to be faint hearted, it is wise to take care to set and maintain high standards of research method. In addition, an appreciation and healthy respect for other methods, old and new, can help us to remember that our own particular approach and methodology are "interrelated aspects of a systemic view of knowledge" which must co-exist with the processes of scientific inquiry (Reason, & Rowan, 1981a). Perhaps the strongest distinction between old and new paradigm research is the theme that methods and metatheories should have an ethos of suggestion and inspiration rather than constraint and control (Mills, 1978).

CHAPTER SIX: TELEONICS: INTRODUCING THE TELEONICS MAPS

6.1 Introduction

> "What we call the beginning is often the end
> And to make an end is to make a beginning.
> The end is where we start from." (Eliot, 1963, p. 221).

When applying teleonics as a process-based systems ecology of ideas, a beginning must be punctuated. Such punctuation can be informed by the questions being asked, the nature of the systems or issues being explored, or the problem being addressed, and as such, is a subjective construction by that person or persons who choose to initiate the process.

To think about anything requires a conceptual map or model (Gharajedaghi, 1985; Reason & Rowan, 1981b; Sowden & Keeves, 1990) which then serves to indicate the orientation of the enquiry process. A variety of models which might facilitate an understanding of teleonics concepts are possible. The choice of model is determined by the opinion of the investigator regarding what might serve as an appropriate metaphor of explanation. More than one model can be used with the effect that insights from the various methods may interact and inform one another.

6.2 Teleonics conceptual maps/models

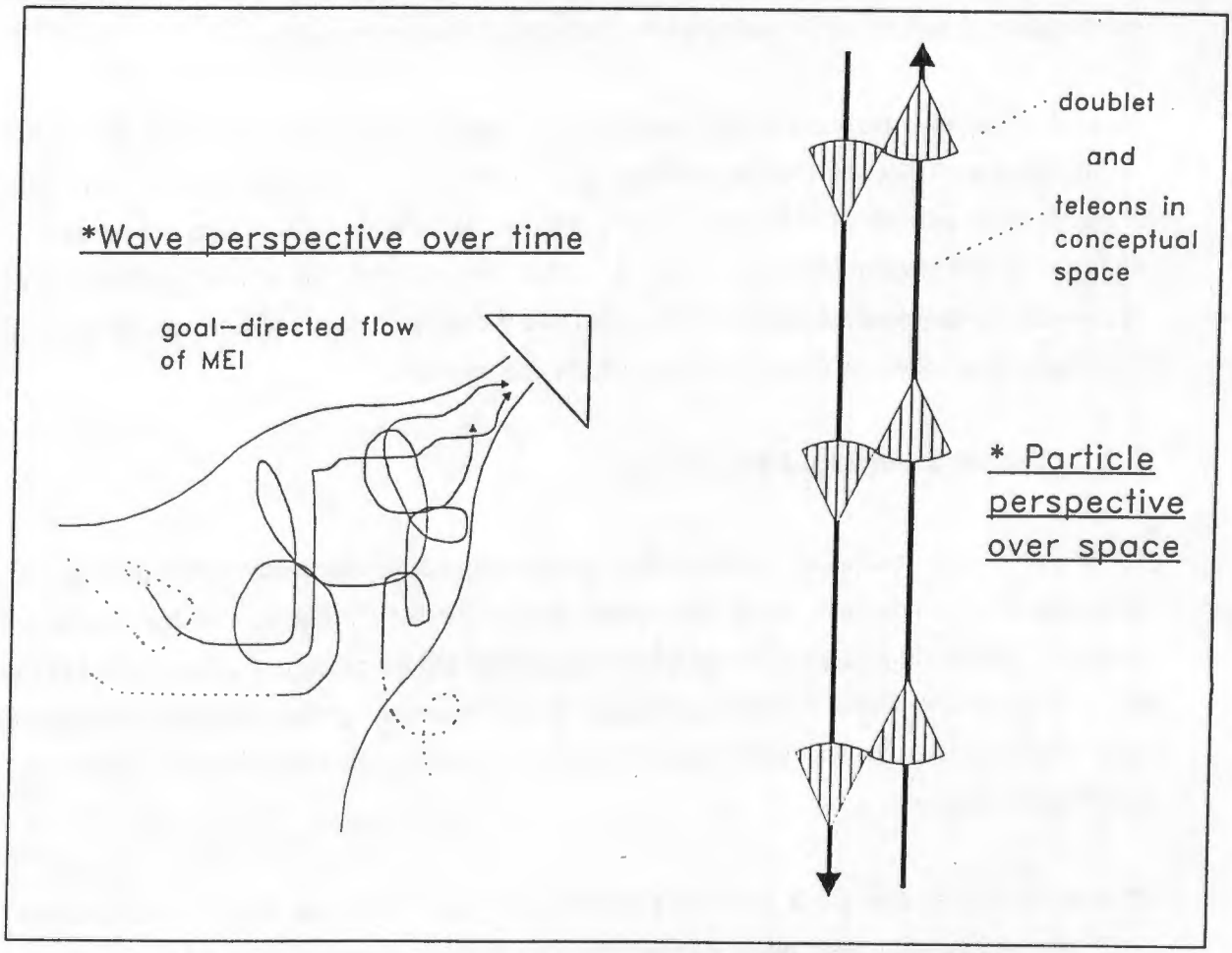
Three conceptual maps, viz. **spiral map**, **teleos map**, and **telentropy tracing map**, which accommodate the emphasis of this dissertation, are proposed for discussion in this chapter. The theoretical position in which they are grounded is explained and the practical methods relating to each map are discussed. While they are essentially heuristic in nature, by their underlying assumptions, these maps suggest certain possibilities for intervention in the organizations of systems (to be discussed in chapter seven).

While each map emphasises a particular perspective of research enquiry, they are all rooted in the process-based systems premises as outlined in this dissertation. These maps cover a wide range of teleonics concepts but focus distinctly on:

* teleos (goal-directedness of process and pattern)
* teleons (gathering of processes around teleos)
* interaction of teleons
* organization of interactions of teleons (patterns)
* telentropy in and between teleons (governance of teleos)
* teleons in both time and conceptual space.

It is to be noted that a simple distinction between time and space is made in teleonics, because of the nature of our consciousness and sensory systems as humans. While it is difficult to clearly distinguish the relationship between these different dimensions of reality, they are intimately related as a dichotomous pair in a union of opposites (Sabelli, 1989). While all essentially interconnected, the spiral and the telentropy mapping methods focus on processes over time (perspective of wave or flow of particles), while teleos mapping focuses on processes in a multilevelled conceptual space (organization of particle perspective) (see Figure 8).

Figure 8: Figure illustrating a wave vis-a-vis a particle perspective.



Some might argue that both wave and particle quantum pictures are static, the waves being standing, while a process view implies change, evolution and creation. This refers to the probability distribution of the wave function in quantum physics. To appreciate the analogy as it is used in the dissertation, one must distinguish between the wavelike propagation of light (which can be observed by for example the diffraction patterns), as opposed to the probability distribution of the wave function in quantum physics. In the context of teleonics this analogy refers to the perspective of observation and whether observation is in space or over time.

With reference to Bateson's epistemology of analysis, both Keeney and Bateson refer to the perspective of time in their requirement that at least **three bits** of action in a sequence of events need to be studied (Bateson, 1979; Keeney, 1983). Bateson does include the spatial dimension with his concept of transcontextual processes or **double binds** (Bateson, 1973), but this is implicit rather than explicit to his epistemology of analysis.

From the teleonic perspective, interactions in the context of both time and conceptual space are explicitly studied. In other words, interactions of teleons (events) are always studied in the context of preceding and subsequent interactions, and in the context of at least three levels of spatial organization. These levels of organization compose a level of focus (called the emergent level), an outer level (externally related doublets called supradoublets), and an inner level (internally related doublets called subdoublets) (Jaros & Cloete, 1993; Jaros & Cloete, 1994). This position of considering relationships between multiple levels is an important contribution to psychological practice, where, major schools rarely regard the meaning/interpretation of analysis and assessment as contextually dependent.

6.3 Spiral mapping

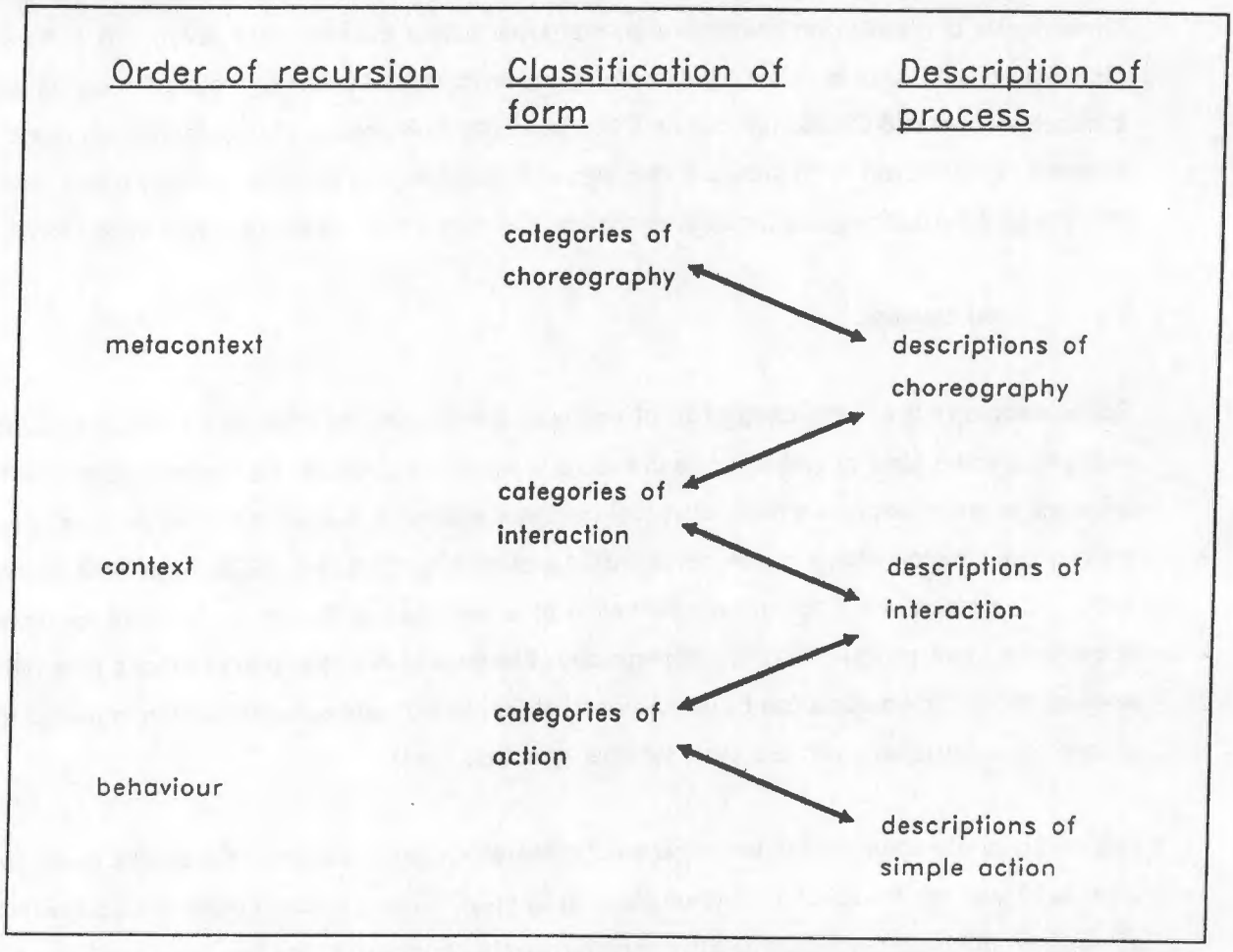
Spiral mapping refers to the development of a conceptual map using the spiral as a metaphor, in order to describe and explain interrelationships of teleons in terms of a particular theme or question. While language as text is the primary explanatory tool, diagrams, examples, illustrated stories and metaphors are also used to *show* what is sometimes difficult to express in words (Levin, 1992; Sowden & Keeves, 1910). In addition, the diagrammatic illustration of a sequence of events in a spiral metaphor, encourages a metaperspective of the choreography of patterns of events and interactions (Sowden & Keeves, 1990). This method can be useful as part of *the making sense process* which is part of any process of understanding complex living systems (Marshall, 1981).

The metaphor of a spiral implies both a sense of conservation (eg. the shape of a snail's shell), and a sense of flow (eg. the spiral of a python crushing its prey). Thus it accommodates a spectrum of governance which can range from rigid (largely influenced by structures) to flexible, (being largely open to feedback and feedforward processes). Purce (1974) suggests that a spiral is an appropriate metaphor for understanding human behavioural processes in a world where man's own awareness constitutes a spiral of multiple dimensions in which each winding is also a complete spiral and each spiral just a winding. Jung (1964, p. 248) also refers to the symbol of the spiral as a mandala which "serves a conservative purpose - namely to restore a previously existing order" while, "what restores the old order simultaneously involves some element of new creation".

The spiral or patterning map is useful when exploring how individuals function as they interact, with a sense of order emerging from the events or behaviours that tend to repeat in a particular organizational pattern (constituting a conceptual spiral). This method is in many ways consistent with Bateson's

epistemology of analysis (Bateson, 1979; Keeney, 1980), where a zigzag between description and categorization of process and form, is proposed (see Figure 9). This zigzag of process and form enables us to dialectically and recursively view patterns of experience of behaviour. Distinctions about experience or behaviour are punctuated from streams of events (processes) on the basis of what is subjectively meaningful to the observer.

Figure 9: Bateson's *zigzag* epistemology of analysis (Keeney, 1980, p. 43).



6.3.1 Punctuating events and contexts

An event is a punctuation of interactions of teleons. This punctuation is made from a stream of complex interrelations of teleons and is punctuated because of its meaning to the observer. The event is an interaction of endo- and exodynamic teleons which interact or co-act because of a particular context. For example, in the *evening meal* as a pattern of family interaction, it is possible to punctuate a sequence of events (eg. serving food, eating, clearing the dishes, etc.) which occur in an inner context (eg. digestion, preferences of individuals, etc.) and outer context (eg. time, place, etc.).

The sequence of events are said to be emergent relative to an inner and outer level of organization. A level of organization refers specifically to an order of complexity where doublets persist over time.

For a doublet to emerge and persist, outward and inward goal-directed teleons interact according to their own goal-directedness, as well as within the context of the *attractor* of the doublet (a higher order ethos). Where the interactions are not of such an order of complexity, they are referred to as a stream of events and not a level of organization (eg. the evening meal is a stream of events). Where such a stream of events exhibits a goal-directedness of its own, it may be distinguished as a teleon (eg. family-nutrition teleon, constituted by the many different sequences of events comprising family eating which *are attracted* by the goal of family nourishment) (see Figures 10 & 11).

Figure 10: Figure illustrating the distinction between the process and a teleon.

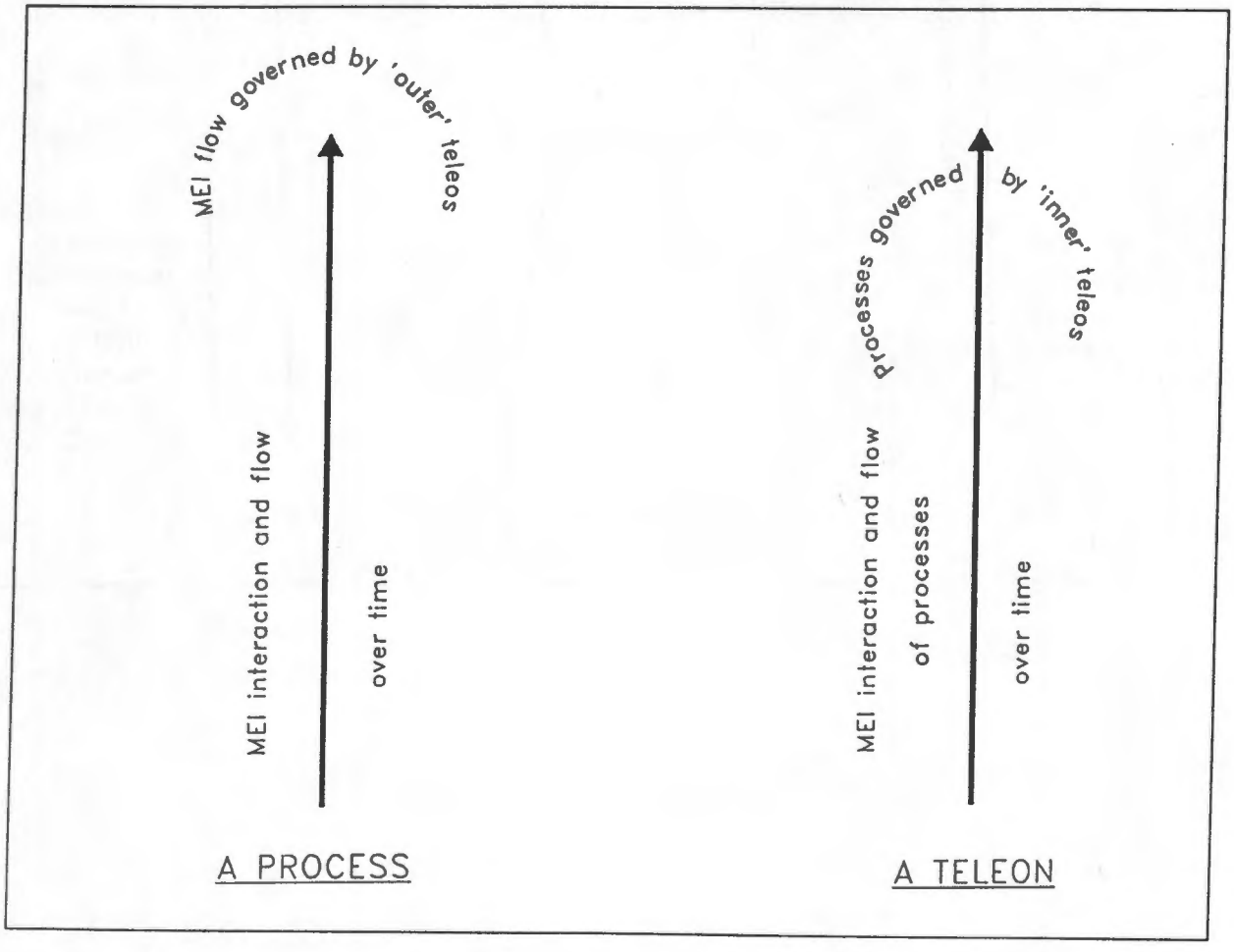


Figure 11: Figure illustrating the distinctions between a process, an event and a doublet.

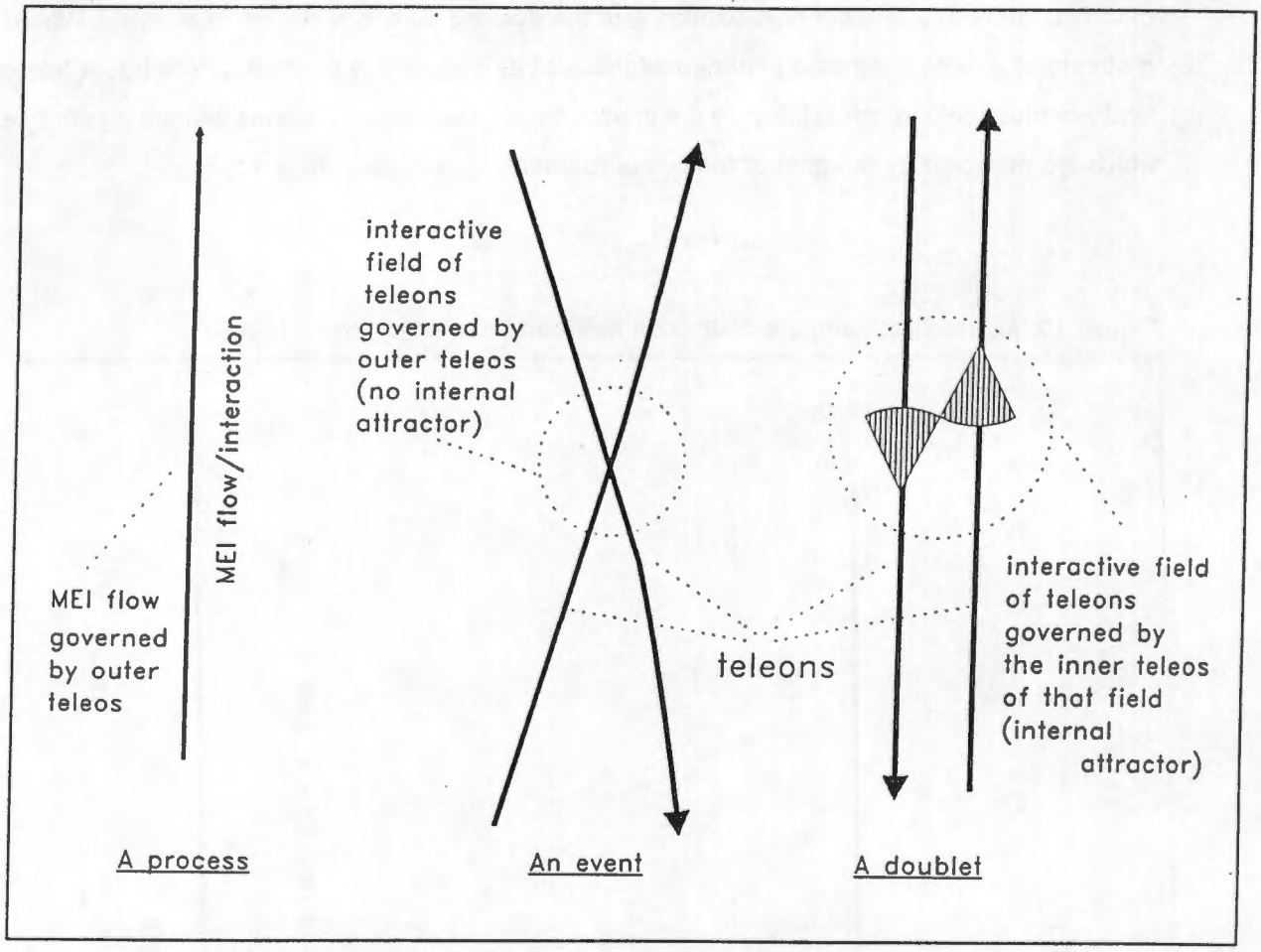
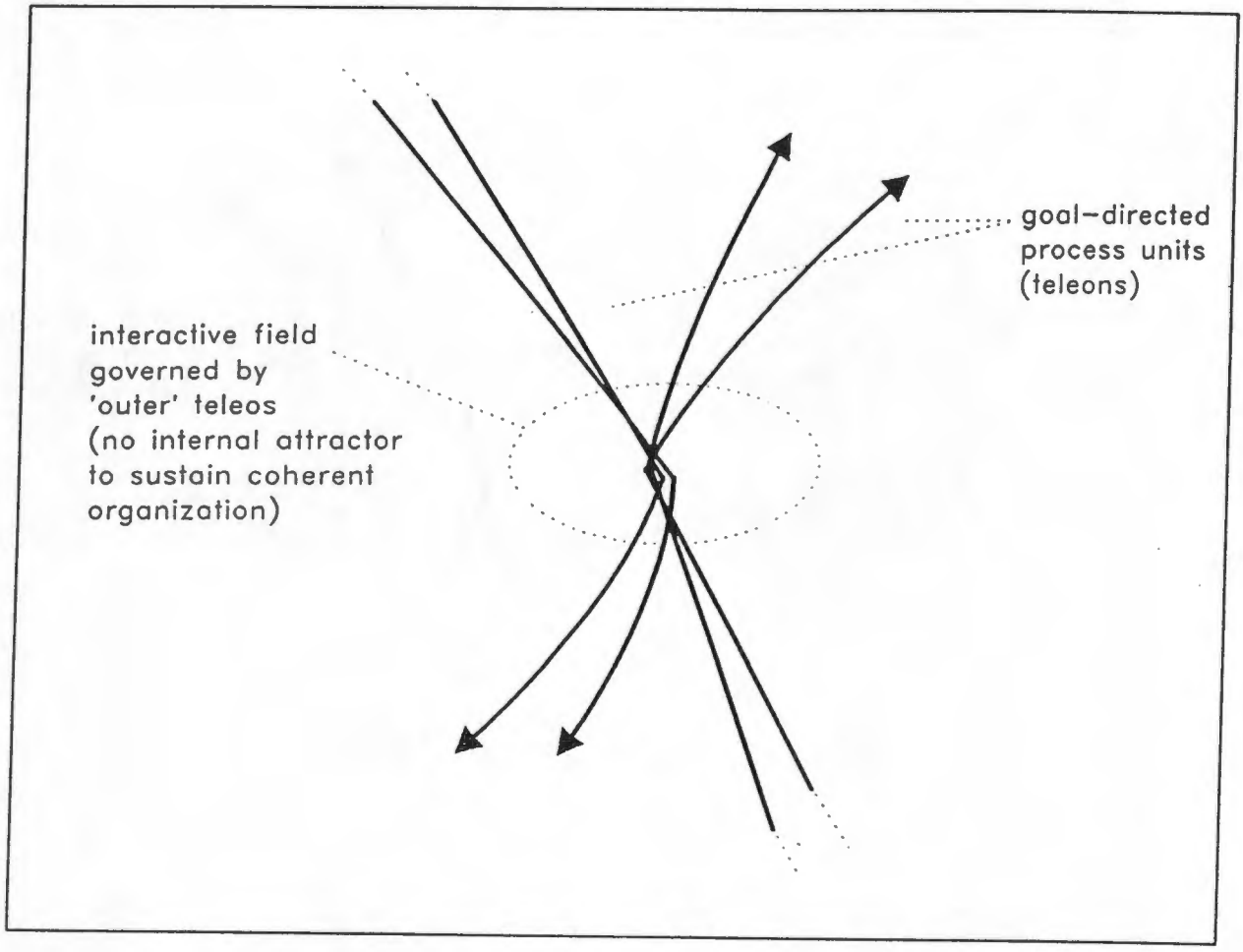


Figure 12: Figure of an *event* of teleonic interaction.

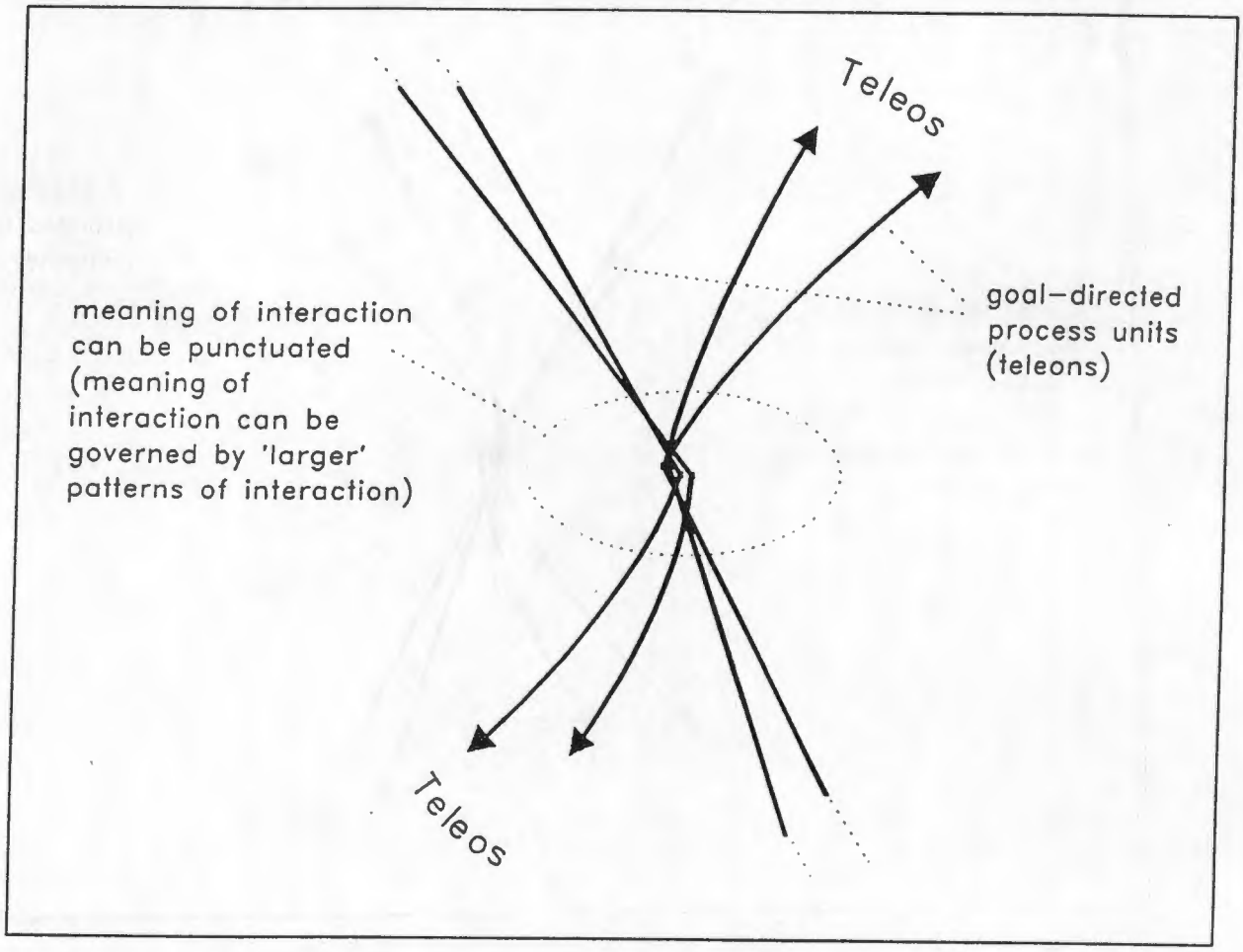


Both the notions of streams of events (see Figure 12) and interactions of doublets over time is a *wave* perspective and is best understood using the **spiral mapping metaphor.** However, the organization of interactions (from which emerge the doublets) in their inner and outer contexts is a *particle in conceptual space* perspective, which is best understood using the **teleos mapping** method.

6.3.2 Teleos in interaction of teleons

As teleons function to pursue their own goal-directedness (autonomy), they interact with other teleons (integration) (see Figure 13). Where meaning is attributable to such interaction, it can be punctuated as an event. For example when the nutrition teleon of an individual and family-relationship teleon of their family interact in the event of the family having dinner, the meaning of such an interaction lies in its significance for the observer or storyteller. The punctuation of the stream of events that constitute the process of family dining, enables an observer to begin to explore how patterns of interaction constitute larger patterns of organization and meaning.

Figure 13: Figure illustrating teleos in the context of teleonic interaction.

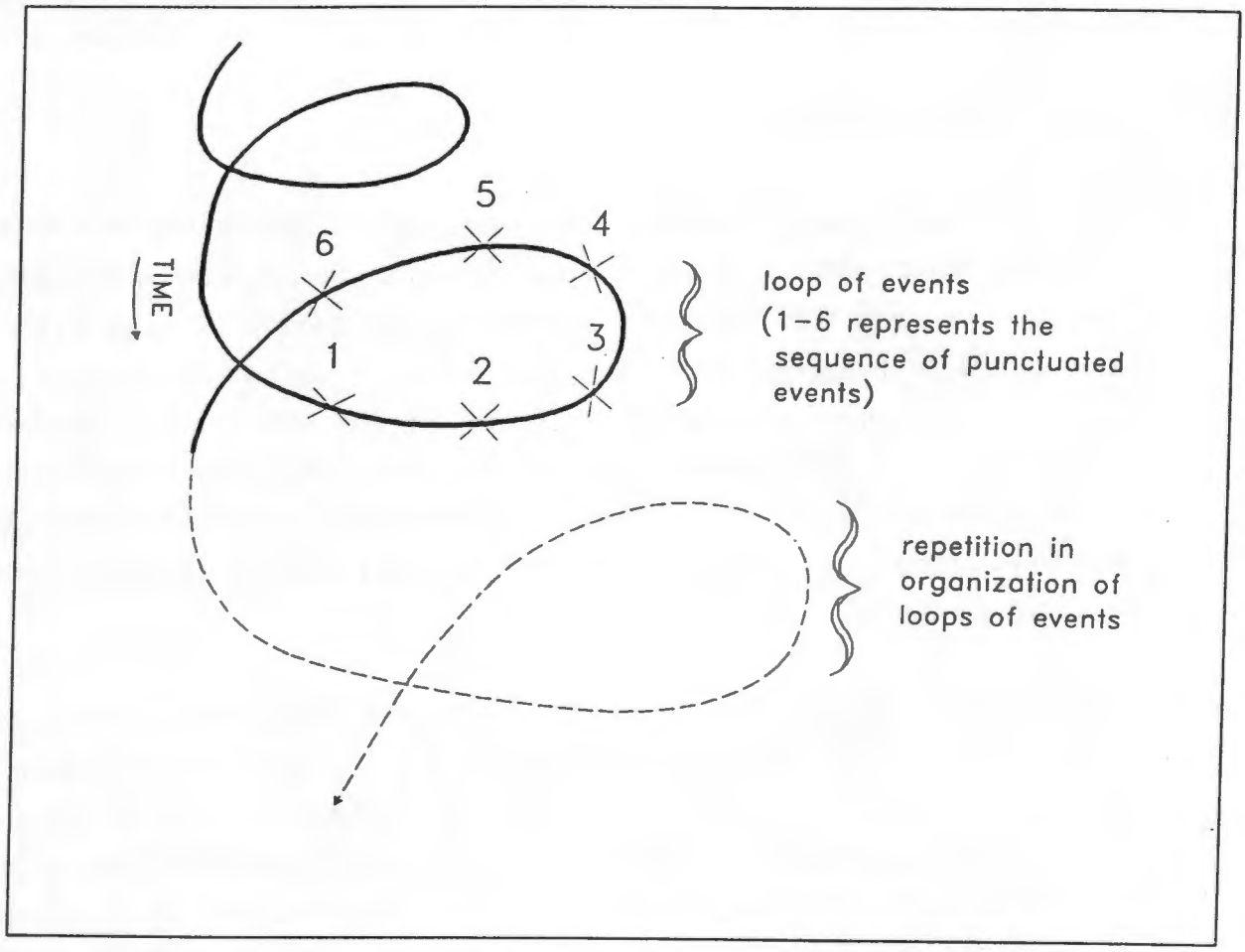


6.3.3 A loop of events

While a research question may require that a particular event be studied in a time or sequential context, these events are usually processes in larger patterns of organization. Teleons are not only governed by their own teleos (autonomy), but are also influenced by the teleos of related teleons or patterns of teleons (integration). Thus punctuated events have their own autonomy of organization which is in a *union of opposites* with organizational integration with larger patterns of organization. Such a larger pattern can be seen as a *loop* of events which recur in the metaphor of a spiral, eg. family meal-times.

Constructing a perspective of meaning in the context of events, sequences or larger pattern of events, enables something of the complexity of meaning in organization to be understood (see Figure 14). While events have meaning in the context of their interaction over time as they connect to create a sequence, it is the meaning (or teleos) at the level of the pattern (or loop) which provides an attractor for the coherence of interaction of events. While this attractor may influence events from a relatively outer level (eg. time might indicate that supper should be served), interaction is simultaneously governed by inner organizational levels (eg. hunger might indicate that supper should be served).

Figure 14: Figure illustrating a *loop* of events.



6.3.4 Distinguishing teleons

Distinguishing teleons is a gathering of processes around a particular teleos. This includes punctuating meaning or ethos (punctuated as teleos) and identifying the processes that relate to that meaning. As such, teleons are conceptual abstractions, which serve as a tool for searching for coherence of interactions around attractors (teleos). Teleons conceptually **flow** through levels of organization (or contexts) as processes appear to **gather** around and contribute to its multilevelled teleos.

Not only is it of heuristic value to know how processes (MEI flow) are governed around the teleos of a particular teleon, but also how teleons gather around larger teleos to form patterns of teleons (eg. how do the nutrition teleons of individuals contribute to the larger family-nutrition teleon). For example in a family's routine of dining, all family members could be distinguished as having nutrition teleons and family-relationship teleons which function according to their own teleos. In addition, those teleons simultaneously interact and weave through the stream of events which constitute the process of family dining, being attracted by the teleos of the *larger* pattern of family dining (with its teleos of family cohesion at dinner time).

Teleons interact at a number of levels, for example the nutrition teleon (with its teleos of nourishment of the body) interacts at the levels of the cells (metabolism), the individual (appetite, food choice), the family (sharing of food) and maybe even at the societal level (production and distribution of food).

6.3.5 Patterns of processes

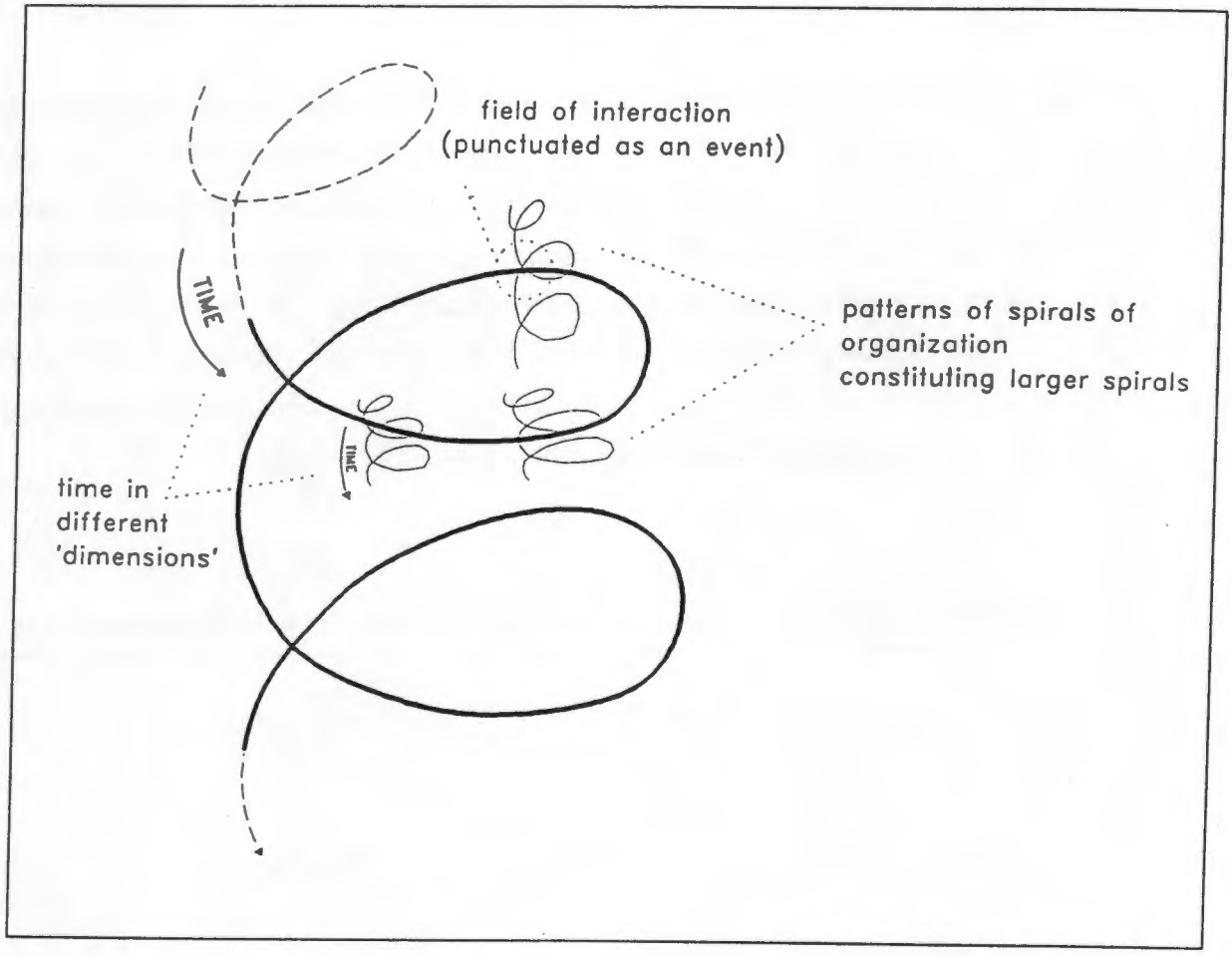
Although, in the spiral metaphor the stream of events has been depicted as a static set of interactions, they are really punctuations of complex patterns of relationships. Patterns are an *event-shape in time and space* (Auerswald, 1985), which are distinguished and defined through our subjective perception (Goertzel 1992). Thus, when considering the sequence of events or patterns which constitute the emergent level, the image of a woven chain is evoked. However, with such a chain of forward and backward knotting and knitting there is no closure (return to a previous point), but an open spiral of repeating loops of patterns. In such a metaphor it can be seen that each knot that is knitted has some autonomy of organization, but that the collective knots constitute the autonomy of a higher order (teleos at a different level).

Thus, emergence through interactions of teleons can be events which occur and fade over time. Teleons have more organizational persistence and doublets have organizational complexity which persists as a level or order of recursion in the web of life. Maturana and Varela (1992) refer to this organizational persistence in the context of organizational closure. Goertzel (1992) goes so far as to say that patterns of self-organizing dynamics of complex living systems cannot be *decomposed* into anything besides more patterns, i.e. idea of *metapattern* reducing self-organization to certain relations between entities.

This metaphor of the weaving and knitting of the woven necklace also illustrates the continuity and circularity of communication patterns which have no beginning or end as people constantly influence one another (Watzlawick et al., 1967). All behaviour is communication and thus it is impossible not to communicate. Organization is at the core of complexity and "the psychological concept of gestalt is only one way of expressing the principle of nonsummativity otherwise known as emergent quality that arises out of the interrelation of two or more elements" (Watzlawick et al., 1967, p. 124).

In the teleonics concept of the spiral, it is possible to distinguish spirals within spirals of organization (see Figure 15), where at one level a spiral can be represented as part of (or constituting) a doublet (eg. family nutrition as a contributor to the cohesion of the family doublet), while at another it can be a more distinct set of events or interrelationships (eg. an anorexic using abstinence from food to feel a sense of self-control in the context of the family).

Figure 15: Figure illustrating spirals as patterns of interaction.



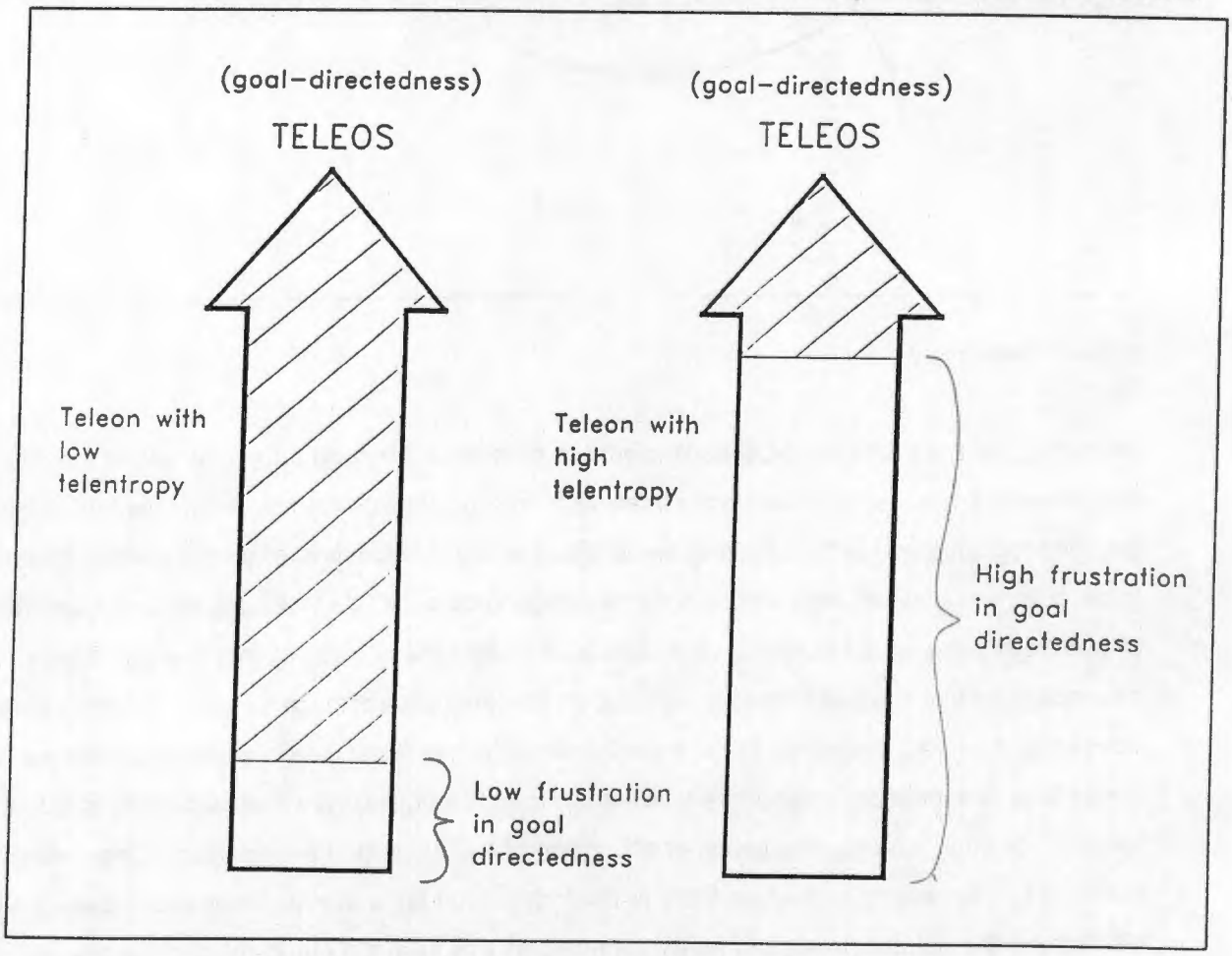
6.3.6 Telentropy

Telentropy, or the frustration of goal-directedness of teleons, plays an important role in the internal organization of teleons as well as in the interaction and co-action of teleons. High telentropy triggers the self-organizing and self-maintaining tendencies that are characteristic of living systems. Essential to the governance of self-organization and self-maintenance is the role that feedback and feedforward of telentropy plays in the dynamic organization of interactions. When events are punctuated, the influence of the frustration of teleons (telentropy) on the emergence of those events, provides important clues as to the role of telentropy in the organization of that particular loop or pattern (see Figure 16). Such efforts to re-organize in response to telentropy include reorganizing within the teleon, transferring telentropy to other teleons, dissipation or absorption of telentropy (to be discussed in more detail in section 6.5). An example of when there is insufficient food for a family dinner with resulting high telentropy in the nutrition teleons of family members as well as in the family-relationship teleons. In response to this, the family could agree to share what little was available (reduce telentropy in the family-relations teleon with high telentropy remaining in the respective nutrition teleons of the family members). Alternatively, bread could be used to supplement the food in order that telentropy could be reduced in all of the nutrition and family-relationship teleons. Should no bread be available, the

family might be traumatised by frustration and in-fighting (even higher telentropy in the nutrition as well as family-relations teleons of family members), or they might be provoked to explore novel possibilities to reduce their crisis.

There are a number of ways in which the family could self-organize in response to the lack of food and obviously such responses are connected to larger and sometimes critical contexts. For example, if the reason for insufficient food was that the head of the house was out of work and that there was little money for food, the implications for the self-reorganizing potential of the family would extend far beyond the dinner table. In such an example, it would be important to appreciate the flow of telentropy in the nutrition teleon as having a much larger context (from high telentropy in the breadwinner's employment teleon), with the appreciation of such continuity through organizational contexts enabling a more substantial understanding of the telentropy in the family-dining teleon.

Figure 16: Figure illustrating telentropy as a concept of frustration of goal-directedness in teleons.



6.3.7 Procedure for spiral mapping

1. Punctuating **patterns of events**:

Invite *stories* or narrative of the problem or issue to be told from the subjective perspective of the person(s) posing the problem or issue. In terms of Bateson and Keeney's epistemology of analysis this process is comparable to *descriptions of simple actions.*

2. Constructing spiral maps:

Organize the events in a logical sequence as they appear to relate to one another. If a number of logical sequences are related, then a number of maps must be constructed. Each map represents a particular organization of events over time and if that organization seems to repeat, then it is distinguished as a spiral pattern.

3. Identifying feedback and feedforward processes between events:

Since the conceptual gaps or spaces between the stories/events are not measured or observed, the nature of the connections between events can be explored by considering feedback or feedforward processes that express a relationship between events.

4. Distinguishing meaning (teleos) of events:

Inquiry into teleos is "inquiry into meaning which is an important aspect of research which has been almost ignored by orthodox science" (Reason & Hawkins, 1988, p. 80). The modes of reflecting that are distinguished in storytelling are explaining and expressing (Reason & Hawkins, 1988). From explanation emerges clues about the participants view of their experiences, while from expression some indication of the meaning or teleos of teleons is made. Explore with the client the possible meaning they associate with each event.

5. Distinguish teleons:

Having punctuated the meaning of events, teleos at the level of patterns of organization must also be distinguished. In this way a teleon can be identified as processes of MEI flow through contexts which are governed according to the teleos of that teleon or *process system.*

6. Punctuating organizational determinism of events:

Teleons are continuous through the levels of dynamic organization with which they interact. However, as teleons recur at different levels of organization, *reality* can be considered to differ as one moves from one level of analysis to another (Munro, 1992). In exploring those interactions, consideration of the inner and outer levels of organization of an interaction (or event) can indicate something of the organizational context from which the interaction emerges. While this can be done by describing the apparent inner and outer organization contexts of an event, application of the **teleos mapping procedure** can facilitate more detailed study.

7. Appreciating patterns of organization:

In terms of Bateson and Keeney's epistemology of analysis this process is comparable to descriptions of choreography of processes (Keeney, 1983). Together with the client, engage a process of zooming in and moving out on information or insights about teleons in order that understanding can be appreciated in the contexts in which they are embedded. Therefore, whenever a particular level of

analysis is focused on, this is unavoidably out of context, with the effect that recursive reference to smaller and larger wholes can only enhance the validity of the enquiry process. While telentropy plays an important role in the organization of patterns of teleons, more detailed study of this is possible by means of **telentropy tracing**.

8. Practical suggestions for the drawing of spiral maps:

When constructing spiral maps, begin with the drawing of a large spiral shape spread over most of the page. Once this is done, a sequence of events can be plotted along the line of one of the loops of the spiral (descriptive words, phrases or even drawings or symbols can be used as cues/keys). When considering the inner and outer context of each event, make corresponding notes on the map (eg. a place, situation or even another spiral of organization). Use a large piece of paper or a flip-chart, so that a sequential pattern of events together with related contexts can be visually depicted on the same map. In order that the mapping process is meaningful to clients, they should be actively encouraged to participate by providing information, insights, opinions, questions, etc. Throughout the process of developing the map, the therapist should provide explanation and discussion about the process-based systems premises in which the map is grounded. On occasions, it can be useful for clients to take maps home to display in a place where they are encouraged to contemplate and review their meaning.

6.4 Teleos mapping

Besides a sequential analysis such as the spiral map, teleonics explicitly holds that a transcontextual (inner and outer organization) perspective should also be appreciated in the understanding of complex living systems. The explicit inclusion of conceptual space or transcontextual process into the sequential analysis means, that a perspective of both time and conceptual space interact and inform one another as part of the enquiry process.

Teleos mapping is rooted in the notion that teleons can conserve their autonomy even as they flow and transform through levels of organization. These levels of organization are understood as similar to what Bateson and Keeney refer to as logical types or orders of recursion (Keeney, 1983). How this applies to psychosocial systems in their organizational context can perhaps be understood when considering the case of an individual as a doublet. The cells of the body are of a particular logical type but when they interact in a particular way a different logical type emerges, that of the individual. Further to this, when individuals interact a different logical type emerges, for example that of a family, society, environmental context, etc. The term logical type, like level is a descriptive tool which is not injúnctive but draws distinctions (Keeney, 1983).

6.4.1 Distinguishing psychosocial levels of interactions

Teleons are continuous through levels of organization. Through their interaction doublets can emerge and persist, demarcating the levels in the Biomatrix. As the bundles of endo- and exo-dynamic teleons

(teleons with inward directed and outward directed teleos) interact and constitute a doublet, their coherence is governed by an ethos of meaning (emerging from the interaction of teleons), which is held at the level of the doublet itself.

Where the individual is the doublet of focus in an enquiry process, its inner context includes doublets at the level of the cells (physiology of the body), while the outer context includes doublets such as the family, community group or society. While distinguishable by their persistence in organization (albeit conceptual), doublets are essentially connected through the flow of teleons which interact and co-act in accordance with the fields of teleos that govern them. When a particular interaction or co-action occurs, only certain teleons which comprise a doublet actively contribute to that event, while others are dormant or inactive (Munro, 1992). In the bundles of processes, some are switched on or off depending on whether they engage in a particular context or not.

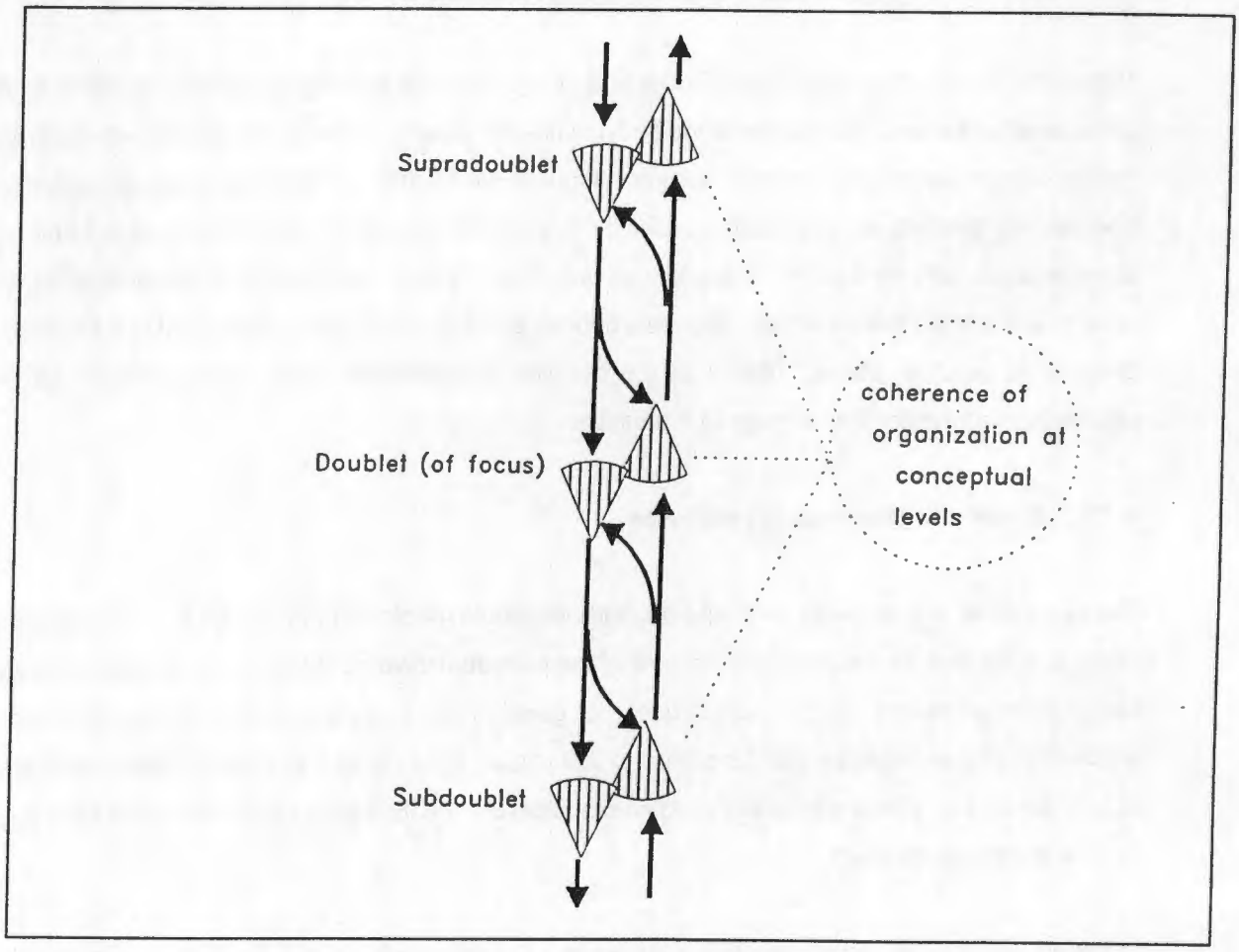
6.4.2 Endo- and exodynamic processes

The *outer level* is a relational term and depends on the level of focus of analysis. In psychosocial study, teleons that are directed from the level of the individual towards these outer doublets are called exodynamic processes. Such a directedness of goals to the outer levels is facilitated through the anticipation of meaning of a particular context to that teleon. For example, the family-relationship teleon of an individual may have a teleos of good communication in anticipation of the teleos of harmony as held by the family doublet.

The *outer* doublet also contributes to the individual and with respect to the above example would be an endodynamic process of the family doublet. The teleos of that teleon is also determined by the anticipation of what is meaningful to the individual as well as coherent with the teleos of the larger doublet. For example, the family doublet may have an ethos of support for its members in anticipation of the fact that support would be both valuable to individuals and congruent with the teleos of harmony.

Endodynamic processes at the level of the individual would be teleons directed to serving the lower level of organization (the cells of the body), this being obviously coherent with its own teleos since the complex organization of cells constitute the body (see Figure 17).

Figure 17: Figure illustrating doublets cohering at levels of organization.



6.4.3 Tapping

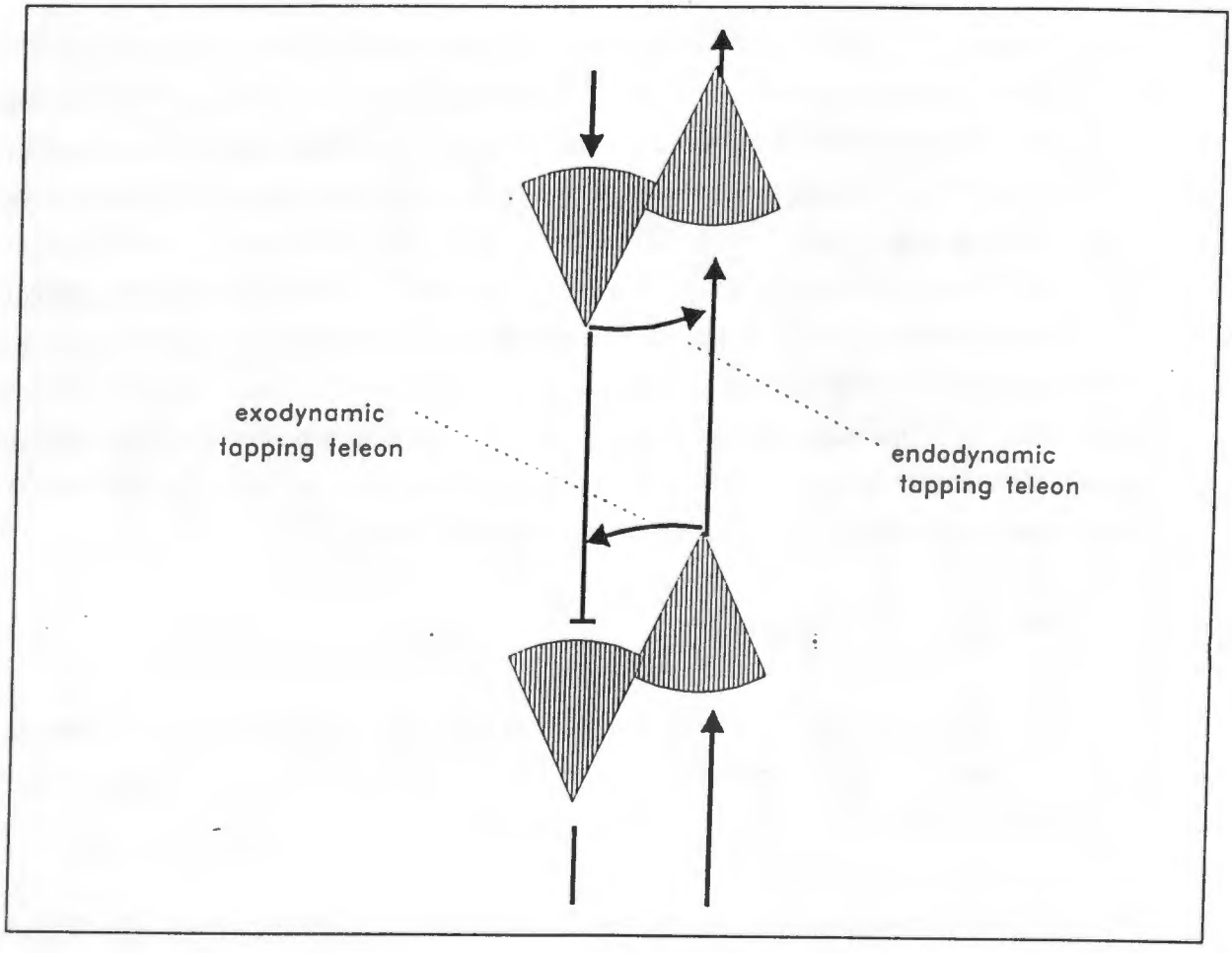
Even while endo- and exodynamic processes flow between all doublets in a complex web of goal-directed connecting, doublets exhibit the ability to *take up* or *tap* from the MEI flow that is offered to them. These **tapping processes** are processes which express the teleos of the doublet from which they emerge. In this way tapping processes strive to govern the integrative tendency of that doublet so that what is taken up from supra or sub-doublets is largely coherent with the teleos of that doublet (eg. the anorexic does not tap from available food because of the teleos of control by abstinence).

A further example is of endo-processes from society to the individual which make a number of occupational opportunities available. The options that the individual takes up will be governed or attracted by the teleos of that individual. The converse can also apply with a supra-doublet being able to selectively tap from sub-doublets. For example, should an individual have certain innovative ideas, society could either take these up through various tapping processes or alternatively refuse to tap them.

Tapping processes are very important to the understanding of human interaction, where people have conscious choice regarding how they relate to their bodies or interact in their social and physical

environments. It is also important in that people make conscious choices regarding which of their own resources they make available to society, or even to their bodies (see Figure 18).

Figure 18: Figure illustrating *tapping* teleons.



6.4.4 Searching for meaning (teleos) in dynamic organization

The method of defining a conceptual map of teleos is a process of searching for meaning of interactions in the context of larger systemic organization. This notion of *meaning in the context of larger wholes* is embedded in the understanding that teleos is essentially embedded in a larger (inner or outer) contextual pattern of organization, wherein lies the argument for the organizational openness of systems. On the other hand the engrained nature of certain configurations of processes can also give rise to largely determined organizations of teleons (eg. biological processes).

Therefore, teleos of teleons can be of a *top-down* attraction (eg. situation or circumstance) or a *bottom-up* nature (eg. DNA). From this perspective, bottom-up teleos can explain limited and determined organization, while top-down teleos can explain the more open and flexible organization of a system.

For example, a watermelon pip, given a certain range of conditions will develop into a watermelon plant with a very limited range of possible ways of being a watermelon plant and in this example structural determinism is the dominant teleos. Other more abstract examples of the governing effect of such *structural determinism* include the determining rigidity of cultural values or religious beliefs.

While in teleonics the strong governing role of structure is respected, teleos is seen to play a crucial role in the *degrees of freedom* that are possible. Even strong proponents of structural determinism and organizational closure such as Maturana and Varela, accept some flexibility as is demonstrated by their statement that "structure conditions the course of its interactions and restricts the structural changes that the interaction may trigger in it" (Varela & Frenk, 1987, p. 95). An example which illustrates the influence of teleos in the flux and flow of MEI is a fertilized ovum. While an ovum is greatly determined by its complex genetic structure, it has environmentally sensitive developmental pathways as well as self-conscious ability which provides many possibilities of how it will be a person. People are distinguished from other living systems in their potential for intending and striving to an infinite number of goals. Whitehead (in Levin, 1992) refers to this interaction between structural determinism and consciousness as events having a causal push and a teleological pull.

6.4.5 Procedure for teleos mapping

In teleonics, besides the requirement that at least three levels of organization be included, the unique contextual organization of the doublet under investigation, and the nature of the research question indicate which doublets should be included in the enquiry process.

1. Punctuate a doublet or event:

Start with the event or doublet which is the most closely related to the reported problem or question.

2. Punctuate three levels of the doublet or event':

Outer context (supradoublets), inner context (subdoublets), and level of the doublet, event or behaviour.

3. Distinguishing teleos and teleons:

Identify teleos and associated teleons, making statements about possible relationships between teleons, especially where teleos appears ambiguous or unclear.

4. Exploring interaction or co-action between teleons:

Explore possible connections, including telentropy within and between all the identified teleons. In this process, more relevant teleons may be distinguishable.

5. Punctuating an end:

The teleos map construction can be stopped when one feels that it can provide a field of novel insights relating to the context of the problem or question. Through the construction of the map it may be indicated where connections with other contexts need to be explored.

6. Practical suggestions for the construction of the map:

In considering the spatial organization of teleos of particular interactions, begin by drawing a symbol to represent the doublet of focus (an outward and an inward pointing wedge is used in the case study

illustration). Following this, draw in related doublets with relatively *outer* doublets above the focal doublet and *inner* doublets below. Draw lines representing the goal-directed processes (teleons) as they *flow* between doublets. Draw tapping teleons as lines which flow from a doublet to a teleon, representing interaction with the *contributions* of other teleons. In contrast to the spiral mapping, avoid putting too much information on one map, rather do many maps which can illustrate specific relationships between teleos.

From the emerging order of the teleos map construction, one begins to appreciate the goal-directedness of teleons, and how such teleos is interrelated with other teleons in their larger organizational (multilevelled) contexts. This teleos mapping method is about the heuristic study of specific relationships with the simultaneous exploration of larger perspectives. In many ways this method highlights some similarities with ecosystemic perspective, where the use of a holistic view of reality is regarded as essential for coming close to understanding living systems in their contexts.

6.5 Telentropy tracing

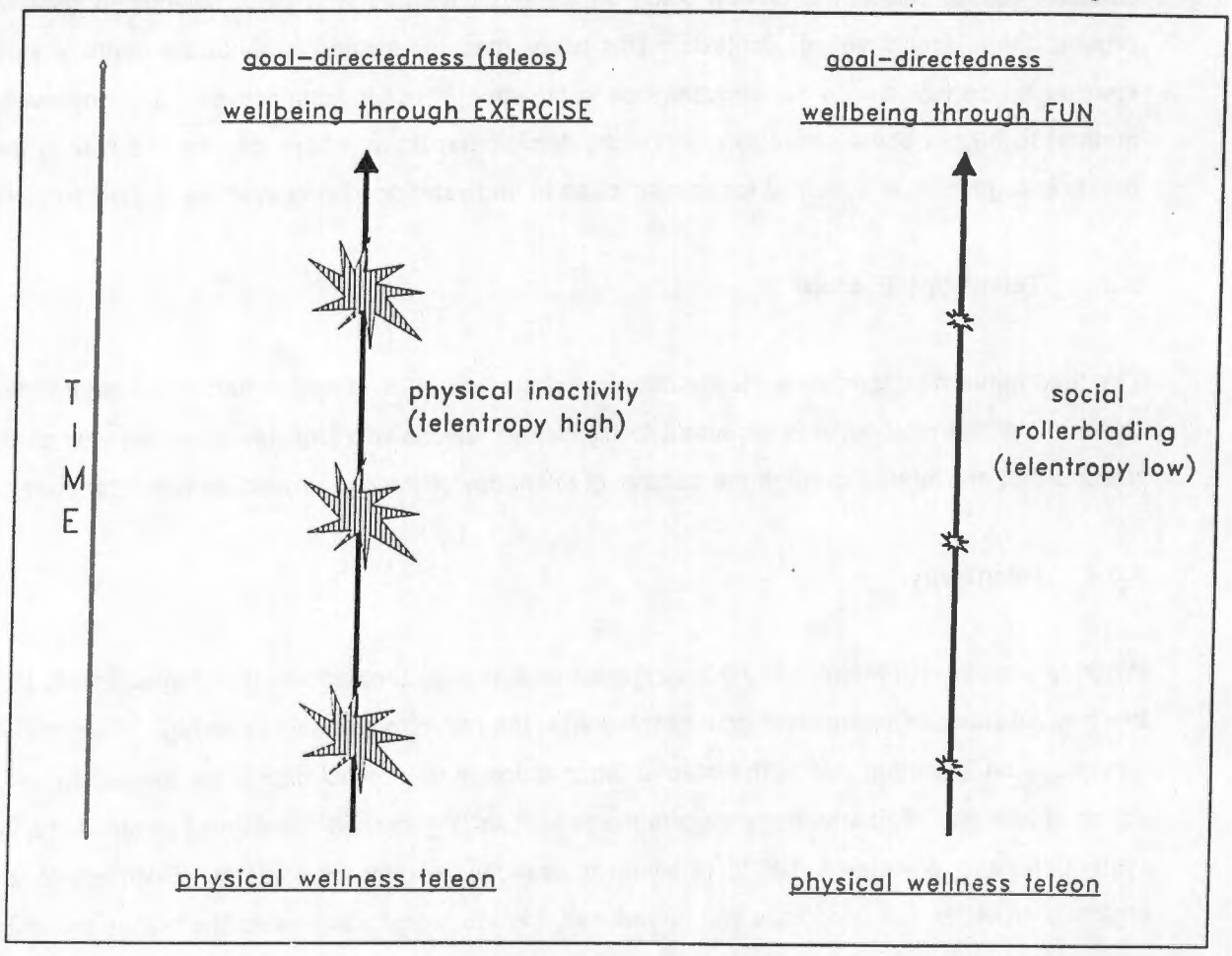
The third method suggested is the identification of the flow of telentropy as part of the organization of teleons. In this method, it is important to distinguish teleons with high telentropy as well as those teleons that are related through the *transfer* of telentropy or through interaction with telentropy.

6.5.1 Telentropy

When teleons have low telentropy this suggests that their goal-directedness is *largely* satisfied. Where there is substantial frustration in goal-directedness, then telentropy is said to be high. Telentropy not only plays an important role in the internal organization of teleons but also in the interaction and co-action of teleons. High telentropy triggers the self-organizing and self-maintaining essence of a living system (Katakis & Katakis, 1982), (a teleon is goal-directed process system). Such efforts to re-organize, in order that telentropy can be reduced, include reorganizing within the teleon, transferring telentropy to other teleons, dissipation or absorption of telentropy and the role of telentropy in provoking transformation in teleonic organization.

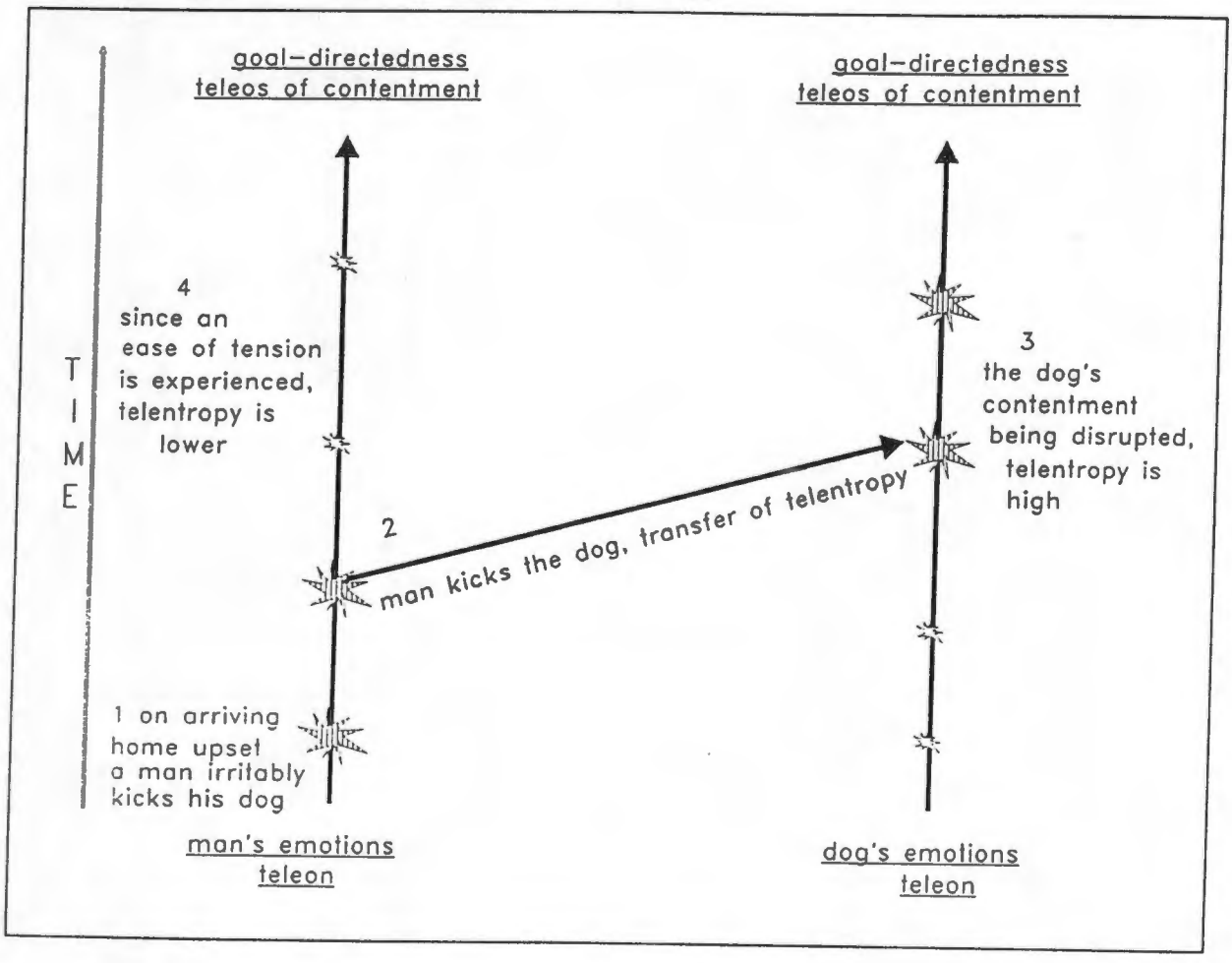
Reorganizing within a teleon can include changing the teleos of that teleon or changing the MEI flow (action). An example of a change in both teleos and MEI flow would be a teenager who is physically inactive because he dislikes exercising (high telentropy in the physical-wellbeing teleon), who then starts rollerblading with friends which effectively changes the MEI flow of the teleon as well as its teleos (goal becomes fun rather than exertion) (see Figure 19).

Figure 19: Figure illustrating the reduction of telentropy in a teleon through internal re-organization.



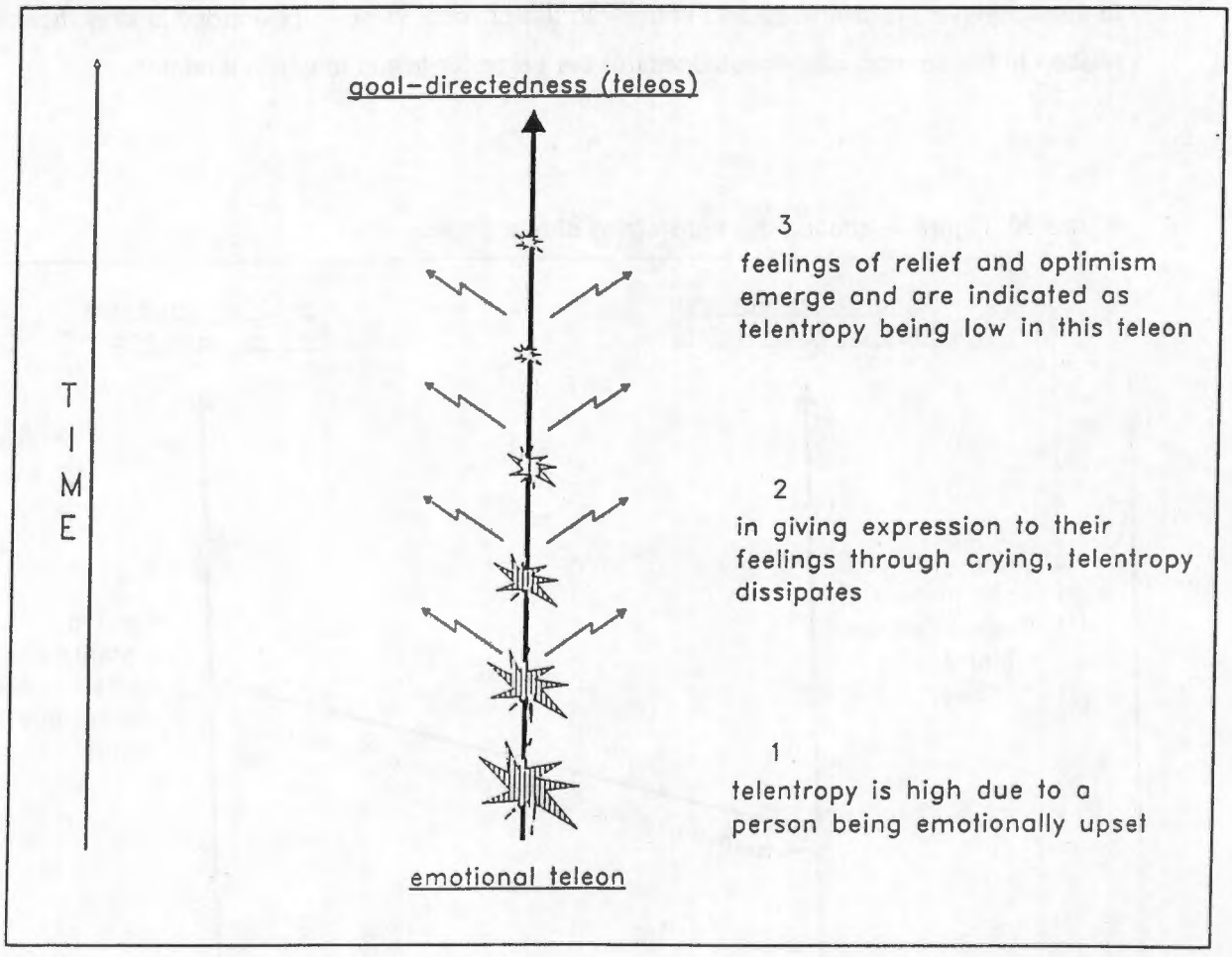
Transferring of telentropy happens when, through interaction, the frustration in the goal of one teleon is passed to another teleon. Take for example a person who vents frustration by kicking a sleeping dog. The frustration in that person is represented as high telentropy in their emotions teleon while low telentropy is assumed in the sleeping dog's state-of-mind teleon. Should that person feel a relief from the action of kicking, telentropy is effectively transferred to the dog (see Figure 20). If that person had still felt frustrated then telentropy would not have been transferred but, through the interaction, the dog would still experience high telentropy in their state-of-mind teleon. This example can also serve to illustrate that there is no conservation of meaning or content in the transfer of telentropy (as opposed to the conservation of energy and entropy in the physical world). Telentropy is only meaningful in relation to the specific goal-directedness of the particular teleon to which it refers.

Figure 20: Figure illustrating the transferring of telentropy.



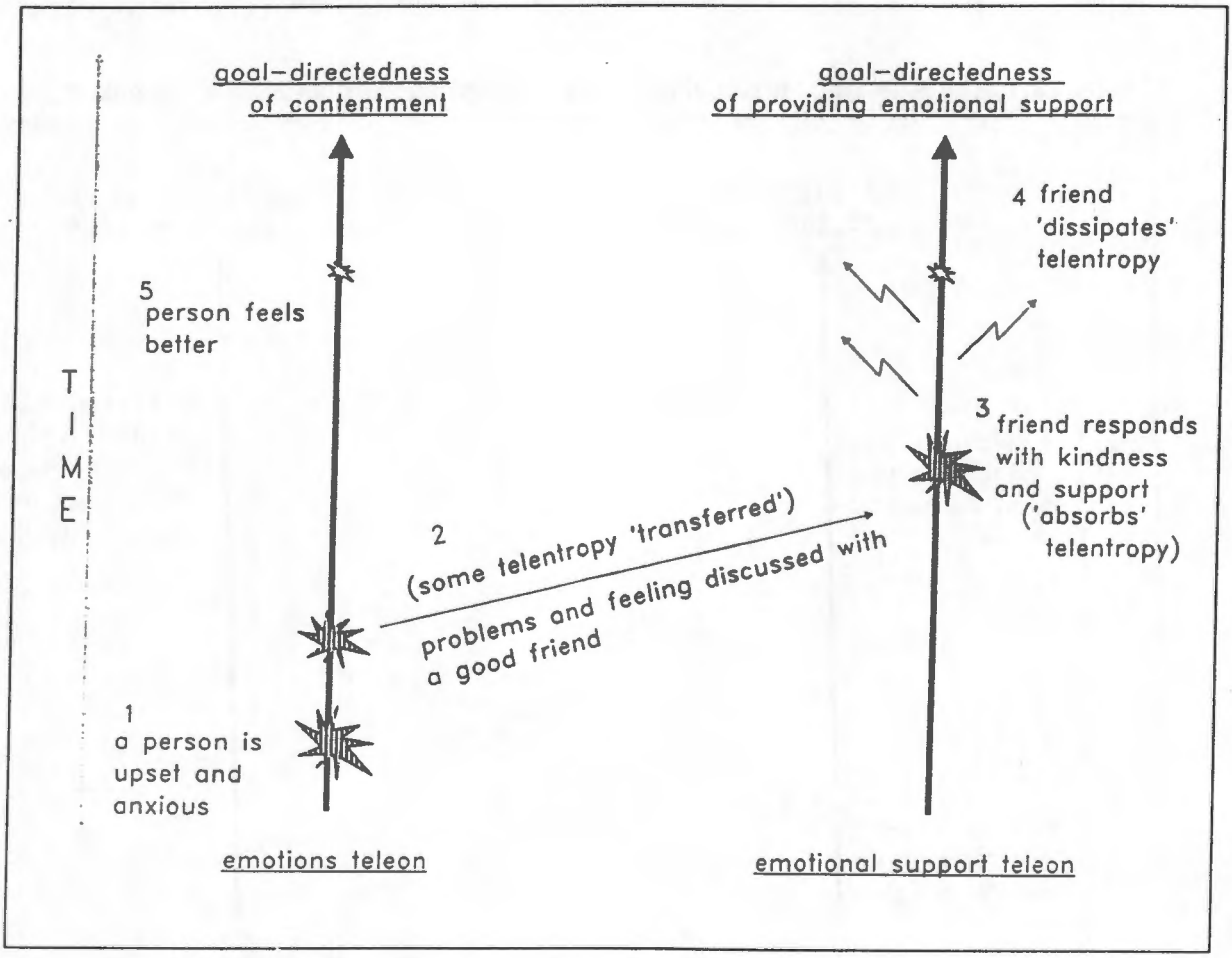
Dissipation of telentropy refers to the reduction of telentropy in a teleon through the action of that teleon. An example would be if a person were upset (high telentropy in the emotions teleon), expressed his/her feelings through an emotional process such as crying and then felt better (lower telentropy in the emotions teleon) (see Figure 21). In this example it could be said that telentropy was reduced largely because of the action of that teleon itself.

Figure 21: Figure illustrating the dissipation of telentropy.



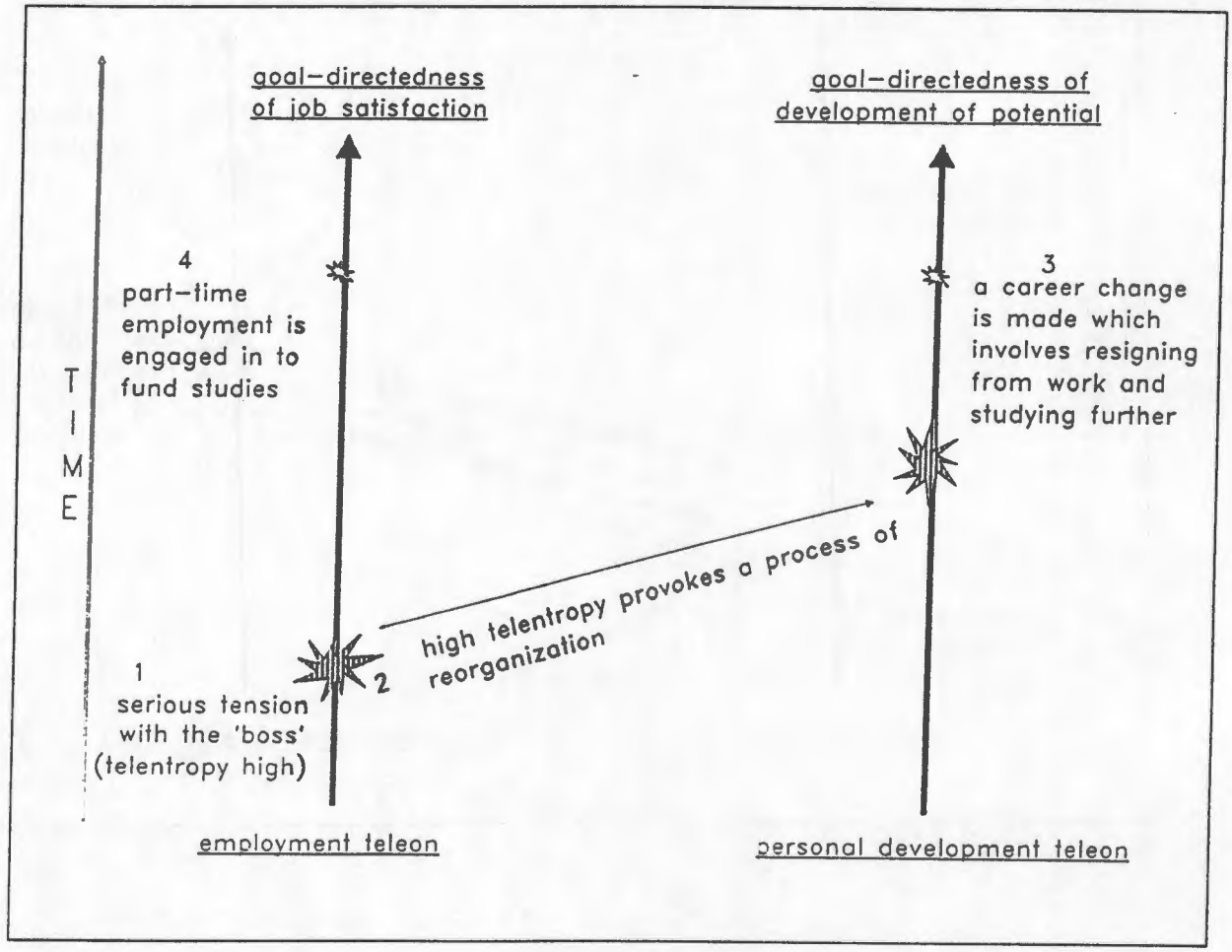
The absorption of telentropy refers to those teleons which absorb telentropy in terms of their goal-directedness. For example, if somebody is upset (high telentropy in their emotions teleon), they may feel happier after being comforted by a sympathetic friend (social-support teleon) (see Figure 22). Therefore, because of the nature of its goal-directedness, the social-support teleon is designed to absorb telentropy from the emotions teleons with which it interacts.

Figure 22: Figure illustrating the absorption of telentropy.



Telentropy can also play a role in the transformation of teleonic organization by provoking dramatic reorganization in order that telentropy can be reduced. For example, if a student fails in the exams (high telentropy in the education teleon) and experiences this as a personal crisis (high telentropy in the emotions teleon), a radical review of life aspirations might be provoked. Such a review process may enable that individual to create new teleons and transform old ones to pursue a new and more satisfying life path. Through this transformation process, telentropy is reduced as new organization emerges to support the transformation process (see Figure 23).

Figure 23: Figure illustrating the role of telentropy in provoking transformation in teleonic organization.



Therefore, the concept of telentropy indicates levels of frustration of goal-directedness. Teleons can strive to reduce telentropy by changing internal organization, or its interactive relationships or by transferring telentropy out of its organization. Telentropy also highlights the role that frustration of teleons plays in the interaction and dynamic organization of teleons.

This method can be useful in the heuristic exploration of problems as they occur in systems as it focuses on a perspective of understanding the interrelationship of problems in the way in which they emerge, are sustained, and responded to, in the web of life. Teleons are never viewed in isolation but are regarded as a field of goal-directed processes which are connected to other teleons as well as to

their internal organizational context.

6.5.2 Procedure for telentropy tracing

1. Identify telentropy in teleons which appear to be closely related to the issue or problem being explored.
2. Identify and specify the teleos of these teleons.
3. Describe the story of telentropy flow through a story of the problem either to some point of extreme frustration/crisis or satisfactory resolution.
4. Distinguish the response of teleons to telentropy and distinguish how the teleos of teleons involved in the story responded with respect to their governance, MEI flow and teleos.
5. Punctuate fluctuations of telentropy as it is exchanged or flows from one teleon to the other (i.e. punctuate the change in meaning of telentropy as it flows). Reduction in the confidence of the associated teleon reaching its goal at that particular point in the story would indicate a high telentropy, while improved confidence that the teleon is being successfully goal-directed would indicate low telentropy.
6. Consider the overall flow of telentropy. Through this, one begins to get some idea of the interrelationship of teleons in the issue or problem being explored.
7. Practical suggestions for the construction of the map.

The drawing of the telentropy maps are particularly challenging since they require that a spatial and a sequential perspective be expressed simultaneously. The particular method of visual representation illustrated in this dissertation is that of parallel lines which indicate teleons, with text and arrowed lines representing events and the status of telentropy. While the information in the **telentropy tracing** maps may be *dense* and difficult for outside observers to follow, this is not a serious problem since the value of the **telentropy tracing** is in the experience of constructing the map, rather than the map as a product. With this in mind, therapists should experiment with and explore which visual images and methods most effectively illuminate the interaction of telentropy for particular clients.

The interconnectedness of teleons can be expressed through circular feedback processes where telentropy can be expressed, accommodated, rejected, transferred or accepted between teleons. Exploring the role of telentropy in the interconnecting of teleons in the Biomatrix can help us to understand something of the emergence of dynamic organization in the Biomatrix.

6.6 Validity and implications for intervention

An appropriate validity reviewing process must be applied to each map, and this process can be guided by the arguments for validity or *soundness of endeavour* in new paradigm research (relative meaning, practical validity, individual and consensual judgement, and holistic fallacy), as outlined in chapter 5.

Because of the dependency of these maps on the narrative reports by clients or *research subjects*, it must be constantly remembered that any story is only one of many possible versions which is rooted in the subjective meaning system of the storyteller. Patterns of processes are subjectively constructed and do not represent any objective truth; they need to have validity in their subjective description and meaning. Practical checks for the validity of subjective description and meaning include i) reviewing whether the metaphors of expression such as language, diagrams, stories, etc. accurately express the meaning of the researcher(s) and subject(s); ii) exploring possibilities for *other* interpretations; iii) searching for contrasting stories; iv) looking for consistency as expressed in the teleos of teleons in particular contexts; and v) if appropriate, seeking additional perspectives of a story.

Just as the subjective content and meaning system of the storyteller is reflected in the story, so is the meaning system of the researcher reflected in their validity review process. A goal of therapy or research depends on the teleos of that therapeutic or research process as established by the percipient or participants. In heuristic research, one is seeking to understand a particular issue, problem, system or field of relationships. In a therapy or counselling situation, one is usually looking to go further than understanding in order to achieve some desirable change. Some of the implications of these teleonics principles for intervention in psychosocial counselling are discussed in the next chapter.

6.7 Conclusion

The spiral mapping and telentropy tracing methods are largely perspectives of organization over time. When the enquiry process requires that a spatial multilevelled perspective be appreciated, the teleos mapping method should be applied. Because of their essential connectedness, the application of methods in whatever combination, creates opportunities for recursive insights which enhance the heuristic power of each. While these methods are in many ways closely connected, they encourage and facilitate different perspectives and can be used independently if so indicated by the research question.

The three teleonics conceptual maps that are introduced and discussed can facilitate/guide an enquiry process with respect to indicating appropriate research questions, useful focuses of observation, and identifying related areas of interest. In this way they can function as metaphors of explanation which can be used to explore a variety of situations. An important contribution that these maps make to psychology is that they are non-verbal tools in a field where verbal communication is the primary medium of interaction. This can be a major contribution to multilingual communities such as in South Africa or the European Community, where therapists and clients may not be communicating in their first language.

CHAPTER SEVEN: TELEONICS: SOME IMPLICATIONS FOR INTERVENTION IN THE FIELD OF PSYCHOLOGICAL PRACTICE

In this chapter some implications of teleonics as a process-based systems method for *intervention* in the field of (health) psychology are discussed. These implications are introduced to raise awareness of the importance of the relationship between theory and practice. By way of connecting the theory with practical psychology some epistemological tools are described which relate to both assessment and intervention, with a strong emphasis on assessment. Intervention tasks are also introduced which *pay attention* to the epistemological tools and which are concerned with the practice of intervention.

7.1 Introduction

Any theory or ecology of ideas which is directed at impacting on human systems, needs to incorporate an awareness of the philosophy or model of health on which it is based. That philosophy in turn indicates what information or decisions may be important, as well as what practical tasks would be coherent with the theoretical position. While this notion of coherence between theory and practice is broadly applicable in general process-based systems thinking, the ideas presented in this chapter are specifically concerned with the field of psychological practice. In the field of psychological practice, a process-based systems approach to intervention invites epistemological tools and tasks that respect, rather than deny, the interconnectedness of everything.

One of the primary implications of systems thinking for intervention in therapy is, that symptoms are understood as messages or metaphors of systemic problems (Jacobson, 1994). These are communications which comment on the patterns of relationships of a system, rather than problems which can be distinguished as separate from the larger functioning of a system. Engaging in a process of therapy (intervening) with people in such a way that systemic health is promoted, requires a different approach from that of mainstream psychological thought where emotional symptoms as well as psychological health are understood as located within the intrapsychic functioning.

In striving to understand the human experience, we abstract, as part of encountering the world, and construct a conceptual map that we believe closely approximates our observation or experience. We abstract this map through our senses in a recursive and dialectical relationship with our internalized symbolic system (Keeney, 1983). This idea of Keeney's refers to the essentially circular and interactive way in which we construct our reality. It is important to be aware of the fact that such maps are subjective abstractions constructed through processes of perceiving and conceptualizing. Such an abstraction is of an essentially different order to the person or experience being perceived and to ignore this is a "fallacy of misplaced concreteness" (Levin, 1992, p. 173). Keeney (1983) suggests that this error is seen in psychology when, therapists and their clients fail to differentiate between their sensory experience and their constructed abstractions about that experience.

Arguably the most crucial conceptual map is the map of self (otherwise called sense-of-self or self-concept), which is constructed through processes of consciousness (Davies & Humphries, 1993; Keeney, 1983). While it is not within the scope of this dissertation to engage with the daunting subjects of self, consciousness or the *qualia*/qualitative experience debate (Biro, 1993; Oatley, 1993; Van Gulick, 1993), some ideas about how teleonics refers to concepts of consciousness and self are ventured.

7.2 Teleonics as a conceptual map

> "The map is not the territory and the name is not the thing being named".
>
> (Bateson, 1980, p. 33).

This quote is a very well known statement in systems thinking and semiotics. Gregory Bateson focuses attention on the importance of remembering the distinction between a map and a territory and between a name and the thing being named. This quote emphasises the need to remember that teleonics is simply a tool to understanding, not a representation of reality.

7.2.1 Consciousness and self in terms of teleonics

In human systems, processes recursively connect and pattern, thereby expressing the autonomy (and integration) of that system in a union of opposites. Through these relationships and the ability to reflect self-consciously on experiences, a sense-of-self emerges (Atkins, 1993). While not suggesting a solipsistic reality (as this would deny the connectedness of thought, thinker and world), every sense-of-self is constituted subjectively and differently with its own sense of continuity in the midst of flux (Levin, 1992).

Teleonics clearly emphasises the process rather than structural view of human psychosocial organization, and as such, is congruent with the ideas of William James and his notion of *self as a stream* with the experience of self-representing a continuous and coherent pattern of relationships which recursively inform the self in its striving for meaning. Levin refers to "the self meaning experience of an experience as the single most salient point about consciousness" (Levin, 1992, p. 206).

Other theories, with which teleonics finds itself able to overlap on this issue, are those of Alfred Adler with his teleological creative self (Adler, 1927), Carl Jung with his inward journey beyond the ego, Heinz Hartman with his "stream of consciousness I identify as mine" (Levin, 1992, p. 179), Bradford Keeney with his idea that "the self-referentialness of a system becomes a way of pointing to the system's autonomy" (Keeney, 1983, p. 98), and Alfred Whitehead with his emphasis on the meaning, connectedness and sequence of experience (Levin, 1992).

Like Whitehead, teleonics emphasises the process nature of self, suggesting that the experience of self

is only ever a flux while we perceive a sense-of-self as a static abstraction (Levin, 1992; Pastoll & Jaros, 1994). Whitehead uses the term *events* to punctuate the flux of self and refers to them as coming into being and then perishing (Levin, 1992). This is similar to the concept of the teleos of teleons, where the self can be seen as an interrelationship of teleons and where the concept is the map and the vanishing relationships of processes are the reality. This highlights the distinction between a structure-based notion of self as a constant construct, eg. fixed personality types or the concept of *personality structure,* and the process-based notion of self as an ongoing punctuation from a stream of experience.

The self as such an interrelationship of teleons, represents a field phenomena, i.e. a pebble in the pond idea, where interrelationships emanate (perhaps even through the universe). Therefore, not only are events embedded in a complex network of relationships, but their interaction reverberates in ripples that are apparent *on top of the water* and extend unseen *currents beneath the surface* as well. While concepts of a bounded self, such as Freud's structural model, become inappropriate to this understanding of self as a *field phenomena*, the sense-of-being as distinct and autonomous from other psychosocial systems is essential to the development of the personal *meaning system or teleos* of an individual.

Central to teleonics is the notion of self as governed by teleos, which can be understood as conscious intention or unconscious processes that punctuate the teleos of human meaning systems. Self appears to be a complex pattern of processes which is continuous through levels of organization where states of mutually incommunicable realms seem to occur, i.e. they are not aware of one another (Levin, 1992). This process notion of self supports the concept of self as one which is not easily bounded. It is a descriptive term for a pattern of processes which express a tendency to autonomy of a self-organizing system in the context of a union of opposites with processes expressing integration.

The implication of the integrative, yet subjectively perceived notion of self for a therapeutic relationship suggests, that it is not really possible to know "how it is for others" (Atkins, 1993, p. 267). In constructing an appreciation of another person's perspective, we would be wise to remember that what we then construct is not necessarily how it is for that person, i.e. there is no objective world (Dell, 1986). This careful interpretation of the meaning of our constructions is important in therapy. It allows for the "imaginative, but cautious, projection" that therapists might make in trying to understand and appreciate the meaning that experiences hold for their clients (Biro, 1993, p. 181).

7.2.2 Therapy as a process of storytelling

The implication of therapy as a process of storytelling, is that the therapist and client should recursively communicate about the process of therapy and the accuracy of their communications on an ongoing basis. It also means that assumptions about the meaning of our ideas or opinions must be carefully

reviewed and understood to be no more than what they are, i.e. abstractions which may or may not have support. In this way the therapy process becomes an unfolding of a story of punctuation and distinctions as told by a client and assisted by a therapist rather than the more conventional notion of therapy being the revealing of a pre-existing, concrete *truth* (Dell, 1986).

7.3 Teleonics in the context of process-based systems concepts of health in psychology

The way in which the therapist assesses the organization of processes as they flow through the therapeutic story holds certain implications for what intervention techniques may be perceived as appropriate, i.e. decisions about intervention flow from assessment. Thus, when using a particular assessment method, the theory in which such a method is embedded as well as the assumptions that follow from that theory should be explicitly stated. Teleonics is congruent with a constructivist approach to assessment which focuses on methods and frameworks, where people use personal meanings to actively interpret life experiences and then reflect on those interpretations.

7.3.1 Implication of theory for models of health

Coherent with process-based systems premises, it is important that practitioners in psychology are self-conscious of their theoretical perspective and how this is related to the treatment goals that are part of the therapeutic process. Such treatment goals are interconnected with the practitioners notion of what constitutes health, thereby informing the practitioner about appropriate therapy goals. Therefore, the recursive and interconnected relationship between theory, an ideal of health assessment and associated treatment goals, provide an important epistemological web to which decisions about intervention techniques, progress of change, significance of symptoms, etc. can be related.

7.3.2 Health as a metaphor

Status of biopsychosocial (Feuerstein et al., 1989) health or wellbeing, including symptoms, is a metaphor for a complex organization of processes that constitutes the person as a living system. By the essence of this statement of connectedness and continuity, both wellbeing and symptoms can be seen as ecologically rooted in inner and outer relationships.

Main stream psychological thinking has been dictated by psychoanalytic and behavioural theory where there does not seem to have been a clear model of health (Levin, 1992). Psychoanalytic therapy has tended to focus on irresolvable conflicts, anguish, struggle, repressions, displacements and other defence mechanisms with a rather pessimistic view of the human being's potential or ability to function beyond distortions. On the other hand behavioural therapy has focused on the changing of overt behaviour with little apparent interest for larger concepts of health. In sharp contrast, process-based systems thinking, suggests a notion of health which is not based on an energy balance or control

metaphor but on a notion of balance and coherence being achieved through processes of recursion, paradox, dynamic self-organization and logical typing.

> "Balance refers to self-corrective processes where the monotonous recycling of interactional sequences signifies pathology and a self-corrective organization of diverse sequences is more characteristic of ecosystemic health" (Keeney, 1983, p. 128).

In teleonics terms, this might be stated as a dynamic interaction between teleons, where different levels of teleonic coherence emerge as doublets and where self-reorganization around attractors emerges in response to telentropy. The relationship between symptom and system is thus understood as the self-reorganizing response to inevitable telentropy, enabling ongoing adaptation in a complex and dynamically (re)organizing matrix of teleons.

Thus, the model of a healthy system is where processes are governed to contribute to the gratification of teleos at the focal level of that system, as well as the relatively inner and outer levels with which it is connected. This requires a governance which accommodates the flux and flow of processes across levels of organization that constitute living systems. This model is not a typical homeostatic model for the reason that, while processes are governed to keep telentropy low, this is not around an ideal *set point* but rather around flexible and complex systems of teleos (attractors).

Jung and Liang are two modern theorists who also tried to appreciate the potential for psychological health beyond the concept of an ego and its boundaries (Levin, 1992). Jung explains the human being as a dynamically open-ended tension of polarities where health calls for the integration of polarities that have tended to split off into opposition or conflicts. Jung also relates health to balance but in the context of integration and *growth* (Levin, 1992), where an inner world makes serious demands on the capacity for adaptation to an outer world (Sanford, 1980).

In some ways similar to the position held by Jung, notions of integration and creativity are essential to the process-based notion of health in living systems. Keeney (1983) explains health as a *vital balance* of diverse forms of experience and behaviour. Such a vital balance is maintained through change which leads to stability in self-correction which does not only refer to the level of the interaction but to interconnection of interactions at higher orders of recursion (or at other levels). While well developed in many disciplines such as mathematics, organizational theory, biology and physiology, the concept of levels has not been well developed in psychology.

In teleonics, all interactions are continuous with at least three levels or orders of recursion (eg. a person interacting in conversation involves processes connecting at their cellular, individual and social levels). While this idea of self-referential maintenance of diversity emphasises the importance of flexibility and adaptation, it also emphasises the importance of continuity of organization. It is this notion of continuity of organization in the midst of integration with the flux and flow of the web of life, that is called

autonomy and focuses attention on the importance of self-agency in human interaction (Neimeyer & Neimeyer, 1993a).

In teleonics terms, healthy teleons and doublets are understood as process systems that are able to autonomously set system goals which are congruent with the evolved meaning system of that teleon or doublet. In addition, healthy teleons or doublets are able to respond recursively to telentropy which emanates from the inevitable conflict of teleons as they interrelate and integrate in the web of life. Such responses must be flexible, context sensitive, and show an ability to re-organize dynamically in one of three ways. Firstly telentropy can be absorbed by an appropriately organized teleon (eg. a family support system would be such a teleon). Secondly it can be discharged out of the system (eg. exercise), and thirdly it can be a catalyst to creative reorganization and transformation (eg. a person leaving a relationship in which they were emotionally abused, and thereafter endeavouring to become independent and confident).

These ideas are congruent with the process-based premises that autonomy and integration form a union of opposites in dynamic self-organizations, where systems maintain a dynamic equilibrium through a tendency to conservation of organization and a capacity for transformation. An example of this would be a healthy family system, where simultaneous diversity and connection of members is expressed (Andolfi, 1979; Keeney, 1983).

7.3.3 Symptoms and telentropy

It is very important for the process-oriented therapist to appreciate that people are usually prompted by problems or symptoms to seek help. Clients, who are symptom-oriented should be encouraged to appreciate the connections between their symptoms and their system, so that they can be process- and not outcome-centred in their therapy. Symptoms are signs or signals of high telentropy in the relationships between the teleons of a particular doublet. These signals are distinguishable, in that they are usually experienced as uncomfortable or disturbing.

Telentropy is a means of assessing the likelihood of a goal-directed system achieving its goals within its systemic organization. Therefore, if generally applied, it could be said that telentropy also refers to symptoms of illness. While telentropy could be a signal or symptom of illness (eg. symptoms of diabetes are a sign of the dysfunction of certain physiological processes), it can also be a response to challenges that a system might face (eg. the fight or flight response). Telentropy is a useful concept, in that it encourages process thinking about problems, through referring to the very way a problem is organized in the context of its inner coherence as well as its ecological relationships.

In terms of process-based systems thinking, the ultimate goal of therapy is to provide an opportunity for a process of exploration where the attainment of new equilibrium between self and function on an

individual as well as on a systemic level is possible. Like the humanistic existential approach, teleonics favours emancipation, self-development and self-responsibility rather than cure by a professional élite grounded in theory which discourages equal participation (Lee, 1981; Levin, 1992).

In a process-based systems view, it is possible to consider psychological health (or ecopsychosomatic wellbeing which would imply a holistic idea of health), from multiple perspectives of time and space and with respect to different levels of experience. In this regard, health is not as well defined as Jung's holistic and non-egological conceptualization of health, but tends to be closer to the Tibetan Buddhist idea of wellness as much more intimately ingrained and embodied in the spontaneous flow of the experiential process (Levin, 1992).

7.4 Teleonics in the context of process-based systems thinking on change and transformation in living systems

Process-based systems thinking holds the position that both change and stability (process and structure), are essential characteristics of living systems. It also holds, that while change and transformation of organization emerge and cannot be *caused*, the teleos and governance of stable patterns of organization can strongly influence or attract certain patterns of organization to emerge persistently. Furthermore, bifurcation of systems is understood in terms of telentropy, which implies persistent governance of reorganization, change, or transformation in order that systemic teleos can be promoted.

7.4.1 Process-based thinking on change and transformation in living systems

The view that change is essential to the dynamic self-organization of systems and as such, is an ever present phenomenon (Watzlawick et al., 1967), is coherent with teleonics. Bateson (1973; 1991) takes this further to suggest, that besides being a difference across time, change is *news of a difference* and is the *primary data of experience*. The level at which Bateson directs his suggestion, is that of the organization of the system, which needs to be distinguished from the flux and flow of MEI which is the ever changing action of processes. The concepts of change and transformation refer not to the flow of MEI but to the governance of systemic organization. Governance is closely related to both the teleos and the organizational meaning of system and can range from being flexible and changeable to rigid and determining.

Just as change, with its attractor of teleos, is natural to living systems, so are persistent patterns of interaction (they can be material or conceptual patterns), which function as attractors of stability (as illustrated in theories of structural determinism). In many instances, bifurcating a system may involve interfering with both teleos as well as structural organization, in an effort to encourage transformation of functioning. Transformation of functioning requires that a new governance of interaction, which may

or may not include new teleos, must emerge to attract new patterns of organization which more closely support the ethos (essence of what is meaningful) of that system. If systemically supported, those new patterns in turn become persistent configurations of processes which resist change and are attractors of stability.

In terms of the principles of equifinality and multifinality, by entering a relationship and engaging in a the process of exploration, systems are *disturbed* and their reorganization is constantly emerging. The therapeutic relationship, like any interacting, involves connections which ripple through the therapist or client(s) (as open systems), with reorganization in response to the ripples being part of the natural self-maintenance of living systems. Where such reorganization confirms undesirable patterns of relationships, a purposeful change teleon may need to be created to challenge the stable organization of unhealthy patterns of processes by inviting healthy change (a example could be a therapy process). The extent to which a system needs to be challenged in order that transformation of patterns of organization become possible, depends on the rigidity of that system. Some systems are sensitive to the smallest interaction or attraction while others find ways to conserve their essential organization in spite of very challenging interaction and high levels of telentropy.

However, in process-based systems thinking it is emphasised that it is not only the change outcome that is important, but the change process itself for the contribution that it makes to the development of reorganization of processes (Rice & Greenberg, 1984; Watzlawick et al., 1967). Thus, the notion that change cannot be caused but has to emerge through systemic reorganization means that intervention or therapeutic processes directed as perturbing systems, need to be process and not outcome-oriented (Schein, 1987).

Thus, while it is not possible to predict outcomes as one engages in provoking change in a system, the value of a heuristic model is that insights can inform one about the ways one might try to provoke desirable change. It is important for intervention in psychology, to try to challenge established perspectives, and stimulate new options, which can be explored in a variety of ways in accordance with the goals of therapy (Neimeyer, 1993; Wicker, 1992).

7.4.2 Goals of therapy

The prime purposes of therapeutic assessment and goal setting are to refine our understanding of the experiences of the person being served (Neimeyer, 1993) and to encourage unique outcomes. Unique outcomes occur when the client resists a normal/usual response prescribed by a problematic pattern of processes (could be distinguished as a problem) and in this way his/her dominant pattern of functioning is perturbed (Yule, 1993). People are meaning seeking as they organize their worlds (Miles & Huberman, 1994). Thus the active participation of personal and social processes in the construction of reality should be emphasised in the therapy process (Feixas et al., 1993).

In most instances, the goal of therapy relates to some change as desired by the client, as suggested by the practitioner, or as invited by a social group such as a family. In the teleonics view, the size of the system is not important. One can take an individual, family or larger group as a focus depending on the context of the therapeutic process. This is a distinct departure from most family system practices, where the focus has been mainly on the level of the family or group and where the lack of individual orientation has been criticised (L'abate, 1976). A notable exception to this tendency is Katakis and Katakis who have explored both individuals and families as purposeful systems in a creative yet practical way (Katakis & Katakis, 1982; Katakis 1986, 1989a, 1989b).

Whether dealing with an individual or a family as a system, the goals of therapy are directed around promoting processes of systemic autonomy as a core developmental issue, in the context of integration with larger wholes (Lyddon & Alford, 1993). Such therapy needs to focus on patterns of organization and on the way they are retained or frustrated in the flux and flow of being connected in the web of life.

In terms of the constructivist approach to therapy, with which teleonics is coherent, the therapist is committed to aid clients to articulate their life experiences. Clients are accorded full responsibility for meanings revealed as well as their unique way of construing. In this way, insights can emerge for the client in their field of phenomenology (Mathieu-Coughlan & Klein, 1984). The validity and respect accorded by the therapist to the client for their meaning system, is itself a therapeutic agent which encourages clients to learn to depend on their own perceptions (Mathieu-Coughlan & Klein, 1984).

Clearly, therapy goals cannot be static but must change with the development of the therapeutic process as well as with the evolution of the changing system. While therapeutic change is usually an optimistic process, all change processes involve some telentropy, and to some, such as Donald Winnicott, frustration (or telentropy), is imperative for development (Greenberg, 1984a; Levin, 1992).

Goals of therapy have to be coherent with systemic ideals of health if the inevitable, albeit temporary disorder/discomfort that comes with seeking **differences** is to be a contribution to a health oriented process. This introduces the notion that therapy needs to be meaningful for the client(s), in order to be process-oriented in the face of the inevitable telentropy that is part of change and transformation. Thus, the personal view of health which is held by the client, needs to interact recursively with the view of health held by the therapist. The view of health as held by the therapist is recursively informed by a theoretical map, which is in turn influenced by the therapy process. In this context, three orders of recursion or levels of meaning are distinguishable.

7.4.3 Role of the therapist

Therapy processes are "those approaches to human dilemmas that are most directly connected to a formal consideration of human relationship systems" (Keeney, 1983, p. 5). In this respect, the role of

the therapist is to invite the client to enjoy the opportunities of a theoretical perspective while being embedded in experience. Keeney (1983), also suggests that such processes of *formal consideration* need to avoid the traditional dichotomy between theory and practice, and attend to epistemology. Such a sensitivity to epistemology would enable therapists not only to appreciate the relationship between theoretical assumptions and the basic premises of practical intervention, but also to modify their knowledge recursively as they engage in both (Keeney, 1983).

Change in therapy is aimed at changing the patterns of process and their associated teleos that constitute organizing governance. For example, a pattern of processes that constitute a problem may function as a construct which occurs as a repetitive pattern, where it follows that shifts in the construct will enable new courses for action (Neimeyer & Neimeyer, 1993a). It is the role of a therapist, to construct a therapeutic environment which can facilitate or provoke change in the sometimes rigid organization of processes in designated systems. The primary role of a therapist is to help clients to instigate changes which are systemically healthy and personally desirable (i.e. healthy relationship between integration and autonomy). In this way, the therapist stands firmly on the side of a positive model of health and must always address destructive, constricting or self-defeating behaviour (Greben, 1981).

Once the role of constructing and maintaining a therapeutic relationship, which can facilitate and even invite change opportunities, is established, it is important for the therapist to encourage the client to explore multiple meanings and interpretations of life (Yule, 1993). While both modelling and encouraging diversity of understanding and open-mindedness is essential, the therapist also needs to show a commitment to seeking some consensual, albeit changing, truth. In this interaction of therapist and client(s), the therapist's ethos or goals interact with the expectations of the client and emerge as the therapeutic teleon. Therefore, while there is a close interaction between the therapist and client, the therapist has to be sufficiently autonomous to encourage multiple distinctions and possibilities. In other words, rather than functioning as a mirror to the client, one of the therapeutic functions is to relate to the client as a *metaphoric diamond*. Mirroring is problematic, firstly in that it implies a single image of reality which can be reflected to the client, and secondly in that it denies the interactive role of the therapist and the client in their construction of the therapy process. On the other hand, the therapist's role as a metaphoric diamond illustrates the active processes of therapist receiving and refracting the experiences of the client, in order that multiple perspectives and alternatives are illuminated.

In this illumination process, the therapist simultaneously engages in interaction with the client and looks for insights which enable appreciation of organizational patterns of interacting. While the theoretically-oriented process of looking for interactions or patterns of interaction requires a high level of therapist direction and conceptualization (Neimeyer & Neimeyer, 1993b), the therapist's manifest concern is with the client's experiencing of insight (Mathieu-Coughlan & Klein, 1984; Rice & Saperia, 1984).

Frequently, insight is an expectation of therapy because it is anticipated that such insight will enable decision making, problem resolution or perhaps relief through understanding (Eysenck, 1993; Mathieu-Coughlan & Klein, 1984; Rice & Saperia, 1984).

Arguably, one of the most important roles for a systemic therapist is to promote systems thinking in the therapeutic process. When it is considered, that our thoughts tend to follow "familiar channels" (Wicker, 1992, p. 42), therapists must be prepared to accept that they will interact with clients who have linear and deductive styles of perceiving. Encouraging systemic conceptualizing of problems, enables thinking which invites an appreciation of relationships, patterns of processes and can illuminate complex systems of meaning (Marmar et al., 1984). While meaning can be expressed through verbal and nonverbal communication (Marmar et al., 1984), it is the role of the systemic therapist to introduce language that invites process-based conceptualization. Because the language of traditional psychology is rooted in nouns (ego, consciousness, therapist, client, psyche, emotions, diagnosis, etc.), concepts tend to represent entities and encourage disconnected images. In many instances, the assumptions underlying the language of diagnostic labels is a constraint in understanding the actual experience that is being labelled (Stor, 1983). Language in therapy needs to be grounded in the experiential process of the client rather than in the language and experience of the therapist (Levin, 1992). This perhaps explains why it is difficult for followers of Freud's psychoanalytic principles to be part of a postmodern movement. The latter promotes respect for the clients language of experience which is not the focus of psychoanalytic psychology (Levin, 1992).

7.5 Epistemological tools for intervention

Process-based thinking provides a conceptual map in which ideas about psychological practice are embedded. These ideas relate to issues such as models of health, goals of therapy, concepts of change, role of the therapist, etc. From these issues flow possibilities for the practical implementation of systemic thinking in therapy which have been called epistemological tools for intervention.

7.5.1 Drawing distinctions

Drawing distinctions is *news of a difference*, where punctuations are based on subjective perception of what is distinguished as relatively important. The experience of noting differences is about choosing between alternatives and the process of distinction making. The distinctions themselves are important for their meaning making potential.

Distinguishing as a process of meaning making relates to the selection of information through the questions that are asked as well as the focus of observation that is selected (Keeney, 1983; Neimeyer & Neimeyer, 1993a). In trying to focus on process, distinctions should be made in such a way as to encourage connections with inner and outer contexts, thereby using "a dialectic which exposes both

sides of our distinction" (Keeney, 1983, p. 114). Drawing distinctions is useful in therapy, in that it helps to illuminate our epistemology as well as the systemic field being explored. Besides illuminating existing meaning, distinction making can enable new meaning to emerge through processes of critical reflection as experienced by the therapist or client(s) (van der Hoorn, 1995).

7.5.2 Indicating punctuations

Punctuation always involves drawing distinctions, i.e. a process of foregrounding and backgrounding. These are made through selective attention, goal orientation, perceptual filtering, applying values and attempts at seeking meaning (Keeney 1983; Watzlawick et al., 1967). The basis on which experience is punctuated and reality is constructed flows from the meaning system of the perceiver. This happens in such a way, that while meaning is expressed through punctuation of reality, so is it recursively influenced by the reality that is constructed. Thus, the relationship between meaning and context is a recursive and dynamic one where punctuations play something of a *messenger role*.

7.5.3 Marking orders of recursion

Marking orders of recursion, or looking for patterns from a metaperspective, involves the making of an observation, drawing distinctions from that observation, and looking for patterns in the distinctions that have been made. This is a process of metacommuncation, i.e. communication about communication, which gives meaning (eg. as with play fighting) and can only be done from a higher level of abstraction than the level being reflected on (Watzlawick et al., 1967). When orders of recursion are marked, a perspective of continuity of process through levels of organization is encouraged.

7.5.4 Distinguishing logical types

A logical type is an order of abstraction (Bateson, 1973), which represents descriptions of processes or structures which are of the same or a similar order in the mind of the observer. Punctuating logical types reveals distinctions, formal patterns and makes self-reference and paradox transparent, while with deductive reasoning, these are often mystified (Keeney, 1983).

An appreciation for distinctions of logical types at various conceptual levels of dynamic organization can discourage the erroneous treatment of multidimensional realities as unidimensional concepts (Gharajedaghi, 1985). In addition, the long standing call for multidisciplinary approaches in health care is essentially a recognition of the distinctions between logical types and levels of systemic organization. While representing multiple perspectives, for systemic models to be effective, such perspectives should be seen as processes gathering around the patient's goal of aspiring to health.

7.5.5 Creating double descriptions

Creating double descriptions (eg. light as a particle or a wave) involves drawing distinctions, indicating punctuations, marking orders of recursion and considering dialectical patterns (Keeney, 1983; White, 1986b). This double description (union of opposites) considers and accepts both (or many) distinctions, thereby limiting the tendency to distort reality and making the illumination of complementary and complex relationships possible. In this way, a more powerful and inclusive way of understanding the world is possible (White, 1986c). Bateson (1979, 1991) states that creating double descriptions can also challenge the double bind relationship through making distinctions, thereby clarifying logical types.

7.5.6 Narrative thinking

Narrative thinking eg. stream of consciousness and free association techniques (Hoshmand, 1993; Neimeyer, 1993) is not new to psychology. In addition to being incorporated in many psychotherapy approaches, it has also been developed as a particular narrative perspective in psychotherapy. The use of the narrative is an interactive means of making sense or searching for meaning in experience (Oatley, 1993; Yule, 1993). The telling of a story, where the emergent story provides a history of the development of emergent organization, is the central meaning of the narrative (Estés, 1994; Hoshmand, 1993). This meaning is expressed by storytellers as they *access* and create their story through punctuation. What is omitted in order that a coherent story can be told, is also relevant to the meaning of the narrative.

Narratives all have gaps, in fact more gaps than punctuations and as such, supply clues to a larger map as one tries to fill the gaps in the narration (Oatley, 1993). In the therapeutic context, people tell dominant stories of themselves; where there are gaps and pieces of the story that do not fit may be distorted or discarded (Yule, 1993). A client works with a therapist to fill in gaps, illuminate distortions and explore interpretations (distinctions about patterns), providing an opportunity for the client to build a model or *map-of-self* to which there is conscious access (Estés, 1994). It has also been suggested that the exploration of other forms of stories such as dreams, poetry, music, art, etc., has the potential to contribute to the construction of a map-of-self, but can, in themselves, be very healing processes of storytelling (Estés, 1994).

It is frequently necessary for the therapist to engage in questioning in order to encourage exploratory story telling or to invite alternative stories. Kinds of questioning that can be useful include recursive or circular questioning (Neimeyer & Neimeyer, 1993b), relative influence questions, questions inviting alternative stories, or encouraging speculation on new possibilities (Yule, 1993). In this process, it is important for the therapist to sensitively avoid suggestive contamination (Oatley, 1993).

A technique, which can be very useful in encouraging self-reflection, is a personal journal or a diary of

feelings (Feixas et al., 1993). This narrative technique encourages the evolution of stories over time and can portray flow and change (Neimeyer, 1993; Neimeyer & Neimeyer, 1993b). Through such an exercise, clients are encouraged to engage in a process of "conversation with self", whereby experiences are externalized and the development of autonomy, personal agency and self-organization is encouraged (Neimeyer & Neimeyer, 1993b; Yule, 1993).

7.6 Intervention tasks

Intervention tasks are those actions that *pay attention* to the epistemological tools described. They are actions which are aimed essentially at challenging the organization of processes that are punctuated as being incongruent with goals of therapy.

When a system is organizationally rigid and this is incompatible with goals of therapy, specific tasks can help to challenge or even *wreck* patterns of organizations (Watzlawick et al., 1967). Tasks need to be directed to the organization of the system, and countersystemic tasks which ignore interactional patterns and focus exclusively on content, are not helpful (Andolfi, 1979). An example of a countersystemic task would be the action of controlling an anorexic client's food intake without addressing systemic issues such as that persons relationship with food, family relationships, issues of responsibility and control, etc.

7.6.1 Restructuring tasks

Restructuring tasks are aimed at challenging established patterns or organization which govern functioning in a system. Such tasks include displacing tasks, system restructuring tasks, and reinforcing tasks:

1. Displacing tasks are intended to shift the problem in a system in such a way that its *new place* contributes to healthier systemic organization or *healthier transactional modalities* (Andolfi, 1979). An example of this would be the displacement of the problem of smoking to ease stress with learning relaxation techniques and encouraging social interaction with supportive peers.
2. System restructuring tasks restructure models of communication in relationships (Andolfi, 1979). An example of this would be to teach people communication skills to encourage more open communication in a relationship where communication is usually not open or honest.
3. Reinforcing tasks involve the therapist encouraging healthy processes that seem to be emerging in interaction but are not well integrated in systemic functioning (Andolfi, 1979). An example of this would be a person starting to feel confident about being assertive and needing to be supported in developing further confidence in this area.

7.6.2 Tasks utilizing symptoms

> "I ask then what is it - what sort of habit of mind is it - that leads to paying too much attention to symptom and too little to system?" Gregory Bateson (1991, p. 295).

Attacking the symptom can take the form of challenging its interactional significance in the larger systemic context (Andolfi, 1979). An example of this is of a female victim of domestic violence who is very fearful of people finding out about the abuse. Her secretive behaviour is significant in that it protects the abuser in the family and contributes to the larger family dynamic of which the abuse is part. To encourage the victim to *let the secret out,* challenges the interactional significance of that symptom in the family and enables the victim to begin to achieve some autonomy from the larger abuse pattern of interaction.

7.6.3 Alternative methods

Alternative methods of inducing change include encouraging problem behaviour, amplifying deviation, suggesting a relapse, emphasising the positive aspect of a symptom, and introducing confusion (Keeney, 1983). These methods are aimed at shifting the function that a problem behaviour is playing in the organization of a system from absorbing telentropy to provoking telentropy.

7.6.4 Paradoxical tasks

Paradoxical tasks were originally distinguished as useful by Bateson to break a double bind situation (Keeney, 1983). A double bind situation exists when a person is confronted with a set of alternatives, each in some way unattractive, but requires making a choice. This is in many ways similar to a paradox, in which pragmatically incompatible messages are transmitted simultaneously (Andolfi, 1979). In many ways, the concept of power sharing between therapist and client is a paradox (Reason, 1988b) and can be better addressed if one understands that authority can be expressed in relation to different issues and decisions in the context of mutual respect. What those issues are will certainly be unique to each relationship and will indicate how the process of responsibility interconnects in the web of interactions that constitutes the therapeutic relationship.

Paradox can also be used as a therapeutic task aimed at addressing an impasse (Katakis & Thomassin, 1988). This can be done by interrupting a vicious cycle by responding to the paradox with a counterparadox. This can be done by prescribing the symptom, prescribing the rules, and provoking infractions to the systems rules, i.e. being provocative and liberating at the same time. Once the endless game of maintaining a paradox is abandoned new ways of relating become possible (Andolfi, 1979).

7.6.5 Metaphorical tasks

The word *metaphora* derives from meta (over) and pherein (carry) (Paivio & Begg, 1981). Speaking and listening in metaphors enables us to send and receive multiple messages at different levels of abstraction (Andolfi, 1979; Wicker, 1992). Metaphors enable the punctuating of different orders of recursion, due to their essential ambiguity and abstract nature. The function of metaphors as abstractions is to go beyond the limitation of the fragment and link the different parts of the whole (Purce, 1974). In this way they enable insight in a dramatic way as they provide both cognitive and affective meaning-making opportunities.

As a map can never be the territory, so a metaphor can only suggest an idea and can never be that idea (van der Hoorn, 1995). In many ways, meaning seeking through metaphors can be compared to seeing what information or insight can be prompted by the use of different types of maps of a territory, eg. road maps, climatic maps, geological maps, vegetation maps, etc. Whichever metaphor or map is used the process involves mapping an abstract idea onto a more concrete and essentially suggestive one (Miles & Huberman, 1994).

Increasingly, metaphors are receiving attention as a method for expressing constructs that would otherwise be difficult to express in words (Feixas et al., 1993). Metaphors also provide a data-reducing device (summarise in a nutshell), a pattern-making device, and a decentering device (encourage bigger perspective) (Miles & Huberman, 1994). The use of metaphor in trying to understand human systems is appropriate, as the general systemic structure of the living world provides many examples of systemic process and organization (Bateson, 1973).

7.7 Conclusion

There are many possible ways of intervening in systems and these interventions need to be evaluated as they fit with a therapeutic process rather than being evaluated as good or bad (Rice & Greenberg, 1984). A therapy process includes the ongoing and recursive interaction between theory and practice as the therapy relationship is developed, treatment goals are set, and intervention procedures are experienced. Just as theoretical premises guide the therapy process, so are theoretical premises recursively informed through the therapy process. Thus, the theory and practice of psychological practice are embedded in a web of connections that are recursively changing and developing as is any other living system of knowledge.

CHAPTER EIGHT: CASE STUDIES

In this chapter an elaborated case study and four circumscribed case studies are presented to illustrate the application of the three process-based teleonics maps as proposed in chapter six, and to illuminate the premises and concepts discussed.

8.1 Introduction

The elaborated case study is used in the manner described by Robson (1993) and illuminates the advantages of using the teleonics maps in that they help the client to understand problems within the context of a process perspective. They encourage the exploration of the problem and possible courses of action in way that is visual, collaborative and of a process-based systemic nature. In other words the case study illustration points to how the teleonics maps operationalize process-based systems thinking in a psychotherapy situation. The psychotherapy case which has been selected for the elaborated case study (see section 8.6 for additional circumscribed cases) was chosen because it is not a situation that would be regarded as unusual and provides a standard clinical example. Thus it illuminates for other practitioners the application of teleonics to a commonly occurring practice situation.

The case study illustration is not presented as part of action research or as evidence or proof of theory, but is a methodology of double description in which important methods are highlighted (Neal & Liebert, 1980). Double description can be distinguished from action research in that when using a **double description** the emphasis is on describing practical operationalization and not on explaining the case study details as important aspects of the "action research cycle" as defined by Robson (1993, pp. 440-441). As previously stated, the methodology of double description is a systems methodology which is described by Bateson (1979, 1981) and Keeney (1983). The first description of the three teleonics maps is from a theoretical perspective while the case illustration provides a double description. The elaborated cases study is augmented by further circumscribed case studies (section 8.7). Some comments about the research/therapy process (to be called therapy) are provided in order that those aspects illustrated are put into the perspective of the overall therapy.

The therapy ethos of the case study that is presented, is in the mould of *cultivating direct knowing* and experience (Hill, 1993; Kanfer, 1980; Sharp, 1990). There is a large body of research on human problem-solving which shows that information about the underlying structure of a problem is thought to improve people's ability to solve problems (Bridger, 1995; Wason & Johnson-Laird, 1972). The case studies illustrate the way in which therapists can work in a systems and holistic world view, cultivating direct knowing in such a way that self-directed learning and promotion of human development is encouraged.

8.2 Rationale for choosing the case study method to illustrate the teleonics method

The intentional nature of human activity is well captured by qualitative methods such as case studies (Gergen, 1992). In case studies, procedures are individualized, not strictly formalized and a more philosophical mode can be adopted (Salthe, 1989). While there are those who remain critical of qualitative, subjective and individualist methods of research, the use of case studies is coming to be regarded as an important generator of psychological knowledge (Hayes, 1992; Kazdin, 1992; Kvale, 1992). Process-based systems epistemology provides for the description and explanation of ideology, values, ethos and passions and case studies are an appropriate method to explore this (Gergen, 1992).

Case studies enable experiences to be rooted in historical and cultural perspectives and facilitate the study of the linguistic and social constructions of relationships and experiences (Bromley, 1986; Gergen, 1992). The present case study is particularly illuminating, in that it reveals something of the close interaction of therapist, client and theory in the *weaving* of the therapeutic process. This particular case study was selected from 48 that were undertaken (some still currently in progress), over a five year period. While many of these studies would have illustrated the teleonics maps, this one was chosen because it provided a standard clinical example, could be presented within the space constraints of the dissertation and because a coherent portion of therapy had been *completed*.

The case study of Sue is presented in this chapter to illustrate how the teleonics maps are used to represent the clients *story*, and how this representation might inform the therapy process. First, the story as told by the client at the beginning of the therapy process is introduced. It must be noted, that the subsequent presentation of the teleonics methods as three distinct exercises, does not illustrate how they were inseparably interwoven into the fabric of the therapy process. Besides operationalizing process-bases systems thinking, the maps provide an example of how complex interactions can be visually and diagrammatically presented. The presentation of processes and interactions is important in that "The representation of a problem (the form in which it is physically communicated to the problem solver) influence how it is represented at a cognitive level. An appropriate representation of a problem can make its structure more explicit and thus facilitate the selection of appropriate problem solving procedures" (Bridger, 1995, p. 425). In teleonics an additional systems notion is emphasised in that the therapist presents the conceptual maps but how the problem is understood in terms of the maps is constructed in a collaborative way and not simply communicated to the client.

While only selected examples of the three maps are presented, they were applied in similar and varying forms throughout the 11 month therapy process. By way of putting the case study examples that are presented into the larger context of the therapy process, a concluding comment on the way the maps informed the treatment goals and interacted as part of the larger therapy process is provided. It is important to note that diagrams are presented to closely represent those that were used in the actual therapy process itself.

8.3 *Introducing Sue's story*

Note:

* *This is not a verbatim story, but is a record of the client's story as related by the therapist/researcher (to be called the therapist).*
* *To support the integrity of the therapist-client relationship, the client's identity and a few details have been changed.*

Sue is a 32 year old woman who entered therapy with the story that she had been seeing a therapist for two years for the purpose of individual therapy and the same therapist for three months for marital therapy. Her stated reason for her husband (of six years) joining her for marital therapy sessions was their lack of communication and her inability to cope with his expectations. She explained, that her reason for changing therapists was that she wanted to consult a female therapist who might be more sympathetic to her priorities. She stated that it was her desire to deal with the physical and emotional abuse that she experienced in her marriage relationship regularly at four to six weekly intervals. The reason for wanting to deal with this issue was that she experienced it as inhibiting her from "sorting herself out".

In marital therapy, both her husband and her former therapist had resisted dealing with the domestic abuse, insisting that once communication and other relationship problems had been dealt with, the abuse would no longer be an issue. She perceived their attitude as a subtle acceptance of the abuse and as a further humiliation to herself. She said that she felt powerless either to stop the abuse, or to leave the relationship. This left her despising herself.

She originated from a family which lived in a small rural town where clear religious principles governed family behaviour. She had not been exposed to much family conflict at all, let alone domestic violence. Both she and her brother were obedient "good" *children and like their parents avoided conflict. When she left the family home and went to university she found that she was able to enjoy less inhibited relationships and made some good friends. She met her husband in her final year and they married three years later.*

Her expectation of marriage was that she would enjoy a relationship with her husband which would enhance her quality of life and enable a secure home life. She had been shocked when the abuse started shortly after they got married and her apparent inability to stop or escape the abuse was an affront to her own view of herself. She felt inadequate, not only because of her inability to deal in any way with the abusive episodes, but also because of her inability to understand how she could allow herself to continue in such a "sick" *situation.*

What she was referring to when she used the term abuse *was verbal insults, physical aggression in the form of hitting, pushing, kicking or damaging objects that were precious to her. When her husband was angry she felt that she should make some attempt at preventing the abuse, but felt unable to do so. If she confronted him in any way then she would run the risk of being abused, so she tended to*

be submissive to avoid conflict, much as she had done in her family.

Her husband was never remorseful about being abusive and always justified his action as legitimate, resulting from her provocation. Invariably, he made comments such as; "see what you make me do" or "when are you going to stop driving me up the wall?". Her perception of her own behaviour at these times was that she was rarely even assertive let alone challenging or provocative.

Sue said that after an abusive event, she felt angry and hurt and behaved in a sulky way with she and her husband not speaking to one another for at least a week. This period always terminated with her husband initiating sex with the abuse never being referred to or discussed. She experienced his sexuality as a power which she found difficult to withstand since it was the only time she received the comfort and affection that she felt she needed.

Sue said that she did receive support and affection from her brother and his family, but this was made available to her in such a way that they did not involve themselves in her problems. With respect to her relationship with her good friends, it was not easy to get support because she was too ashamed to tell them about her marital problems. Her parents maintained regular, albeit superficial telephonic contact with her, but she did not tell them about her marital problems. Thus, with the exception of Sue's previous therapist and general practitioner, she had told nobody else of her circumstances, i.e. a conspiracy of silence was maintained.

In general, she managed to cope with the abuse. Her work as a computer programmer was particularly important in that she enjoyed the satisfaction, intellectual stimulation and distraction that it provided. In recent years she had fallen apart at Christmas time when her husband expected her to be socially involved and her inability and reluctance to comply seemed to provoke more frequent bad moods and constant fear of abuse. The reason that she was reluctant and unable to socialize with him was that she was fearful that he would drink too much and insult her in public. Her fears seemed to get the better of her at these times when she became emotionally and physically unwell.

For the last four consecutive years, she felt so bad that she regularly left the marriage shortly after Christmas. On these occasions, she moved in with her brother, his wife and their four children. She experienced these times as a relief which she ascribed to a reaction to the constant stress of keeping up the appearance of being happy over the festive period. She seemed to feel particularly unwell at this time of the year and it was a relief to be able to relax and attend to the fatigue, depression, severe migraine and backache she experienced almost daily.

She said, that she had a good relationship with her brother and his wife who welcomed her into their home, although they respected her resistance to discuss her problems. Her brother's home was a busy family environment which was enjoyable because she could interact with the children who she really

loved, and who made her feel loved. At these times, her husband was obviously agitated. Yet he was kind and attentive, frequently enquiring about her return as if she were on holiday. She found that within only a few days she started to feel stronger but also guilty and obliged to return, questioning herself as to whether her situation was as bad as she thought it was. On returning home, she tried to be optimistic that things would be better and resolved to try not to stir conflict.

She was confused about her feelings for her husband, since she did care for him, especially between the abuse episodes when they got on quite well. Yet at other times he made her angry and disappointed. She did not understand his bad moods and could only guess that he took after his father, who was a very unhappy man. She also felt that she was something of a disappointment to him as a wife. One of the most worrying and telling aspects of their relationship was that while her husband did not have a strong desire to be a parent, she really wanted to have children. She felt that this was not possible because of the violence in their home. She stated that all this was conflicted by the fact that somehow she felt disloyal to be pursuing the abuse issue and making a big thing *of it. She often wondered if she unconsciously* asked for *or* deserved *her situation and if she should perhaps just wait for him to* mellow out.

Conversation with the general practitioner.

After the first few sessions of therapy Sue invited the therapist to make contact with her general practitioner, who had been her doctor for the past ten years and had been a wonderful support to her. The general practitioner informed the therapist that he had attended to injuries reportedly sustained by Sue during abuse episodes. These injuries ranged from cuts and bruises to a broken tooth and haematomas on her arm and hip received on separate occasions. He also indicated that Sue was currently in a very poor state of health having become progressively underweight over the previous four years. He had prescribed medication of Lexitan 3 mg (1-2 daily), Aropax 20 mg (1 daily), Noctamid 1 mg (at night) and Pynstop for migraines which seemed to occur at least weekly. She had been on the Lexitan for two years which was a concern to him, due to the habit forming nature of this medication. While the medication seemed to help her cope on a daily basis, things never seemed to improve to the point where she could slow down on the medication. The Aropax was an anti-depressant which was prescribed on the recommendation of a psychiatrist following a psychiatric assessment. The pattern of depression worsening over the festive season did not seem to be influenced by going onto the anti-depressant, i.e. a similar pattern of depression persisted.

8.3.1 Overview of the therapy process

Sue engaged in a therapeutic relationship with the therapist, having weekly consultations for a period extending over 11 months. While the theory and language of teleonics was firmly in the mind of the therapist throughout the therapy process, all discussions of concepts with the client were done in language that encouraged and enabled the client's participation (see table 2 for examples). The terms

that were chosen were words in common usage which had **approximately** the same meaning as the teleonics terms.

TABLE 2: Table of teleonics and alternative terms.

Teleonics terms	Alternative terms used
teleon	process
doublet	system
telentropy	trouble
exodynamic processes	outward directed processes
endodynamic processes	inward directed processes
teleos	goal-directedness

However, when discussing this case with supervisors and colleagues, a few *core* teleonics terms were used to facilitate accurate and efficient communication, interdisciplinary discussion as well as the coherent relating of practical experiences to theoretical concepts.

While not commented on specifically in this case study, throughout the therapy process, the therapist attended to the interaction that emerged between herself and the client, insisting that this be scrutinized and appreciated as part of the therapy experience (Greben, 1981).

8.3.2 The therapist's perspective

From the initial contact, the therapist used process-based systems thinking in terms of terminology as well as epistemological tools. It was one of the therapist's goals to appreciate how the client conceived of various aspects of her reality. A further goal was to encourage process-based systems conceptualising so as to encourage change processes and desired outcomes. It was hoped, that by encouraging a therapy process in line with process-based thinking that interactional descriptions would be encouraged (White, 1986a), leading to process-oriented interventions. Furthermore, the client would be able to appreciate and develop systemic (or relational) thinking, thus making a positive contribution to her life skills (Kirk et al., 1983; Marton, 1986).

8.3.3 Therapy teleon

The therapist clarified her role and the teleos of the therapy process. The client's need for affirmation and support for her intention to change certain things about herself and her situation through therapy, were especially emphasised. The scope of the therapeutic interaction would be dictated by the goals of therapy and the subjective judgements of the client and therapist as guided by process-bases systems epistemology.

The therapist clarified that it was important that the client contribute to creative thinking and management as well as participation in therapy activities, with the relative strengths of contributions depending on the therapy process itself (Heron, 1981b). It was also clarified that corrective feedback between therapist and client in order to illuminate and clarify the therapy process, was desirable (Heron, 1981a).

The question of responsibility and expectations of the therapy process were discussed with the co-operative enquiry model in mind. In terms of the co-operative enquiry model, as a facilitator, helper and a participant, the therapist's ultimate aim is to *work themselves out of a job* (Melser, 1993; Reason 1988c). In the light of this, it was acknowledged that a match of expectations that would indicate a coherent teleos to the therapy teleon was important (Reason 1988b).

The initial goals of the therapy teleon were broadly distinguished as the exploration of the redundancy (organizational conservation or persistence over time in the organization of processes) of the abusive patterns of behaviour and the encouragement of processes promoting the client's autonomy. The former was a priority in terms of the client's immediate crisis, while the latter was of supreme importance for the nurturing of autonomy and integration as a union of opposites (Sabelli, 1989; Sabelli & Carlson-Sabelli, 1989). It was accepted that further goals, and the way they might be invited or provoked, would be illuminated by the therapy process itself.

In determining the flexibility of the clients attitude to challenges of *change* (i.e. redundancy), the individual's basic belief about their circumstances (Katakis & Thomassin, 1988) was given attention. In exploring the redundancy of the abusive patterns of behaviour as expressed through the narrative, it was held that the self-perpetuating language of the system should be challenged so that alternative stories could be developed (Sluzki, 1992). In punctuating the beginning of the exploration of the abusive patterns of behaviour, it was decided that the exploration of connections with the larger marriage relationship would be the initial task. In line with the systemic principles of equifinality and multifinality (Gharajedaghi, 1985; Watzlawick et al, 1967), as relationships of processes are explored, further interactions would be illuminated, thereby informing the therapy process.

8.4 Implementation of the teleonics methodologies

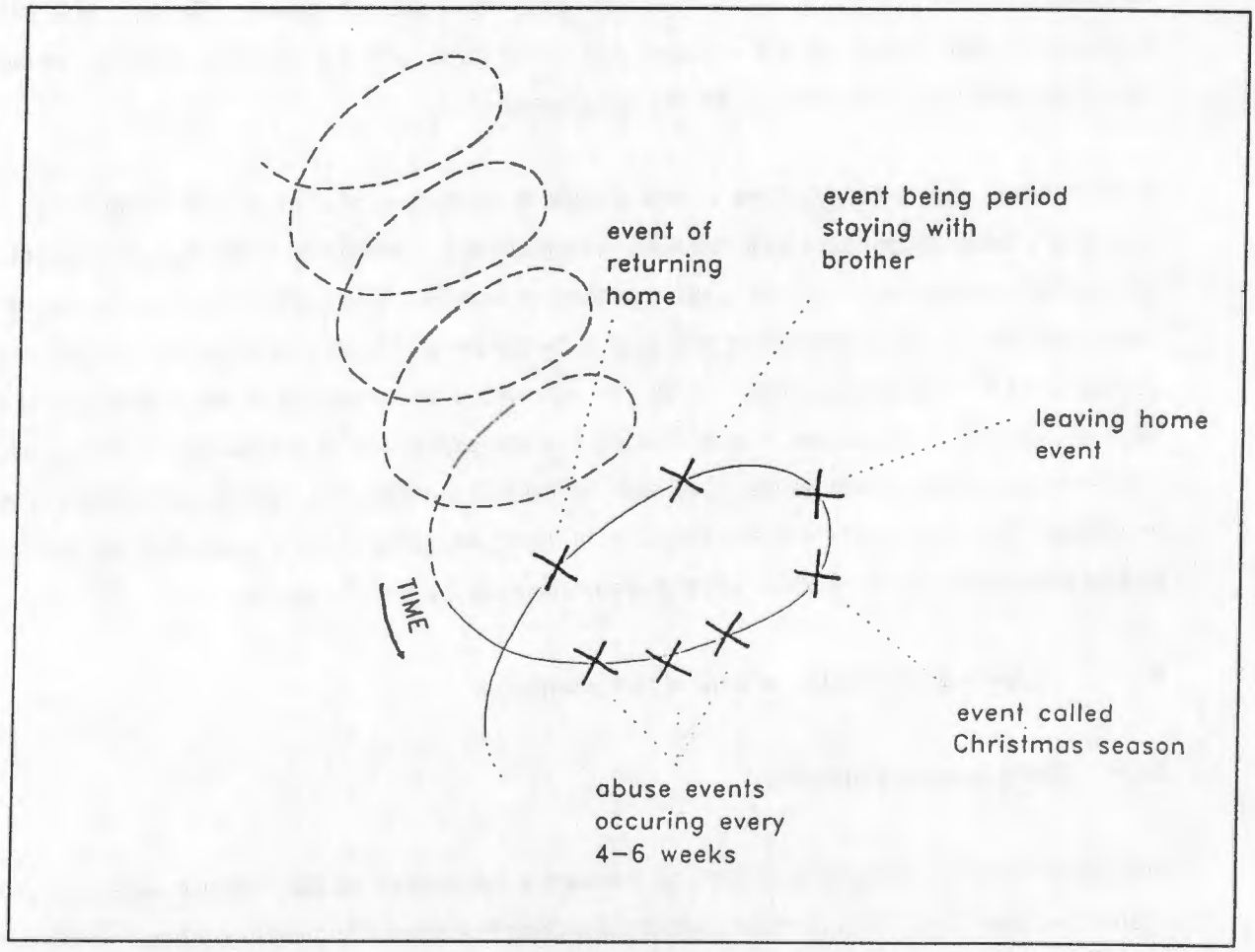
8.4.1 Spiral mapping process

The spiral mapping process was used to illustrate a perspective of the dynamic organization of interactions over time. Attention was given to describing interactions and exploring those which were not foregrounded in Sue's story. By acknowledging *both sides* of a distinction (Keeney, 1983), a perspective of cybernetic complementarity or a union of opposites was invited. In other words a broad understanding of organization of processes over time was encouraged. Understanding included

considerations of how the client understood the distinctions, descriptions and relationships between observations (i.e. a perspective of double/multiple descriptions and an appreciation for systemic connections).

The sequence of events selected to illustrate the spiral mapping method, is a pattern of processes which relates to the organization of the marriage relationship as well as the abuse episodes. This sequence started with an abuse episode which recurred, alternating with periods of calm over most of the year until Christmas time. At this time, Sue felt pressured by her husband's expectations that she socialize with him. This made her fearful of him drinking too much and humiliating her in public. She found that the stress of this time made her unhappy as well as physically unwell. This period of tension culminated with her moving to her brother for about a week and then returning home. This sequence of events was seen to be a pattern of organization which had persistence and coherence since it repeated, consistently and without obvious deviation, over the four preceding years (see Figure 24).

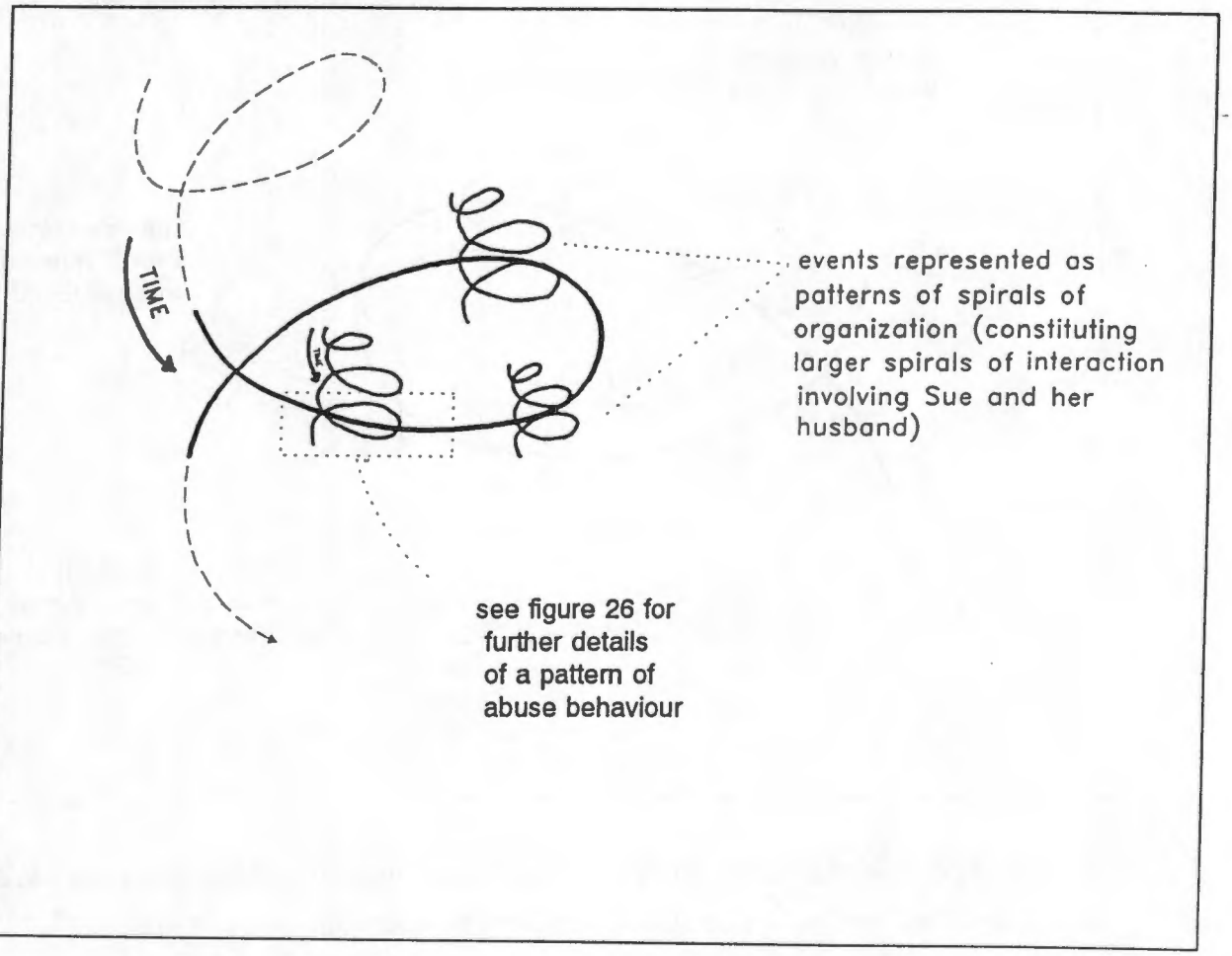
Figure 24: Figure illustrating a spiral metaphor of the **pattern** of the client leaving and returning to the marital home.



The persistence and coherence of patterns of events is rooted in the organizational determinism of those events. The inner teleos of the events and the larger teleos (contextual relationship) of the organizational patterning of those events, refer to different orders of recursion. Patterns represent a

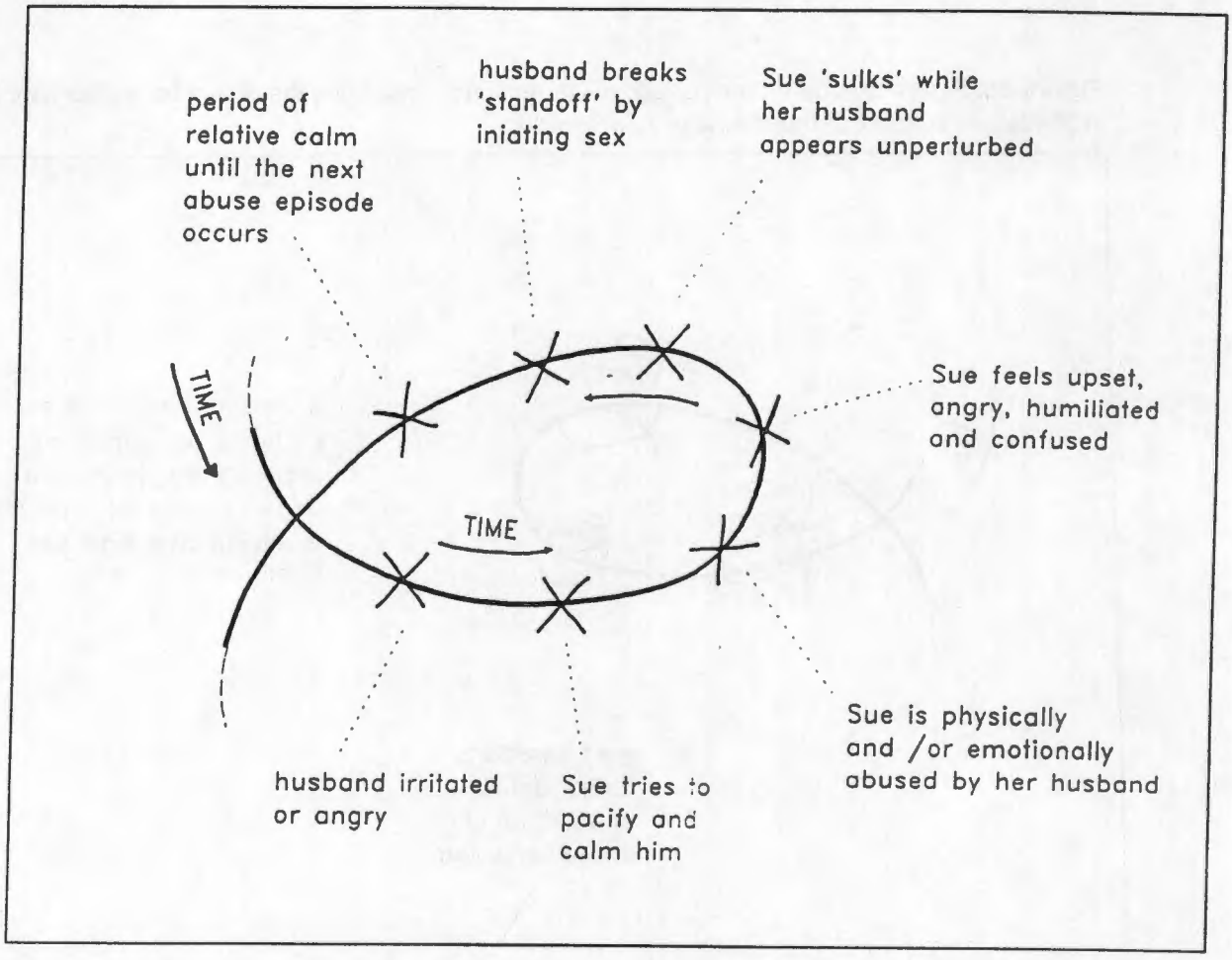
stable order of recursion which *attract* (teleos) the conservation of the organization of events (redundancy). In this context, patterns can be said to be *predictive* to the extent that their stability of organization attracts repetition (coupling in a particular context). The inner organization of the events themselves, refers to a different order of recursion as is illustrated by the interaction of the abuse event with the larger marriage relationship (see Figure 25).

Figure 25: Figure illustrating the pattern of interactions constituting the abuse behaviour as it interacts in the larger context of the marriage relationship.



The abuse pattern is organizationally constituted as a further pattern of interactions in the metaphor of a spiral within a spiral (see Figure 26).

Figure 26: Figure illustrating how the abuse pattern was organizationally constituted as a further pattern of interactions.



The inner and outer contextual levels of events had not been specifically punctuated and it was decided that this would be done more systematically by using the teleos mapping process.

8.4.2 **Interaction of the spiral mapping process as part of the therapy process.** (* *Client's comments in italics)*

CLIENT'S PERSPECTIVE: After working through the spiral mapping process, the client said that while she still experienced the complexity of her situation as daunting, she was becoming aware of a sense of order and organization.

COMMENT BY THERAPIST: Teleonics provided a metaperspective of patterns of order in a problem saturated story.

CLIENT'S PERSPECTIVE: She reported developing a perception of being victimised in her problem saturated story *that not only invited limited descriptions of herself, but also limited descriptions of the*

influence of others (White, 1988).

COMMENT BY THERAPIST: When alternative or double descriptions of relationships are made, people are encouraged to entertain new descriptions of themselves, others and of their relationships, thereby deriving unique outcomes from which unique possibilities can flow (White, 1986b; White, 1988).

CLIENT'S PERSPECTIVE: The client realized that anticipation of the relatively relaxed periods between the abuse events contributed to her being able to sit them out. *In terms of further connections between events, she said that the anticipation of relief and care at a time when no reprieve to the tension seemed possible,* forced *her to leave as a short term* escape.

COMMENT BY THERAPIST: A perspective of a sequence of events over time, illuminated actions that were attracted by teleos based on feedback (from experience) and feedforward (in anticipation) processes. The distinguishing of the relatively relaxed periods for closer scrutiny in terms of the meaning that they contributed to the sequence of events, is an example of how further connections were punctuated through appreciation of the spiral patterning of events.

CLIENT'S PERSPECTIVE: In considering the events individually, the client considered what emotions and meaning she associated with each event. In this process of exploring teleos and subjective meaning she distinguished the following:

* *The abuse episodes or events left her feeling humiliated, demeaned, helpless, frustrated, angry and with a very poor opinion of herself.*
* *The festive season event raised emotions of fear at not being able to hide the abuse, desperation and physical exhaustion.*
* *With respect to the event of leaving home, feelings of relief, escape, uncertainty and fear emerged.*
* *The period at her brother's home seemed to be dominated by feeling of insecurity, guilt, happiness and relief and was the only time that she felt even remotely good about herself.*
* *On returning to the marital home, the client stated that the dominant feelings related to relief, sadness, hope and resignation.*

With respect to the meaning embedded in events, she felt she could appreciate that behaviour in the interactions tended to reinforce her inability to recognize or assert, her own needs or desires. She could also recognize that her husband's patriarchal attitude towards her played a role in attracting *this response. She was also able to discern that her avoidance of confrontation and deference to the authority and needs of others was a strong behavioural tendency. In addition, she noticed how her emotions seemed to depend on other people's behaviour towards her, rather than by her own initiation.*

COMMENT BY THERAPIST: The spiral method invites the consideration of both meaning and mechanism (Oatley, 1993). In this way insights that enable us to change things in our inner world as it is connected to our outer world, are encouraged. By considering meaning embedded in interactions, the spiral method invites the further making of connections at an inner level (eg. client's insights about her own self) and at an outer level (eg. client's insights about other people's behaviour). Through the

punctuation of meaning in the context of interactions, a perspective of relationship between meaning is also invited. An appreciation for the relationship of meaning at different levels of interaction enabled a sense of understanding of the emotional organization underlying emergent behaviour.

CLIENT'S PERSPECTIVE: Finally, she said that she could recognize a connection between being in her brother's home and returning to the marital home. She perceived this connection as expressed by her feeling refreshed from her break, *pressured by guilt, feelings of obligation to* work at the marriage *and her inability to consider new options. She indicated that she was beginning to see how, by this response, she contributed to the perpetuation of the patterns of interaction.*
COMMENT BY THERAPIST: The client recognized that the meaning of one event (being with her brother) could enable the emergence of another event (returning to the home). She also recognized how organization of processes at one level (eg. the marriage relationship), could be better understood when appreciated in the context of organization of processes at other levels (eg. at the personal level). For the purpose of encouraging unique outcomes (Yule, 1993; White, 1988), the client was supported in the insights and understanding that she developed and was encouraged to acknowledge her own efforts recursively. An example of a unique outcome was the accepting of responsibility for some organizational aspects of the problems in the story.

The understanding of the interaction of teleos (meaning) and teleons (process) was further advanced by the application of the teleos mapping process.

8.4.3 Teleos mapping process

The pattern of abuse as organized in the marriage teleon over the period of a year, is presented as an example of the teleos mapping process. In addition, illustrative diagrams are used for the purpose of being explicit, yet brief.

It must be born in mind, that in the context of their spatial organization, teleos and associated teleons (i.e. goals and the processes that gather around them), are conceptually connected beyond what is illustrated in the maps. The primary focus of teleos mapping is to distinguish and foreground the teleons (processes) which interact in the organization of events and punctuate their teleos (goal-directedness). Doublets or events (systems or *interactive fields*) are always punctuated in the context of three levels of organization (orders of recursion). Brief descriptions of status of the teleos of teleons with respect to telentropy (*trouble*) are also made. A further punctuation is that of *tapping* teleons that are of special significance in the client's interaction or *coupling* with particular teleons.

In the process of developing the teleos maps with the client, the following teleons were punctuated:

* wife's marriage-relationship teleon (teleos of harmony)
* emotions teleon (teleos emotional contentment)

* physical wellbeing teleon (teleos positive health)
* support teleon (teleos emotional support)
* social teleon (teleos of social approval)
* husband's emotions teleon (teleos emotional contentment)
* husband's marriage-relationship teleon (teleos of harmony).

In addition, the **tapping teleons** distinguished were;

* teleon of wife tapping from the contribution by her husband to the relationship teleon (teleos of tapping)
* teleon of husband tapping from wife's contribution to the relationship teleon (teleos of tapping)
* tapping of approval by the client from the social teleon (teleos of tapping)
* teleon of wife tapping from the contribution of her husband to the relationship teleon (teleos of tapping)
* teleon of wife tapping from the social teleon (teleos of tapping)
* teleon of wife tapping from the support that is offered by her brother and his family teleon (teleos of tapping)

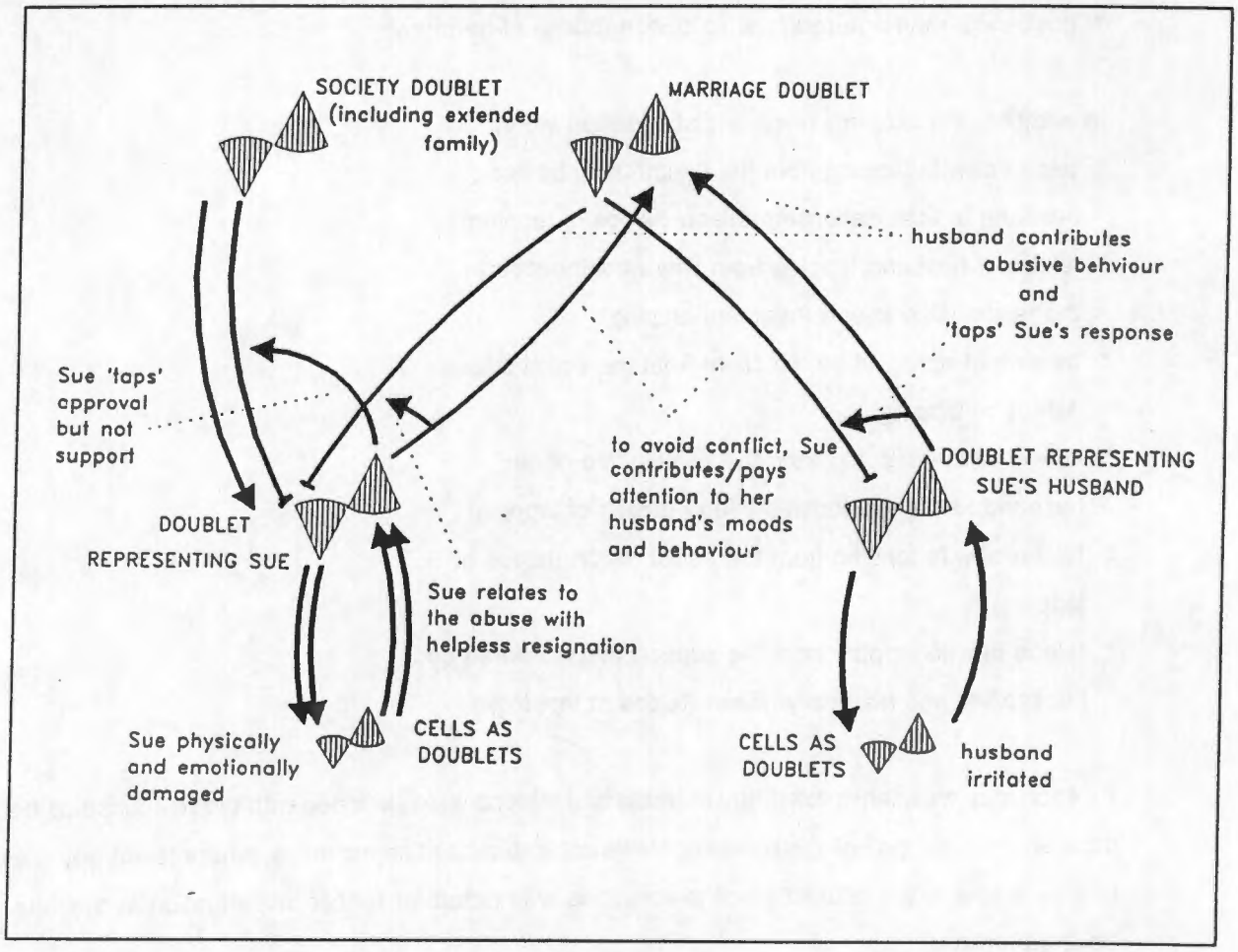
As each map was constructed, the doublets and teleons were sketched with the relationships between doublets and teleons being discussed. While not emphasised on the maps, where telentropy appeared to play a role in the interaction of teleons, this was noted for further investigation in the telentropy tracing process.

With respect to the teleos map illustrating teleons interacting as the **abuse event,** the teleons interacting as the story of her husband being frustrated, Sue trying to calm him, he hitting her, her ensuing emotional trauma and his apparent calm, were discussed. In the map that was constructed (Figure 27), it was illuminating for Sue to see that she played a role in tapping the abuse from the marriage relationship by the way in which she contributed and responded to her husband's behaviour. It was highlighted how these interactions connected with Sue's physical and emotions teleons which were distinguished at a *lower* level of organization. It was of special note that while social support was available to Sue from the social doublet, what tapped was social approval. In effect, this encouraged her to maintain a *conspiracy of silence* about the domestic abuse, and discouraged her from tapping the support that was potentially available to her.

The telentropy that was punctuated for further analysis in terms of the telentropy tracing process was the high telentropy in the marriage doublet, the social-support teleon and her emotions teleon. The low telentropy in her husband's emotions teleon was also noted for further analysis when applying the

telentropy tracing process.

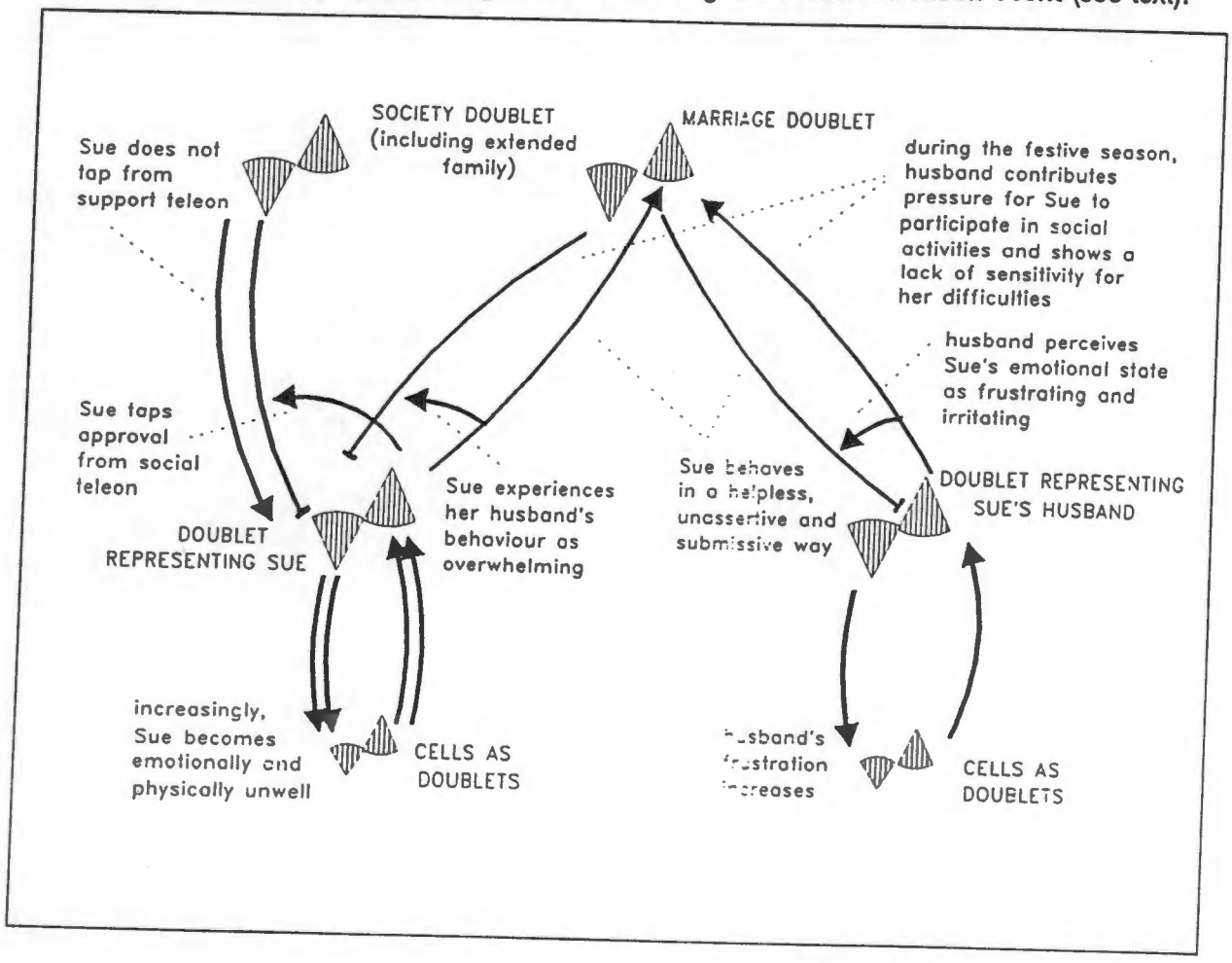
Figure 27: Teleos mapping illustrating teleons interacting as the **abuse event** (see text).



The next teleos map was that of teleons interacting as the **festive season event** (see Figure 28). In this map it was noted that, while the organization of the interaction of teleons appeared to be much the same as for the **abuse event**, the difference was that there was an escalation of demands on Sue's physical and emotional resources over the festive season. With Sue being emotionally and physically depleted, her husband experienced frustration and emotional dissatisfaction.

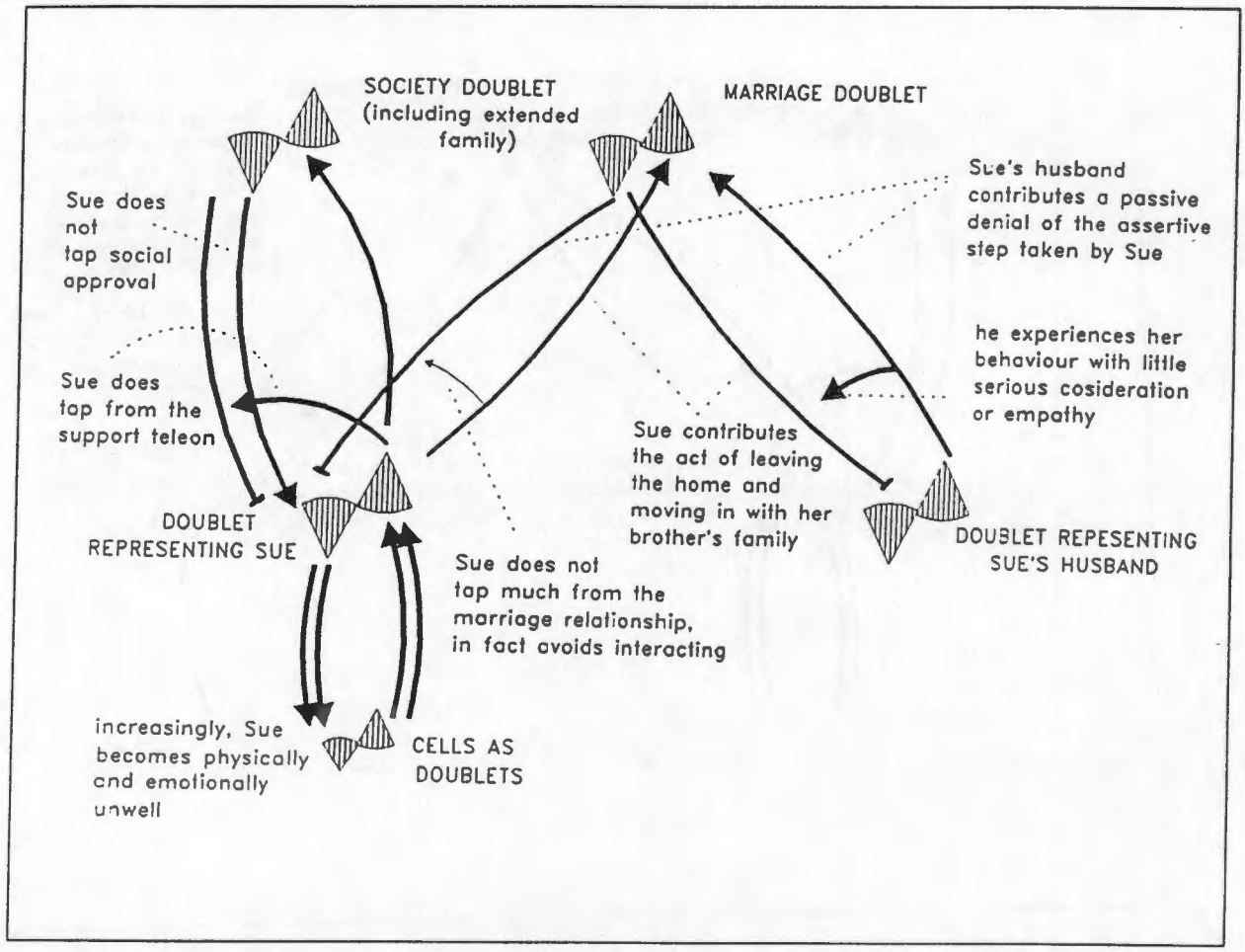
The status of telentropy in teleons that was punctuation for further analysis, included high telentropy in Sue's emotions, physical and support teleons, in her husband's emotions teleon and in their marriage doublet.

Figure 28: Teleos mapping illustrating teleons interacting at the **festive season event** (see text).



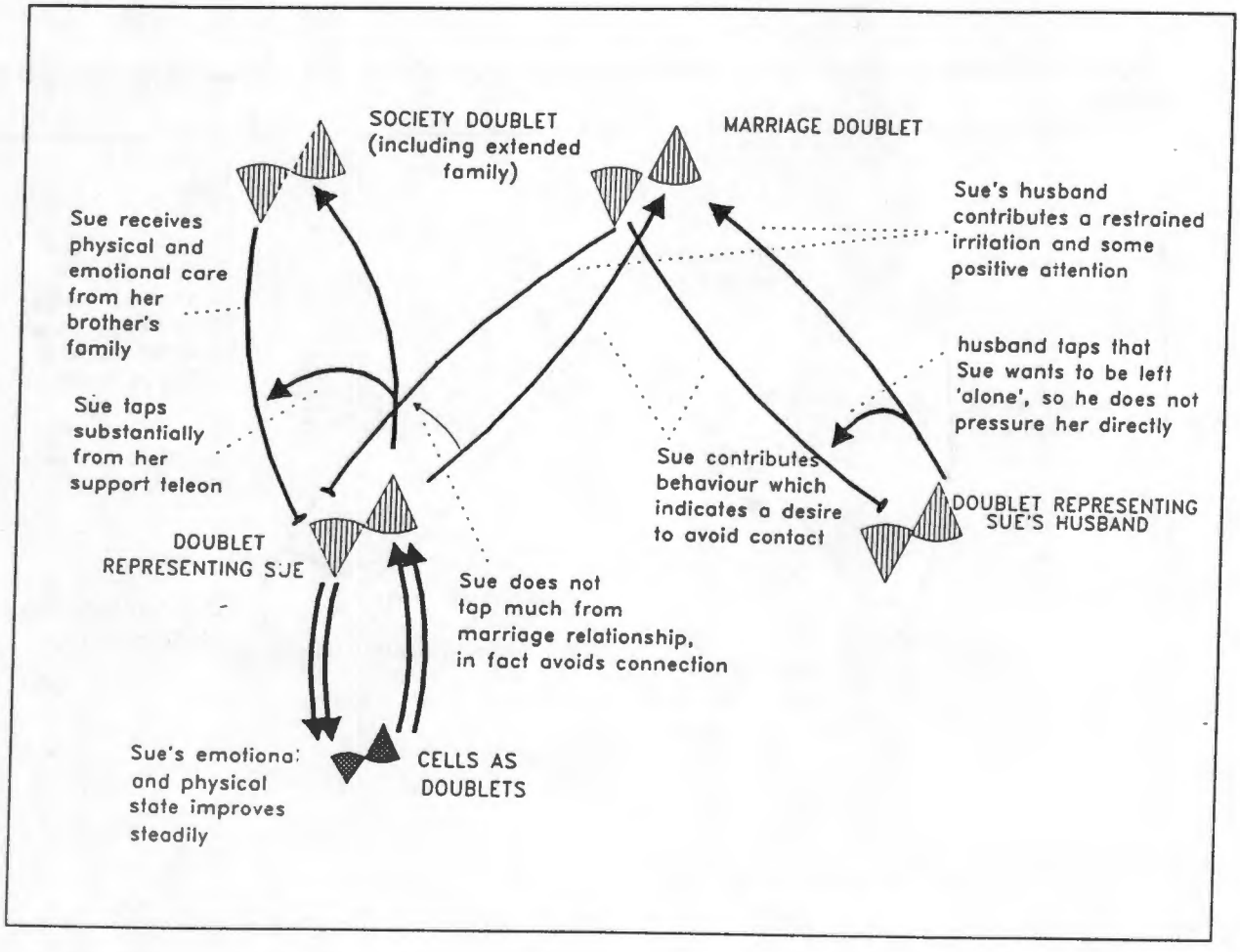
When constructing the teleos map for the **leaving the marital event** (see Figure 29), it was apparent that Sue's interaction with the social doublet was significantly different to the previous maps. The difference was that previously, Sue did not tap from the support teleons that were available while, at this time she tapped support in a substantial way. This corresponded with a cessation of tapping from the marriage doublet as well as her contribution to the marriage doublet virtually ceasing. The implication of these differences for further scrutiny through the telentropy tracing maps was that, telentropy was very high in Sue's emotions and physical wellbeing teleons, indicating her depleted state. In addition, telentropy seemed to be high in the husband's emotions teleon and lower in the emotional support teleon.

Figure 29: Teleos mapping illustrating teleons interacting as the **leaving marital home event** (see text).



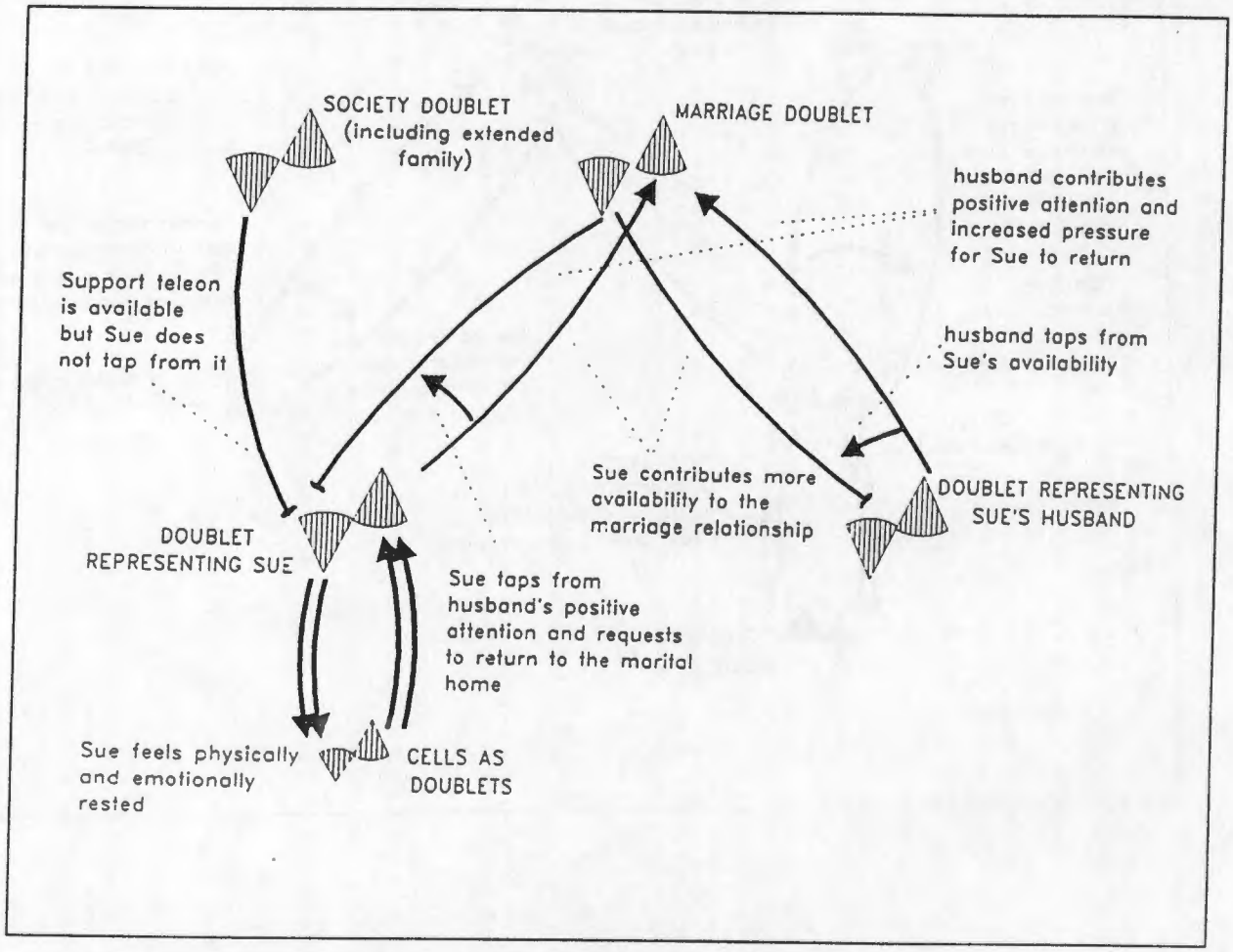
In constructing the **being with brother's family event** (see Figure 30), the notable difference to previously constructed maps related to Sue's contribution and tapping in relation to the marriage doublet. Further differences were the relief of tension and position attention that Sue's emotions and physical teleons received. Some of the effects of these interactions were that telentropy was lower in Sue's physical and emotions teleons, while telentropy was increasing in her husbands emotions teleon, as represented by his efforts to coax her back home.

Figure 30: Teleos mapping illustrating teleons interacting as the **being with brother's family event** (see text).



The last map exploring the loop of events constituting the abuse cycle was the teleos map of the **returning to the marital home event** (see Figure 31). In this map it was clear that the organization of teleons reverts almost to that of the **abuse event.** The only difference was that telentropy was lower in Sue's emotions and physical teleons, and reflected her feelings of being somewhat refreshed. While there was a lowering of telentropy in the marriage doublet due to Sue's returning to the marriage home, this is accompanied by a cessation of tapping of support and associated frustration in the emotional-support teleon.

Figure 31: Teleos mapping illustrating teleons interacting as **returning to the marital home event** (see text).



8.4.4 Interaction of the teleos mapping process as part of the therapy process (* *Client's comments in italics)*

As the *focal doublet* (i.e. the focal perspective from which the maps were constructed), the client was invited to comment on her impressions and insights as emerged through the process of developing and constructing the maps.

CLIENT'S PERSPECTIVE: With respect to the teleos of teleons interacting as the abuse event, *an impression that was foregrounded for the client was of her growing appreciation for her* contribution *to the context of the abuse event.*

COMMENT BY THERAPIST: On the one hand this idea was shocking and frightening for the client, yet it constituted a useful double description which challenged her "victimological construction of the violent act" (White, 1986d, p. 101). It also enabled her to distinguish those aspects of the abuse event that were rooted in her husband's teleos and were not her responsibility. The teleos mapping process seemed to help the client to consider interactions in a particular context. She started to spontaneously contextualise findings, appreciating not only their location in a context but also how their unique interrelationships with that context informed their meaning.

CLIENT'S PERSPECTIVE: With respect to the map of teleos interacting at the festive season event, *the client indicated that she was beginning to appreciate her feelings of isolation and despair. She said, that even though she tried hard to be a* good friend, *she never really felt as though she fitted in. She experienced socializing as very stressful. She ascribed this to the fact that she* lived a lie *and did not allow her friends to get close to her.*

COMMENT BY THERAPIST: This comment suggest an emerging ability by the client to appreciate connections and relationships between interactions. It also hints at the further recognition of the sense-of-self (autonomy) and the way it relates to her interacting with other people (integration).

CLIENT'S PERSPECTIVE: The client felt that the map of teleos interacting as the leaving the home event *highlighted how, when she felt low enough, her concern for other people's opinions was less important to her. She said that she was becoming aware that her concern for preventing social exposure contributed to her avoidance of seriously challenging her husband. A further insight, which made the client feel very sad and despondent was, that her life did not seem to be orientated to happiness, but rather to the avoidance of conflict.*

COMMENT BY THERAPIST: This latter insight was quite a remarkable one and suggested that the client had a perception of patterns of interactions where teleos at one level (teleos of social approval) was backgrounded in the context of teleos on another level (teleos of emotional contentedness). The further insight of how the teleos in one teleon (i.e. of social approval), had interaction with the teleos of another teleon (i.e. marriage teleon), also demonstrated the clients emerging ability to appreciate the interaction of teleons (across levels) in the organization of patterns of interaction.

CLIENT'S PERSPECTIVE: With respect to the map of the being with brother's family event, *the insight that the client foregrounded was that her really happy moments were the times she spent with her brother's children. In addition, she had some sense of her* own self *when she was away from her husband, and experienced the contact that she had with her husband at these times as undermining this. She said that the teleos map made her realize how self centred her husband's interaction with her was and how little attention he gave to her needs. The client said that while this realization made*

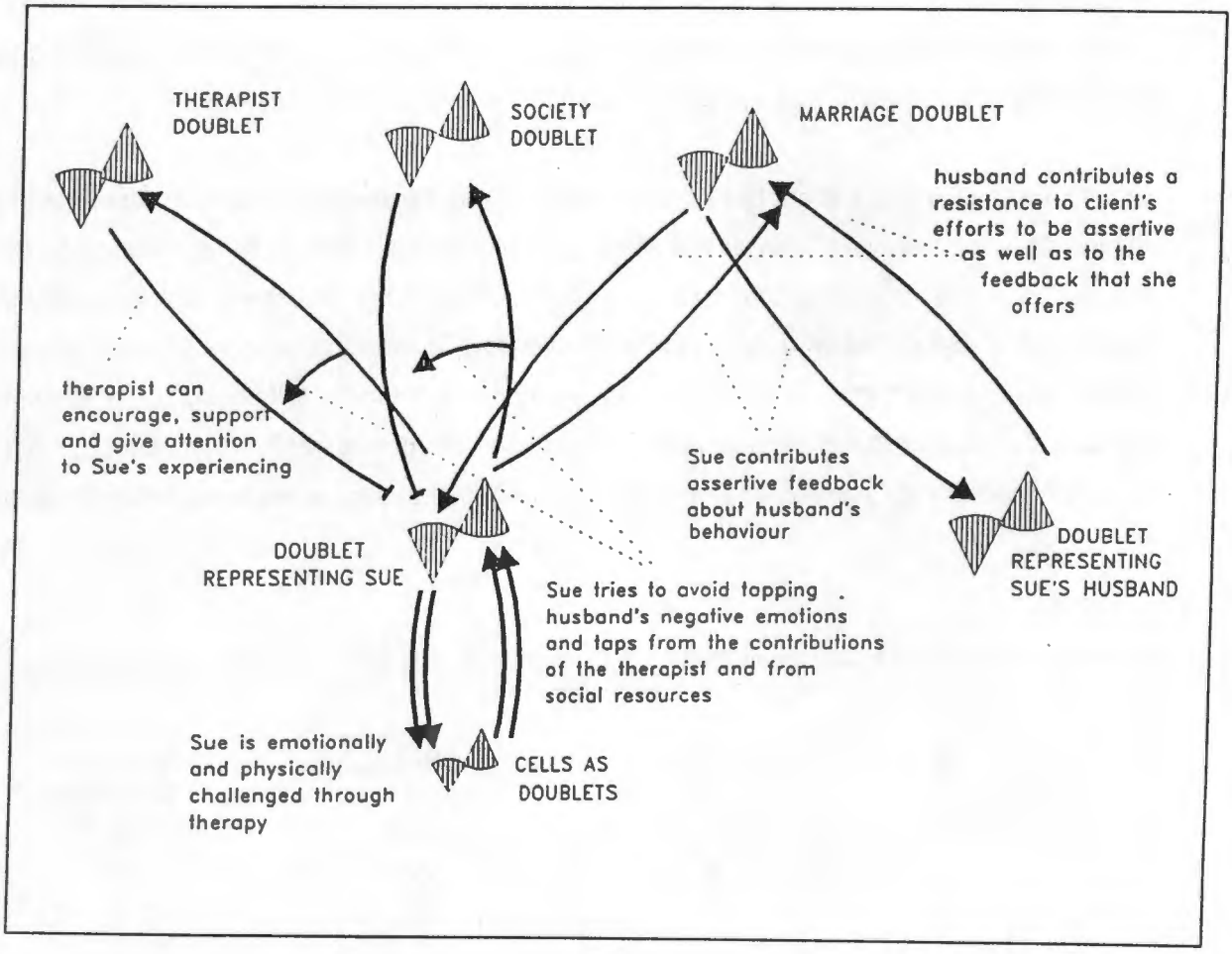
her angry, it also highlighted how frightened she was to confront her husband in any way. While she was excited about the prospect of exploring and developing her own meaning system, she was very nervous of the inevitable conflict that this would generate in her marriage.

COMMENT BY THERAPIST: In discussing this map, the client was able to connect with her own fragile sense-of-self as well as acknowledge some of her frustrations in her marriage. It provided an opportunity to distinguish the development of healthy processes of autonomy and integration as urgent treatment goals. The exploration of the client's meaning system was guided by Victor Frankl's principles of logotherapy (Frankl, 1969a, 1969b). This was done in the context that processes of meaning making that attended to her autonomy were related as a union of opposites with processes of integration. This means that if processes of autonomy and integration were not attended to in the context of their interconnectedness, the development of latter would be unavoidably undermined.

CLIENT'S PERSPECTIVE: The client's experience of the returning to the marital home *teleos map was, that it confirmed very clearly to her that she could not accept her own abdication of power to her husband. She said, that this map showed clearly to her that by* backing down *from taking a stand she was* selling her soul. *She also noticed that while she wanted happiness, all she was getting was a false reprieve. She could see that she was in a* no win situation *where whatever she did was wrong, i.e. if she stayed with her brother she was a bad wife and if she returned she was an unhappy wife. She felt that simply by being* in therapy *was a strong move to her challenging these patterns.*

COMMENT BY THERAPIST: It appeared that the client's strong reaction to this map was influenced by the previous teleos maps. She noticed that there was a discrepancy between her marriage teleon (teleos of happiness) and the emergent teleos of the whole spiral of events (teleos of conservation of the marriage). She also seemed to be able to distinguish a critical paradox according to which she was locked into a double bind situation, as long as she avoided confronting the marriage. It was observed that therapy and the relationship that Sue established with the therapist, challenged many of the paradoxical patterns of interaction that she was engaged in. This systemic influence of the therapy processes as they *ripple* through the systems of relationships in which the client is engaged, is illustrated in Figure 32.

Figure 32: Figure illustrating the therapist interacting with Sue in the larger context of Sue's situation (see text).



In terms of the teleos mapping, it appeared that the client was beginning to appreciate the relationship between teleos, levels of teleos, patterns of interactions and the flow of telentropy. The maps appeared to help her to visually organize and connect patterns of interaction.

8.4.5 Telentropy tracing maps

The telentropy tracing method was implemented to explore the relationships between telentropy in the web of interacting teleons. Changes in telentropy, representing **news of a difference,** were explored in terms of the patterns of events that had been distinguished. High telentropy in a teleon was diagrammatically represented with a large dark star, with low telentropy indicated as a small light star.

Based on the subjective meanings associated with interactions as punctuated by the client, the following teleons were distinguished:

* the client's emotions teleon (teleos emotional contentment),
* the bundle of teleons (teleos of harmony, security, sexual satisfaction, companionship, emotional

support, etc.) constituting the marriage doublet,

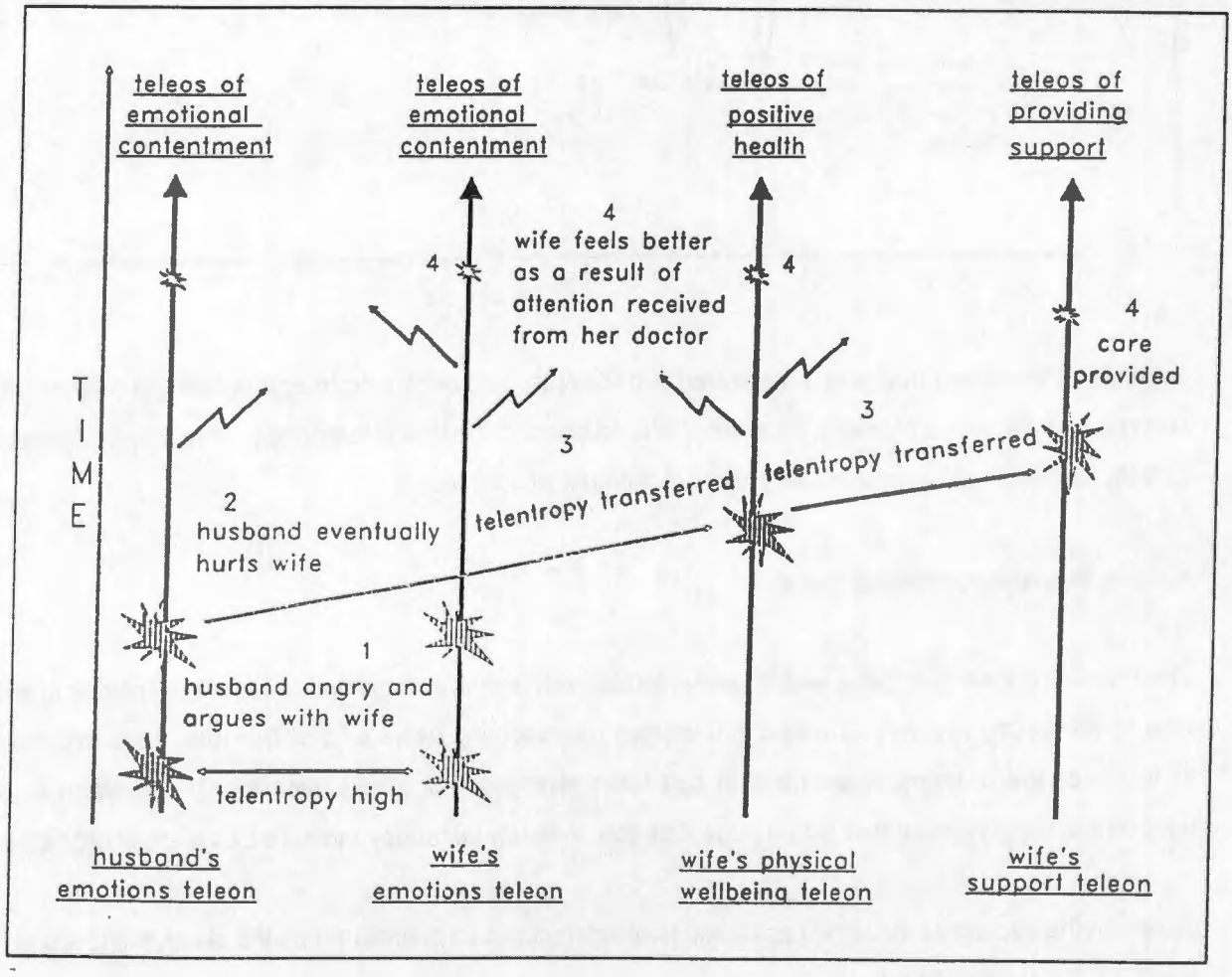
* the client's support teleon (teleos emotional support),

* social doublet with associated teleons (teleos of approval, support, etc.),

* the husband's emotions teleon (teleos emotional contentment). (This teleos was punctuated by the wife after questioning her husband and based on her perception of his answers).

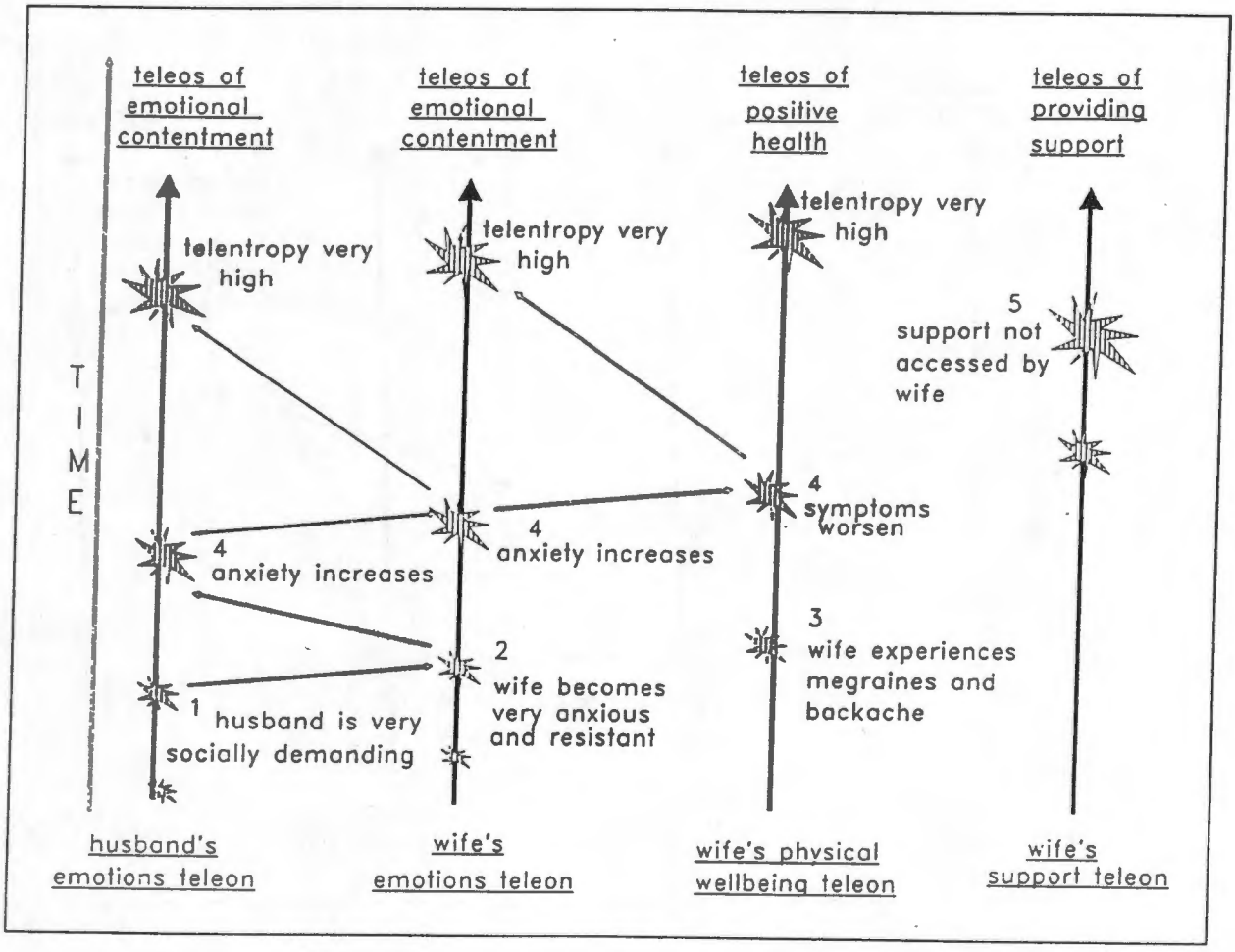
In the construction of the telentropy tracing map of interaction in the context of the **abuse event** (see Figure 33), what was significant was that telentropy originated in the husband's teleon and was quickly transferred to Sue. Sue responded by receiving the trauma with little resistance, which resulted in her emotions and physical teleons having significant telentropy. Thereafter, Sue received support from her doctor, which was effective in helping Sue to experience a reduction of telentropy. Unfortunately, because the support that Sue received from her doctor was directed at her symptom and not her system, it inadvertently contributed to the ongoing pattern of the abuse event by absorbing telentropy.

Figure 33: Telentropy tracing map illustrating teleons interacting in the context of the **abuse event.**



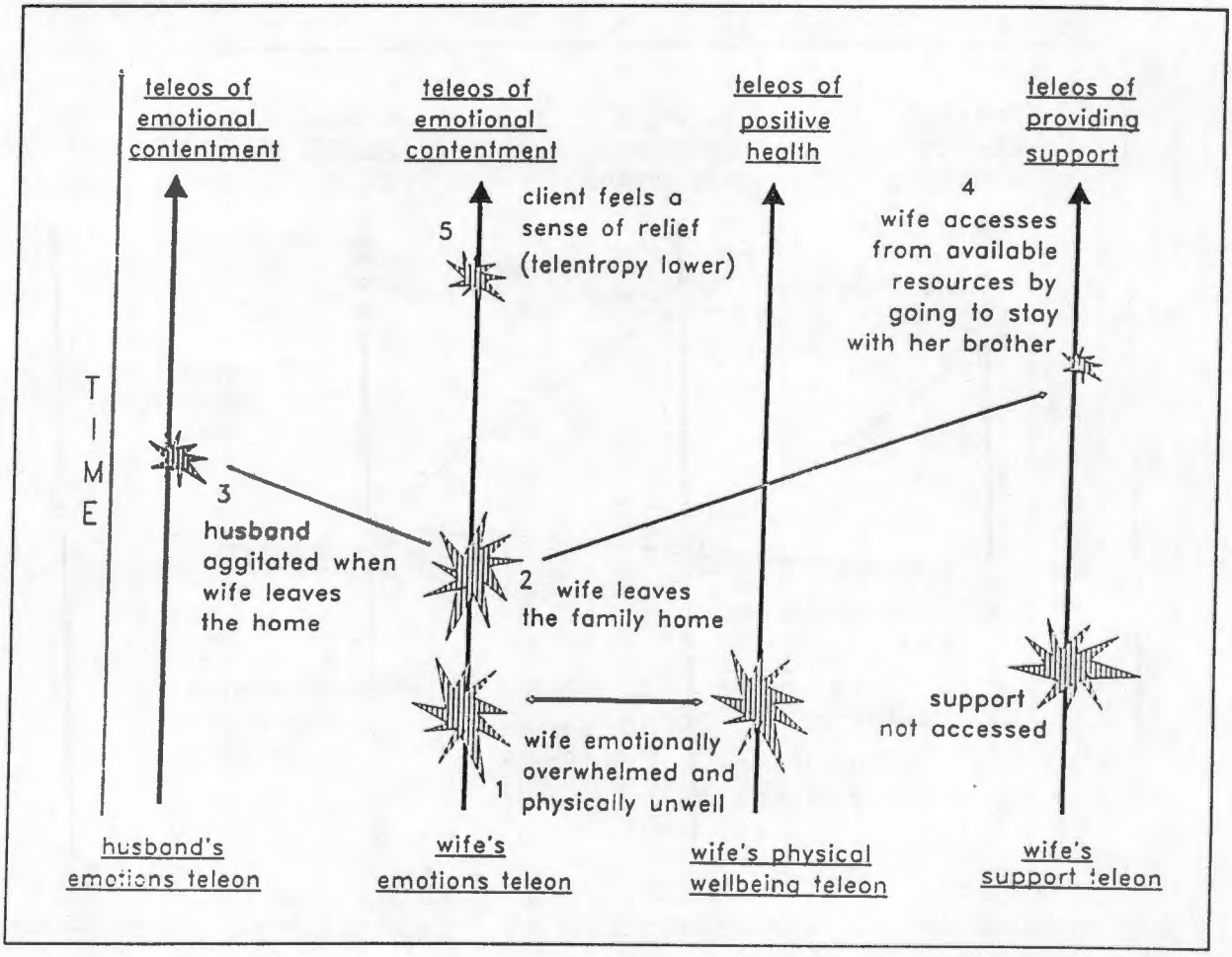
The telentropy tracing map of the **festive season event** (see Figure 34) was particularly illuminating in that it illustrated how, when Sue could not accept behaviour which would effectively transfer telentropy from her husband to herself, her husband retained telentropy in his emotions teleon. That is, when her husband's social demands increased and her physical symptoms became so severe that she could not meet them, telentropy did not only escalate in her emotions and physical teleons, but also in her husband's emotions teleon.

Figure 34: Telentropy tracing map illustrating teleons interacting in the context of the **festive season event**.



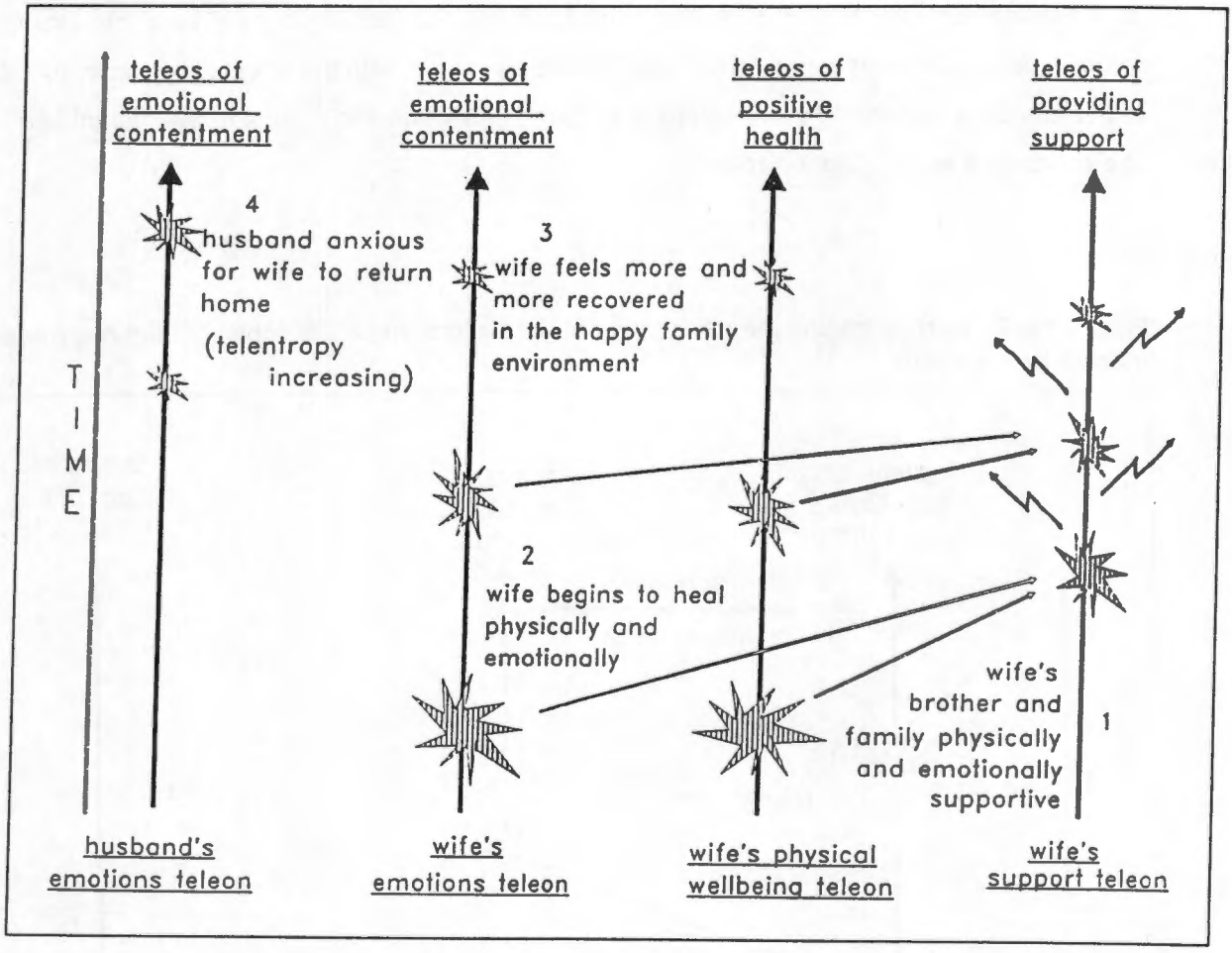
In constructing the telentropy tracing map of teleons interacting as the **leaving the marital home event** (see Figure 35), it was observed that the escalation of telentropy in the marriage doublet was relieved by Sue leaving the marriage home. The passive role that Sue's husband played in the face of conflict in the marriage relationship, was also illuminated by the diagram.

Figure 35: Telentropy tracing map illustrating teleons interacting in the context of the **leaving marital home event.**



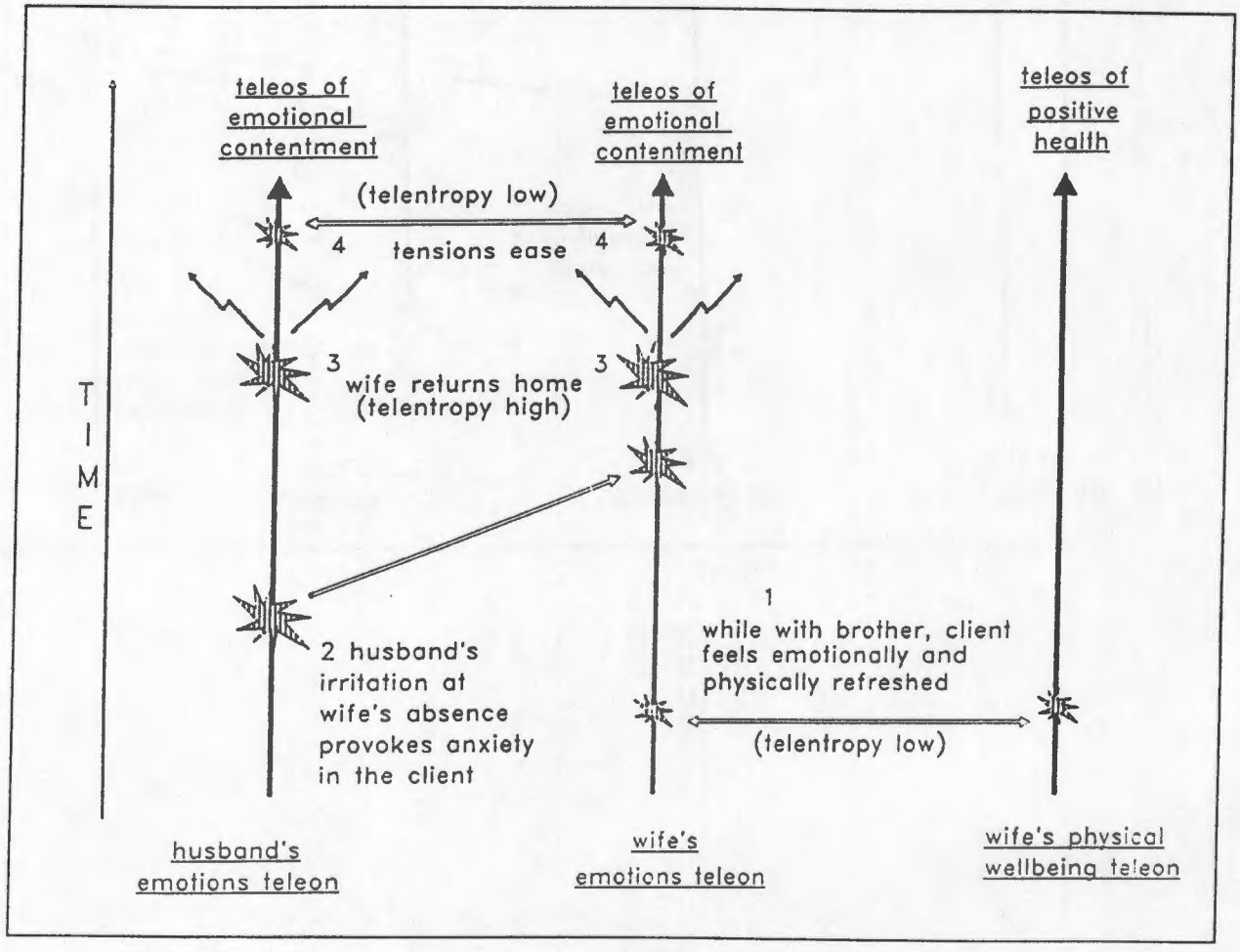
The telentropy tracing map illustrating teleons interacting in the context of the **being with brother's family event,** illustrated how emotional and practical support in the form of caring and attention from her brother and his family, could contribute to the lowering of telentropy in her emotional teleon. It appeared that interaction with her husband facilitated his transfer of telentropy to her through his communication of his irritation with her absence from the marriage home. It was also interesting for Sue to observe that even when her husband was kind to her, she did not experience this positively, but rather felt guilty at leaving the marriage home (see Figure 36).

Figure 36: Telentropy tracing map illustrating teleons interacting in the context of the being with brother's family.



In terms of the telentropy tracing map illustrating teleons interacting in the context of the **returning to the marital home event** (see Figure 37), it appeared that Sue experienced her stay with her brother as a tension reducing *time out*. As her husband's irritation increased, so did his requests for her to return home. Sue's response to this was to feel pressured, with the effect that telentropy increased in her emotions teleon. This telentropy is reduced only when she returns to the marital home where she receives a reassuring welcome.

Figure 37: Telentropy tracing map illustrating teleons interacting in the context of the **returning to the marital home event.**



8.4.6 **Interaction of the teleos mapping process as part of the therapy process.** (* *Client's comments in italics)*

The client participated fully with the therapist in describing the flow of telentropy and in constructing the conceptual maps (telentropy tracing maps). The client did not comment map by map (as in the teleos mapping), but made comments which were general, showing that her insights emerged from collective appreciation of various maps. In other instances, insight was very specific and detailed. While this is not specifically commented on, almost all of the insights or observations made by the client represent double or multiple descriptions (White, 1986c).

CLIENT'S PERSPECTIVE: Firstly, the client commented that she could see that her experiences of her marriage relationship were not chaotic and disjointed events. She felt that her marriage relationship comprised of themes or patterns which were reflected in aspects of her own personality, her social relationships, her relationship with her husband and even in her work life. When asked to expand on the themes, she said that all she felt was that it was something to do with the authority of her husband and her feelings of helplessness as a woman.

COMMENT BY THERAPIST: This demonstrates an appreciation by the client for the dynamic but coherent systemic organization of interactions at different levels of interaction. This also indicates an appreciation for the weaving of teleos through orders of recursion (levels in space) and action patterns (events in time).

CLIENT'S PERSPECTIVE: The client was beginning to appreciate how, through interacting with her, her husband's bad moods became her problems in the form of emotional and/or physical pain.

COMMENT BY THERAPIST: This suggests an appreciation of the interaction between teleons and co-action within teleons, and of the transfer of telentropy in the emergence of the dynamic organization of processes.

CLIENT'S PERSPECTIVE: An additional punctuation that the client made was of the relationship between her emotional tension and her poor physical health. She felt that the one exacerbated the other and vis-a-versa.

COMMENT BY THERAPIST: This also indicates an appreciation of the interaction between teleons, and of the transfer of telentropy in the emergence of organization.

CLIENT'S PERSPECTIVE: She was also beginning to appreciate how disconnected her husband was from any feelings of being accountable for his negative behaviour towards her.

COMMENT BY THERAPIST: This comment indicates the client's understanding of the concept of the transfer of telentropy. It also suggests that she was recognizing her own personal experiences of the marriage teleon as an order of recursion that was distinct from her husband's personal experiences of that teleon. This distinction is an example of a **unique outcome** in that previously, the client was unable to recognize either her own, or her husband's distinctive interaction in the *abuse story*.

CLIENT'S PERSPECTIVE: She felt that through the maps, she could understand that she and her husband did not really have a shared ideal of what marriage should be like. It appeared to her, that the purpose of some interactions in the marriage was to provide her husband with an outlet for his frustrations, while other interactions seemed to be directed to preserving the marriage, regardless of its poor state.

COMMENT BY THERAPIST: This profound insight demonstrated how, effective self-governance is not possible in a teleon without a clear goal-orientation (eg. of the marriage teleon). It also demonstrates how a teleonic goal can emerge through interaction and persist as an attractor at the level of the

relationship (i.e. goal of preservation of the marriage), and the level of her emotional organization (the goal of avoidance of conflict). The idea held by Sue that her husband needed an *outlet* for his frustrations provided an opportunity to follow a recommendation by White (1986d) that an *ejaculatory theory* of violence be challenged.

CLIENT'S PERSPECTIVE: While it was her desire to protest her husband's behaviour, the client recognized that her inability to challenge him contributed to the continuation of the status quo.
COMMENT BY THERAPIST: This was another example of a **unique outcome** in that the client was beginning to see that she played any interactive role in the pattern of the abusive behaviour. This also indicated that the client was beginning to entertain and accept the notion of having her own autonomy with a teleos that was in conflict with the teleos of her husband's sense-of-self.

CLIENT'S PERSPECTIVE: The client said that she realised that the medication that she had been taking helped her to cope and kept her from falling apart. *She realized that this type of* coping also contributed to the status quo.
COMMENT BY THERAPIST: This comment indicates an appreciation of orders of recursion or levels where interaction has a particular meaning at one level (medication attends to effect of abuse), with a different or little meaning at another level (medication keeps client coping and *available* for abuse).

CLIENT'S PERSPECTIVE: A further insight was arrived at when the client reached out for support from her brother's family. This really helped her to feel better about herself and she recognized that she experienced it as a positive action to reach out to someone else.
COMMENT BY THERAPIST: This refers to the potential for the lowering of telentropy in teleons through interacting with other teleons (specially those with a teleos of absorbing telentropy).

CLIENT'S PERSPECTIVE: She also realised that not only was the time with her brother an escape, but by facilitating her improved emotional and health, it enabled her to return home.
COMMENT BY THERAPIST: This comment again refers to an appreciation of orders of recursion or levels, where interaction has a particular meaning at one level (care facilitates health), with a different or little meaning at another level (care enables health which facilitates client returning to marital home).

CLIENT'S PERSPECTIVE: She commented that from reviewing the telentropy mapping of the festive season event, *she could understand that neither she nor her husband* caused *her to get sick. Her inability to cope was the result of the whole complex situation in which it occurred.*
COMMENT BY THERAPIST: This suggests an appreciation for the interconnection of outer and inner organizational context of behaviour as well as appreciation for systemic organization rather than linear causality.

CLIENT'S PERSPECTIVE: The client remarked, that she was appalled by the fact that almost all the

punctuated interactions with her husband, whether her husband was being aggressive or not, seemed to be associated with a rise in tension on her part.
COMMENT BY THERAPIST: This indicates an awareness of the way in which, not only feedback but also feedforward processes, interact and inform the client's emotions.

CLIENT'S PERSPECTIVE: The client said, that for the first time she appreciated that one of the reasons why she never left the home after being abused, was because there was an anticipation of a period of relief. In contrast, there was no anticipation of relief from the escalation of tension of the festive season events, *with the only apparent way out being to* escape.
COMMENT BY THERAPIST: This indicates an appreciation of the role of feedback and feedforward processes as a *cybernetic system* (White, 1986c). Such a cybernetic system gathers around teleos, which in this example relates to the teleos of the emotions teleon of the client.

CLIENT'S PERSPECTIVE: A final comment that was foregrounded by the client was that she realised that she had no sense of serving desirable goals in her marriage. She remarked that her behaviour seemed to have been a defensive response to her husbands needs or demands.
COMMENT BY THERAPIST: This comment shows an appreciation for the distinction between her own processes of autonomy and integration and those of her husband. It also shows a developing awareness of the victimological ethos or construction of the violence (White, 1986d) that governed much of her behaviour in the marriage relationship, as well as the patriarchal ethos that governed much of her husband's behaviour.

8.5 Implications for the therapy process

> "The adaptive spiral is the reverse of the vicious cycle"
> (Yalom, 1975, p. 101)

Systemic tasks were planned to further develop the epistemological tools which were woven through the fabric of therapy, i.e. narrative thinking, drawing distinctions, indicating punctuations, marking orders of recursion, distinguishing logical types and creating double descriptions. Most of these tasks were explored and planned in the therapy situation and implemented by the client as part of *homework*. In support of this, the client kept a personal journal as part of her therapy process. Where tasks interacted with her own inner systemic organization, they were included into the formal therapy process.

Despite the desire to affirm her sense-of-self, the client felt that she wanted to give the marriage another chance. During this period of the client trying to reclaim her self (confidence) her husband remained unwilling to enter into therapy and continued to threaten her physically and emotionally. She decided to try to exercise some restructuring tasks in order to see whether she and her husband could change the way in which they related to one another. One of the ways in which this was initiated

was to teach the client a transactional analysis style of communication (Harris, 1969; Harris & Harris, 1985). This was done with emphasis on her asserting her own feelings and challenging some of the communication patterns that existed. Another way was by means of the client working on her own victimological behaviour which involved calling the police during domestic violence, stating clearly to her husband how she viewed his behaviour and approaching a support agency during violent episodes.

To support her efforts on an essentially personal developmental level, the client accepted that her own autonomy needed urgent attention. This was attended to through the *construction* of a being-an-autonomous-person teleon (teleos of a positive and developing sense-of-self). This teleon was constructed with the teleos grounded in the client's personal ethos, which was explored, as well as in a systems model of biopsychosocial health.

In terms of tasks which utilized symptoms, the client decided to start to share the *secrets* of the abuse with friends and family and to allow herself to enjoy their support. An additional symptom that was targeted was the abuse itself, which was challenged by the client leaving the marital home on anticipation of the abuse using her anticipation as a cue to remove herself from being available to the abuse.

One of the alternative methods that was planned was to try to reduce the medication that the client was taking with the clear statement to the husband that she was getting *stronger*. The intention was to shift the function that the status of poor health played in confirming the client's helplessness. This method was employed with the support of the general practitioner, who had to be persuaded of the systemic potential of reducing medication, despite the stress that this could cause the patient. The teleonic maps (which the client, with the support of the therapist, explained to the doctor) proved very useful as a conceptual tool which the doctor, therapist and the client could all relate to, from their own perspectives. Reducing medication was not a strategy of bravado or irresponsibility, it was one of the ways in which the client chose to shift her pattern of relating to her husband. This was the clients decision, which the therapist supported. While dealing with the clients depression was an important factor, there was a reluctance on the part of the client to have the marital problem redefined as secondary to issues such as depression or her poor physical state. This highlights an advantage of the 3 teleonics maps in that they facilitate a shifting of perspective which help to view problems or patterns from a multiple perspective thereby resisting the seeking of a *simple cause* of a problem.

The issue of the management of the medication is one which highlights the limitations of working within a differentiated and specialized health care system. While every effort is made to interact and co-operate with other health care professionals, "the concept of a multi-professional team, which is steadily gaining ground, institutionalizes a multi-track approach" (O'Dowd, 1990, p. 409). This points to the practical reality that while the use of systemic intervention in the treatment of psychopathology will continue, but it will tend to do so in the context of health care systems that are developed according

to non-systemic paradigms.

The double bind pattern of interaction that was focused on, was that of the situation where the client seemed to experience a period of warmth and affection in her marriage only when an abuse event had preceded. *Good* periods seemed to fade until another abuse event followed and so the vicious cycle went on. The client decided that she would try to be assertive during *good* periods which really would challenge the *rules* of the game and would be a counterparadox.

Metaphorical tasks were used throughout the therapy process to encourage the client to think systemically and to look for multiple descriptions and meanings in the exploration of her own organization as a dynamic system. Because metaphorical tasks provide both cognitive and affective meaning-making opportunities, they enabled the client to not only heuristically appreciate her situation, but also to explore her own ethos as well as a wider range of practical alternatives.

8.6 Conclusions to the case of Sue

The patterns of interactions constituting the client's marriage relationship with her husband turned out to be very rigid and redundant in their organization. The client's husband refused to participate in the therapy process, showed no remorse for his abusive behaviour and fiercely resisted almost all attempts to bifurcate or disturb the organization of the marriage system. In his resistance to her efforts, his violent behaviour became more frequent and severe with the client's welfare being seriously endangered.

Despite the therapist urging the client to take actions to ensure her safety, it was only 10 weeks after the client first tried to implement restructuring tasks that she finally left the marital home. One month later she instituted divorce proceedings, after which she seemed less fearful of *his power over her*. The client's decision to institute divorce proceedings was not taken lightly and was based on how she understood the systemic organization of her problems. After initiating divorce proceedings, the client intentionally started working towards her independence by consolidating changes and bravely taking on new challenges. The *end* to this story was punctuated by the client's divorce being finalized (11 months after therapy was first initiated) and her therapy process being temporarily interrupted by an overseas holiday. While divorce is in no way regarded as an ideal outcome in this situation, it must be understood in the systemic context of the abusive behaviour. Also, a variety of change within the marriage structure was attempted but these new processes were not sustainable in the face of non-cooperation. The client chose this very dramatic option autonomously, albeit with the support of the therapist who promoted the notion of striving for systemic health. In terms of a model of systemic health, the relationship between client and therapist should always be one where the client's autonomy is be strongly supported.

While not within the scope of this case study, it became obvious to the therapist that the client developed the ability to think and perceive systemically. She also showed that she had developed the language and symbolism necessary to experience an "internal dialogue of higher order abstracting" (Keeney, 1983, p. 45). The client stated, that what she had learned about *how to understand* situations was something which helped her in her work situation, as well as in her personal and social relationships. The client experienced this as a great advantage over her previous style of understanding herself and her life experiences.

In using the spiral, teleos and telentropy maps, perspectives of relationships over time and space are considered in varying detail. While there is focusing, zooming in and scrutiny, this is not done by reducing wholes to their parts in the traditional reductionistic mode. *Pictures* of reality can be *frozen* rather than reduced, with this *zooming in* frequently illuminating different levels of relationships. Jordaan and Jordaan (1984, p. 16), suggest that to further increase their value, "the pictures should be thawed every so often to create more comprehensive categories as our knowledge increases and our insights deepen". This *thawing* of the picture is a reminder that even when it is useful to look at a *frozen picture of reality* this is an *artificial* conceptualization for the benefit of our understanding.

Since parts systemically reflect the whole, the way in which these processes interacted with the client's experience of therapy, as well as the way in which teleonics as a process-based systems method contributed to this process is demonstrated through the examples that have been illustrated. In terms of the systemic principles of equifinality and multifinality (Gharajedaghi, 1985; Watzlawick et al, 1967), it is noted that the emergent interactions and insights from the therapy process could have emerged through other methods, or that the methods used could have facilitated alternative interactions.

The therapist/researcher acknowledges that the construction of conceptual maps is subjective. While there are inherent omissions in any subjective analysis of experience, one of the questions which was posed throughout the therapy process was of *what was being left out*? However, with reference to what was foregrounded and included, the case illustration of Sue provides a useful description of the practical application of the three teleonics maps.

8.7 Additional examples of the practical application of the teleonics maps

Additional case studies are presented in **circumscribed form** to augment the elaborated case study of *Sue*. The circumscribed case studies were selected to "complement the first study by focussing on areas not covered" (Robson, 1993, p. 161). The diagrams of teleonics maps are not included in the presentation of the circumscribed cases as the purpose of these case studies is to explain **how** the teleonics maps interact in a variety of psychotherapy processes. This circumscribed presentation of the additional case illustrations follows that of the double description as used by Carlson-Sabelli and Sabelli (1984), where case studies are contextualized and discussion points directly to those aspects

of theory (or method in the context of this dissertation), that are being illuminated. Of the four examples that are presented to augment the case of *Sue*, the first three are derived from individual psychotherapy, and the fourth refers to a two-session health enhancement workshop. The individual psychotherapy cases include a single-session intervention, as well as on-going therapy.

Example 1 (The case of Paul):

The rationale for selecting this example is that it refers to a man, thus complementing the case of Sue who was a woman. This example provides an opportunity to illuminate how the teleonics maps can be used where there is a strong pattern of disconnecting and not relating, and where the therapy process requires engagement, relating and collaboration with the therapist. The collaborative use of the maps encourages such a client to be actively involved in understanding and making decisions in connection with changing unhealthy systemic organization.

On entering the therapy process Paul, a 35 year old married man with a three year old daughter, was encouraged to tell the story of how he came to be entering therapy. The presenting problem was that he exhibited a pattern of withdrawal and not relating to problems in his life. While his difficulty with relating occurred in a general sense, it was a particularly serious problem in the context of his relationship with his wife and his child. The catalyst to seeking therapy was that he was generally overwhelmed by problems and frustrations in his home life. Together with Paul, the therapist constructed two spiral maps which reflected sequences of events that constituted frequently repeating themes and patterns in his story. The first map related to sequences of events which centred around a teleos of his avoiding conflict of any kind. This sequence of events was comprised of events where he was confronted with conflict, where he tended to perceive himself as threatened or attacked, where he withdrew, and avoided any efforts on the part of others to deal with the conflict, and where he behaved in such a way that any future conflict was avoided. This pattern was reflected in the story of his early childhood, through his adolescent years, to his current relationship with his wife and his child.

The second map related to the pattern of events that constituted the *tendency to withdraw,* as punctuated in the first map, and centred around a teleos of disconnecting with his discomfort. This sequence of events referred to a pattern within a larger pattern, i.e. to two different levels of organization. This second sequence of events was comprised of the client persistently ignoring his emotions, reframing the conflict as something unimportant, shifting his focus onto some unrelated practical issue (frequently onto his work as an artist), and ultimately adopting a pleasant demeanour in order to discourage others from reconnecting around the conflict.

Through constructing and discussing the two maps with the therapist, the client came to appreciate that his difficulty in acknowledging and paying attention to his own emotions was directly related to how he effectively disconnected, firstly from the issues to which conflict was connected, and secondly from those associated with the conflict.

To further explore how the pattern of relating, as punctuated in the spiral mapping interacted in the context of family relationships, teleos maps of the punctuated patterns of events were undertaken. In the construction of the teleos maps, how the client contributed to and tapped from interactions with his wife and child, was emphasised. The teleos maps **illuminated in a diagrammatic form** how the way in which the client related was important in the ongoing systemic organization of the relationships.

The process of constructing and discussing the maps encouraged the client to interact and engage with the therapist. In addition, the maps informed the therapy process by emphasising the pattern and therefore the redundancy in systemic organization. This pointed to how, by countering disconnection and trying to relate to problems and to people, Paul could attempt to bifurcate the unsatisfactory systemic organization of his pattern of not relating. It further illuminated that the client needed to develop a sense-of-self where he could become more conscious and tolerant of his own emotions. This was imperative if problems were to be dealt with in a connected rather than a disconnected way, and became one of the central goals of therapy.

The maps also pointed to some of the difficulties that the client was likely to experience in pursuing the therapy goals. Strategies that were comfortable for the client, but encouraged challenging experiences, were sought. An example of this was playing with play dough with his child which afforded him the opportunity to practice relating with her in a way that was not entirely uncomfortable to him. He was also encouraged to express his feelings in his art, and to show and explain these works to the therapist, family and to close friends. In order to support the therapy process and to encourage self-talk that incorporated honest encounters with his emotions, the client started keeping a *feelings journal* and corresponded with his sister, who lived overseas, about the changes that he was trying to make.

Effectively, the spiral and the teleos maps facilitated the drawing of connections between how the client's pattern of **not relating** interacted with problems in relationships with his family. The apparent connections provided some explanation of how the client's behaviour contributed to frustrations in relationships with his wife and child, and pointed to how systemic organization could be bifurcated and encouraged to healthier interactions. The diagrammatic representations were particularly useful in that they promoted involvement and interaction with the therapist, and provided insights which could be appreciated by a client who could relate well to the visual, rather than the more commonly used verbal medium.

Example 2 (The case of Melanie):

The rationale for selecting this example is that it refers to a single session problem-oriented process. This example provides an opportunity to describe how the teleonics maps can be used in a situation other than long term therapy, and how they can facilitate the systemic exploration of a complex story over a short period of time.

Melanie, a 30 year old woman who was married and the mother of a five year old daughter and a nine month old son consulted a psychologist to discuss her daughter's resistance over the previous month, to going to school. Owing to Melanie's circumstances, the therapy contract was for a single session only.

The story that Melanie told was that her daughter, Mary, who had happily attended pre-school for a year, had begun to cry and fret on arriving at school. On being questioned about this, she explained that she liked her school, but preferred to go home. The client said that she felt pressured by the teacher to make a firm stand by insisting that Mary stay at school. Furthermore it was preferable to the client for Mary be at school in the mornings, since these were valuable times when she was alone with the younger child, and could get her chores done. She explained that the children tended to squabble in the afternoons with the nine month old interfering with the older sister, pulling her hair and breaking up her games, while the older sister was intolerant and sometimes mean to her brother. The client said that she needed to understand what was making Mary so upset, because attending school was important, and she was reluctant to let her miss school without good reason.

Together with the client, the therapist constructed a teleos map to explore how Mary's recent response to going to school was contextualized in relation to other interactions in her life. From this map, some relationships were identified as possibly having some connection to the child's behaviour. These included the relationship of the teacher to the problem behaviour, the relationship of the younger sibling to Mary, the relationship of Mary to her *stressed* mother, and to her hardworking but almost absent father, and the issue of discipline in the home.

A spiral map was constructed with Melanie to explore the pattern of the school-resistant behaviour and how it manifested each day. From this, is was apparent that the journey to school was uneventful with the greeting by the teacher being kind and welcoming. When Melanie tried to leave, then Mary started to object and become upset. The teacher was friendly, but very firm and not very sympathetic to the behaviour which occurred while she was busy greeting other children as they arrived. From the client's perspective, it was difficult to learn anything from this pattern other than perhaps that her tension and that the attitude of the teacher, somehow related to Mary's reaction.

Both spiral and a telentropy tracing maps were constructed to trace the pattern and flow of conflict between the siblings. From the spiral map, which could be traced back to the time when the baby started to crawl, it appeared that the pattern of conflict originally began with the baby causing some aggravation to the older child who then retaliated. More recently, the pattern changed to one where the older child avoided the baby, pushing or shoving him when he came near. Invariably the older child was disciplined for her unkind behaviour with the method of *time out*, but this did not seem to improve the sibling conflict. The client said that while the younger child was frequently the initiator of conflict, she felt that he was too little to be disciplined since he could not understand that he irritated his sister.

From the telentropy tracing map it appeared that Mary was battling with the intrusion of a little sibling, especially in the light that the sibling appear to be uncensured when he interfered with her. It was considered possible that her behaviour represented a protest whereby she was demanding not only her mother's attention, but to have her frustrations noticed. It was also considered possible that she resented losing her mother to her brother in the mornings. This was appreciated in the context of the afternoon environment where she might have been frustrated in relation to her brother, who was effectively given sanction to interfere with her, while she was punished for her retaliations. Strategies to encourage her to feel more empowered in relation to her brother through insisting that he indicate some remorse to her for interfering with her, for reprimanding him and even timing out with him (ways in which this can be done with such a young child were discussed), for encouraging Mary to tell her brother how she felt when he aggravated her rather than physically retaliating, and to guide and support her in dealing with her brother, were discussed. Working from the systemic premise that the child's behaviour was a metaphor for how she was experiencing the systemic organization of her life, the mother was encouraged to approach the issue in this way, and where possible, to explore what meaning the behaviour could be pointing to.

The maps also illuminated that it might be useful for Melanie to discuss with the teacher when might be a more useful time to bring Mary to school, so that the teacher could provide more warmth, attention and encouragement for her to stay at school. While this was unlikely to change the *problem behaviour*, it was hoped that it might, at the very least, make it less traumatic for the mother and the child to separate. A further suggestion was to organize for the father to take the child to school to observe if and how this might affect the pattern of Mary's behaviour.

The use of the teleonics maps facilitated the exploration and visual presentation of a large quantity of complex information in a very short space of time. Furthermore, it was possible to discern patterns of interaction which pointed to areas which needed further exploration, or some testing for redundancy of organization. Although a considerable amount of information was processed, much of it was ordered through the use of the maps. While the client left with a *check list* of things to do and explore, she also left with copies of the maps which enabled her to locate her *check list* in a larger context of understanding.

A limitation of using the teleonics methods in this example, was that the therapist did not have an opportunity to review how the therapy process interacted with the organization of the problem. In addition there was not sufficient time to explore aspects of the story that were backgrounded or to explore connections that were not obviously apparent.

Example 3 (The case of Alison):

The rationale for selecting this example is that it refers to a situation where the client was involved in problems clearly related to circumstances beyond her immediate control, and related to the context of the supra system. Also it illuminates work with the individual in the family system context which has been criticised as a neglected area of systems therapy (Katakis, 1989a; L'abate, 1976). This example provides an opportunity to describe how the teleonic maps can be used to indicate where systemic involvement contributed to a larger systemic organization, and how the maps can point to where it can be useful to involve other persons in the therapy process.

Alison, a 30 year old married woman with 3 children, entered therapy because she felt unable to handle conflict between her husband and herself. She was a full time housewife and her husband worked in a family business that was owned jointly by her father and three brothers.

A spiral map was constructed around the story of how the conflict was enacted in the marital relationship. From this map it appeared that on most occasions the conflict between her husband and herself began when she tried to discuss complaints that her father and brothers had made to her about his performance at work. Because the criticisms were not those of the client, but that of her father and brothers, a further spiral map was constructed to map the pattern of her interaction with them. This map pointed to a pattern of the father and brothers communicating with Alison in such a way that they expected her to persuade her husband to improve his performance.

From the spiral maps it appeared that the interaction between the two maps centred around her paying attention to the complaints by her father and brothers about her husband, and how this interacted in her marriage. A telentropy tracing map was then constructed to explore how the marriage teleon, the family business teleon and the extended family teleon interacted. From the telentropy tracing map it could be diagrammatically represented to the client how telentropy was effectively, albeit temporarily, transferred from the family business to her marriage relationship. By constructing a teleos map of these events it was also possible to diagrammatically represent something of her contribution to the transfer of telentropy, i.e. she played a critical role in *tapping* from what her brothers and father *contributed* in the interaction.

In terms of the telentropy tracing maps, the obligation to comply with the expectations of her father and brothers, and the lack of confidence in her husband, were illuminated as very anxiety producing for Alison, and critical to the transfer of telentropy. The client experienced that her father and brothers had an expectation that her primary loyalty should lie with the extended family. When she responded to this expectation, telentropy was transferred into the marriage relationship in that she was interacting around an issue which was essentially beyond her control, i.e. her husband's performance at work. In addition the role that she played in passing her family's complaints on to her husband, temporarily eased their frustration, but this was short lived as her communications to her husband tended to result

in marital conflict and not in her husband attending to his work performance. Essentially her extended family's frustrations and reluctance/inability to deal with the work problems in the work context, were being transferred into her marriage.

Through the construction of the maps, the client's attention was drawn to her role in maintaining two patterns of interaction where telentropy was transferred from one pattern (pattern of interaction with brothers and father), to another (relationship with husband). The process of constructing the teleonic maps facilitated insights which encouraged her to undertake a process of trying to resist interacting with her father and brothers around issues related to the family business, and especially issues related to her husbands performance. This in turn raised issues about their expectation of her being firstly loyal to the extended family and secondly to her nuclear family, which became an important therapy issue. It also raised the issue of how her husband and herself did not really regard themselves as independent, and how they did not generally support one another around problems. The client responded to this by inviting her husband into the therapy process to work on improving their communication and problem solving abilities.

While these two spiral patterns were related to the assessment phase of the therapy process, they were useful examples of how problems must be understood in the context of its larger connections, and that attempts to shift the systemic organization of *the interactions* requires changes that pay attention to the multiple connections/contexts of the problem.

Example 4 (The case of the health enhancement workshop):
The rationale for selecting this example is that it refers to a two-session health enhancement workshop. This example provides an opportunity to describe how the teleonics maps can be used in a group situation, as part of an educative process and in the context of a multidisciplinary health enhancement programme. While the workshop forms part of a multidisciplinary, three month health enhancement programme, its interventions are essentially focused around physical health, diet and exercise. While in the philosophy of the programme the psychosocial aspects of health are acknowledged as crucial, this is not well addressed in the programme. The only formal opportunity that participants have to review how their behaviour or feelings might relate to their efforts to improve their health, is a four hour process called the *patterning workshop*.

The patterning workshop is connected to the overall health enhancement programme is that groups of between six and eight participants, attend a two-session health enhancement workshop in the second week of the programme. The health enhancement program consists of physical exercises three times a week, fitness testing and dietary analysis and support throughout the programme. The purpose of the patterning workshop is to provide a perspective of life style as comprised of patterns of behaviour and interactions which occur at different relative levels of systemic organization, but which are all interconnected in a web of relationships. Participants are encouraged to use the insights that may

emerge from the workshop in a practical way, for example to understand what would be an enhancement of systemic health given their unique context, and to appreciate and be responsible for how they might optimally *tap* from the opportunities that are provided by the programme.

In the first session of the *patterning workshop,* participants are introduced to the concept of their life style being made up of patterns of behaviour, which occur in interaction with other patterns. From this session, participants are encouraged to identify where efforts to improve/change the organization of their life patterns might be optimally applied. The way in which this is done is that each participant is asked to consider what they are hoping to gain from the programme, and how this might be different from or challenge the status quo of their life styles. Then each person is given the opportunity to have their *story* mapped on a board, according to the spiral mapping method.

The group is encouraged to discuss the spiral map in such a way that the redundancy of organization and the way in which the pattern is connected to a larger context is especially noted. Furthermore, in the discussion, the concept of levels of organization and the meaning that might be expressed regarding the patterns of organization, is also emphasised. The group discussion not only enables the group to share ideas, but affords the facilitator the opportunity to repeatedly explain and clarify how the maps can be used. Where appropriate the teleos map may be applied to a particular situation to illustrate the relationship and interaction of processes between levels. In addition the telentropy tracing map may be applied to illustrate how the transfer of telentropy is interconnected with systemic organization, and how it may need to be addressed if systemic organization is to be bifurcated.

In the second session, which takes place two weeks later, participants are given the opportunity to discuss how they used the insights that they gained from the first session, especially in relation to the health enhancement programme itself. Discussion is held in the context of the frameworks provided by the maps which are further developed and expanded on as the change process is explored by the participants. The medical practitioners, exercise physiologists and dieticians who run the program either sit in on the sessions, or can access feedback via a brief report that is compiled by the workshop facilitator. When they are in attendance they are encouraged to contribute and comment wherever possible.

The use of the teleonics maps provides a useful tool for exploring how people can understand their life style as being systemically organized, and in this context try to improve their health. The teleonics maps encourage a redefinition of compliance where each participant distinguishes how the programme can relate to their particular aspirations, and what actions might be useful to support those aspirations. The maps also illustrate how complex patterns of interaction can be explored over a relatively short period of time, and when trying to effect change, how the complexity of the web of life, is constantly pointed to.

8.8 Conclusion

It has long been known that the way that problems are represented influences how they might be perceived and what solution strategies might seem appropriate. Bridger (1995, p. 427) points to this clearly in his comments that "the particular representation (of a problem) can influence the types of cognitive operations that are brought to bear on its solutions." It is suggested that the less abstract the form of the presentation of the problem the easier it is to solve (Wason & Johnson-Laird, 1972).

The teleonics maps that are described in this chapter are tools for a more concrete presentation in a more collaborative way than is usually found in psychological practice. The additional dimension added to the therapy process by the visual representation of the client's stories, points to the important contribution that the maps make to psychological practice. In view of the fact that in process-based systems thinking attempts are made to appreciate problems in the context of their complexity, the teleonics maps accommodate the visual representation of complex relationships and interactions. Using three maps which illuminate and emphasise different perspectives makes the important contribution of encouraging double and multiple descriptions of problems which is a systemically coherent approach.

CHAPTER NINE: CONCLUSION

9.1 Introduction

This chapter reviews the research process of the dissertation. The contributions and soundness of endeavour of the research process are summarised. Limitations and considerations following from the research are identified and some recommendations are made with respect to future research.

The initial chapters of this dissertation were concerned with the relationship between structure and process in the understanding of complex living systems. While a strong argument has been made for the foregrounding of process, this position is in no way antagonistic to structure (Poynton, 1987). Structure is respected as inextricably related with process in a union of opposites, while analysis can be useful when held in context.

Smuts suggested the position that is supported in this dissertation that holism is a mediating concept (Smuts, 1926). Once committed to this position, certain world views and models attract different metaphors (Linstone, 1994), and the metaphors that were attracted to the hypothesis of this thesis constitute this dissertation.

The birth, growth and development of this dissertation emerged through processes of literature review, conversations with theorists and authors, interaction with mentors, colleagues, fellow students, clients and many other interested persons. While the dissertation is a distinguishable document, it is a particular perspective of the ongoing relationship of the researcher with ideas, theories and life questions. It is hoped that in the true spirit of systems theory, the process of this dissertation will *ripple* through the thoughts and experiences of others, and in the process interact with *ripples* that emerge from experiencing of living systems.

The literature reviewed as part of this dissertation was chosen from the diffuse and prolific literature that represents both the fields of systems thinking and of psychology. The selection that finally emerged in the literature survey, illuminates the perspective, personal questions and interpretations of the researcher.

In keeping with the idea that one must pay greater attention to the means and less to the more easily measured ends (Hill, 1993; Rice & Greenberg, 1984), the researcher maintained a clear intention to entertain a non-quantitative and self-informing research process. The way in which this intention contributed to this dissertation was that, not only did the three maps emerge out of the *work* of the early chapters of this dissertation, but the models and illustrative case studies in turn illuminated the theoretical chapters. Thus, the research process (research teleon) was governed by the exploring of certain questions (teleos) while the *content* (MEI flow) was essentially an emergence which recursively

informed the research process itself.

9.2 Contributions of this research process

The implications of the 3 proposed teleonics maps for application in psychological research and practice is substantial. The epistemology in which the proposed maps are grounded represents a decisive and fundamental departure from the more rigid and dominant science-oriented approaches. While the most specific contribution of this dissertation is the heuristic and explanatory potential of the three teleonics maps, other contributions relate to the general field of systems thinking and to the postmodern movement in psychological research and practice.

The postmodern era represents a move from the dominance of inner focusing or outer focusing in psychology, to connectedness with outer relativity and practical reality in the world. To support and contribute to this movement, new studies and methods in the postmodern perspective are needed (Gergen, 1992). Not only is the process of this dissertation in the style of postmodern research, but the teleonics mapping is also a new method which can be located in new paradigm research.

As a new paradigm method, the exploration focuses on many issues that are not recognized as conceptually located within main stream psychology. Examples of such exploration includes, the connectedness of interactions experiences with the *archive* of a person's experience, culture and history, linguistic construction of reality, social construction of reality and the appreciation of *self* in the context of a network of relationships (Gergen, 1992). Notwithstanding this embracing of complexity, the contribution of this dissertation as a valid new paradigm study is supported by the internal coherence of general with specific concepts, as well as by the coherence of the relationship between theoretical and practical premises.

Of the many competing paradigms comprising the discipline of psychology, no single psychological approach can facilitate an understanding of human beings in their full complexity. While a strong argument for the merits of process-based systems thinking is presented in this dissertation, this must not add to ethnocentrism and intolerance that is so prevalent in psychology (Reason & Rowan, 1981a; Salthe, 1989). While being in unavoidable conflict with theories which are grounded in Newtonian and Cartesian principles, process-based systems thinking encourages an inclusivity of ideas.

By promoting generally valid principles which are applicable to biopsychosocial systems, genuinely interdisciplinary approaches to the human psychological experience can be encouraged (Mills, 1978; Strijbos, 1993). This is a contribution to the unification in psychology movement where, even if agreements are not possible, the drawing of clear epistemological distinctions or similarities, would invite clarity on crucial issues such as ideals of health, psychological metaphors and approaches to *healing*.

In line with the strong caution by Kvale (1992) that it is not the time for mere anti-establishment critiques, the application of teleonics as a method in psychology is not only presented from a critical position, but suggests theoretical and practical alternatives.

An important contribution of this dissertation relates to the development of general process-based systems premises to the micropractice of maps. This process emerged out of the interaction of theory and practice in this dissertation. Thus, practice was theoretically informed and theory was practically informed (Chaiklin, 1992), thereby illustrating the interrelationship of theory and practice as a union of opposites. The recursive interacting of the exploration of both theory and practice, facilitated the emergence of understanding and experience that enabled the maps (micropractice) to develop.

General systems practice (i.e. approaching problems from a general systemic perspective) has received substantial attention from a theoretical and practical perspective. In contrast, the body of research in the area of micropractice is not at all well developed (White 1986a, 1986b, 1986c, 1988). Because systems thinking, especially process-based system thinking is orientated to embracing complex webs of interaction, it is important that micropractices exist to assist practitioners (White, 1988). Troncale refers to this as bringing research in systems down to earth (Troncale, 1993), which is a contribution that the proposed teleonics maps make.

In terms of being *down to earth*, it was also demonstrated that teleonics could be presented to lay persons in a simple and understandable manner. Through interaction with the process-based premises *contained* in the essence of the maps, people can *tap* from the heuristic opportunities that are provided.

A further important contribution for the field of psychology is the emphasis on being able to focus on any level of systemic organization in an enquiry process. The concept of levels is well developed in general systems theory but not in psychology. In psychosocial disciplines where systems thinking has been applied, the focus has mainly been on the family or group as a system (L'abate, 1976). While this may well have provided useful insights for understanding the group, it resulted in inadequate attention to the biopsychosocial organization of individuals. The development of teleonics, with its strong emphasis of not only distinguishing and punctuating levels, but also respecting the interconnection of levels contributes some very exciting opportunities to the field of psychology.

The teleonics maps that were presented, contribute opportunities for interdisciplinary communication, understanding and practice in psychology. The maps make a particular contribution to psychological practice in that they facilitate the visual representation of interactions and relationships. The inclusion of many levels of systemic organization, interaction between systems and processes *flowing* through the web of life enable the discussion of interactions as they relate across disciplines or fields of study. This is done at a level of complexity that invites appreciation of the interconnectedness of life processes

that is not generally found in psychological theory or practice.

Where teleonics terminology may be a barrier to communication in the multidisciplinary situation, it is possible to use language in common usage, albeit with some theoretical compromise, thereby making concepts and ideas accessible.

In this dissertation, the development of the maps, contributed to the further development of the heuristic and explanatory potential of the ecology of teleonics ideas. While this dissertation clearly contributed to the extension of teleonics, perhaps it can be said that other more subtle contributions have been made. These subtle contributions relate to the many different kinds of connections that have been made, with the work of those on whose shoulders this dissertation has stood.

9.3 Soundness of endeavour

Conventional science has made a very valuable contribution to the body of knowledge. However, arguments for developing and promoting other methods can be summed up with Rosnow and Rosenthal's observation that the progress of science seems to be less a history of stunning leaps of logic than the outcome of "happy guesses and felicitous strokes of talent" (Rosnow & Rosenthal, 1992, p. 293). Otherwise stated, while science tends to be very critical of most that falls outside of controlled and constrained research, history shows that its own progress has been through inductive rather than deductive methods.

With the foregrounding of *process* being essential to process-based systems thinking, much of this dissertation falls under the "qualitative paradigm" as defined by Mouton (1985, p. 81). This paradigm refers to the inclusion of first hand, albeit subjective, knowledge of the social and psychological systems being studied, as valid data.

While support can be found for the arguments against subjectivity in psychological research and practice (Polkinghorne, 1992), it is inevitable. This researcher tried to achieve some measure of detachment (neutrality), which enabled an awareness that the positions held in the dissertation were "merely as one among many" (Thomas Haskell in Harding, 1992, pp. 570-571). This detachment is not impersonality, but rather a critical awareness of the assumptions that shape perceptions and convictions.

In postmodern science one occupies a multiplicity of standpoints which are within specific communities and which set standards and ways of judging (Shotter, 1992). In line with this, the validity of this dissertation is not argued in terms of prestated authoritative foundations (Shotter, 1992), but rather in terms of the postmodern criteria of it having *soundness of endeavour* (Reason, 1988c). This soundness of endeavour is supported by evidence of coherence, a balance of divergent and convergent

thinking, individual and consensual judgement, triangulation and relative meaning.

Coherence is supported by the apparently consistent, interdependent and mutually illuminating nature of arguments and conclusions (Heron, 1988). A balance of divergence and convergence is evidenced by processes of *zooming in an out* in order to encourage a holistic view of the inquiry in the context of refining and clarifying important issues (Heron, 1988). Processes of consensual judgment are illustrated in the co-operative interactions between therapist and client in the therapy process of the elaborated case study. In terms of the dangers inherent in individual and consensual judgement, the researcher considers that methodological inconsistencies and epistemological speculation have been avoided. In terms of triangulation, the multiple connections and distinctions that were made as an essential part of the whole research process, provide many examples of information or interactions placed in relation to one another to lend clarity to a further point. More specifically, the three teleonics maps provide a methodological triangulation as they are used to illuminate different perspectives of a particular web of processes. Lastly, relative meaning is evident in the many interconnections, and patterns of relationships (Heron, 1988; Reason & Rowan, 1981b; Reason 1988a) that are punctuated in the case studies and the larger research process.

9.4 Limitations and considerations

Many of the limitations of this dissertation relate to the paradigm within which it is located. For example, systems thinking involves a major paradox, it moves us towards approaches that attempt to be holistic, yet in these approaches we need to come to terms with our inability to grasp the totality (Woodhill, 1993).

Systems theory in which teleonics is located, has been criticised for its diffuse and confusing terminology (Robbins & Olivia, 1982). The diffuse nature of the language of systems theory interacts with this dissertation in two ways. Firstly, because of the absence of words which could meaningfully represent the new concepts that were developed, Jaros and Cloete (1987) introduced a few new terms. In the experience of the researcher, the development of the coherence of the maps was enhanced by the use of conceptually clear terminology. Secondly, while teleonics terminology enabled inspiring and creative academic discussions, it was not always an advantage when communicating with those not familiar with the theory. The heuristic and explanatory potential of teleonics to lay persons, especially therapy clients, as well as those not familiar with terminology, should not be constrained. In the experience of this researcher the language of teleonics was very useful in some contexts (eg. theoretical discussions) and alternative language was adequate in others (eg. with therapy clients).

A further criticism which needs to be commented on, is the general criticism of relativism. Criticism of relativism concerns its potential to give all views legitimization, the danger of confusion and a loss of a sense of reality (Lather, 1992; Sass, 1992). While the first criticism can alert us to the fact that all

is not acceptable on *perspectivalist* grounds (Harding, 1992), the second and third are not valid as they imply that because we may be confused, we should not embrace complexity.

A final comment comes from one of the pioneers of general systems theory Ludwig von Bertalanffy, who cautions against the potential of systems thinking to further dehumanise people (von Bertalanffy, 1968). This dissertation has addressed this issue by contributing a theoretical and methodological focus which incorporates respect for the individual as a self-organizing system.

9.5 Recommendations for future research

This dissertation marks a further level in the development of teleonics. The first level initiated and evolved by Jaros and Cloete (1987, 1993, 1994) comprised of the development and refining of the teleonics ecology of ideas. The level that this dissertation represents is one of the first steps to the practical development of these fundamental ideas. Due to the youth of teleonics and the urgent need to contribute to the transformation and unification processes in psychology, many recommendations for further research can be suggested by this dissertation.

Of the many possible research opportunities, three issues which stand out in the mind of the author will be distinguished. The first suggestion concerns the further development of process-based thinking in psychology. This could be enhanced and promoted by research into the dynamic organization of patterning of processes across levels of behaviour and experiences. Having provided this exemplar double description of theory and practice, groundwork for designing outcome and evaluation studies has been contributed to the field of teleonics and systems psychology, and provides a *stepping stone* to further work in this area. Research in this area will provide support for appreciation of the interconnectedness of human systems, will expand our understanding of the complex and systemic organization of behaviour and will further the exploration of the interaction of meaning in the web of life.

The second suggestion is to research the area of metaphors of systemic disturbance otherwise known as symptoms eg. clinical depression, anxiety disorders, etc. The exploration of such patterns could provide important insights with respect to their inner as well as outer ecological organization. Such insights would facilitate a more coherent appreciation for emergent patterns of disturbance, would hold some very exciting opportunities for both practitioners and patients alike and would encourage a general acceptance for the systemic understanding of *disease*.

The last suggestion relates to change and stability as a union of opposites in the organization of living systems. Very little in depth work has been done on the processes of change connected to the organization of human psychology and experience. Research in the area of human teleos, governance and telentropy, would provide novels insights into some areas of human experience that, while being

firmly located in the field of psychology, have been sadly neglected. If these concepts are researched in the context of their relationship to change and stability, emergent insights could enable psychology to evolve as a discipline that really strives to understand psychological processes as they are internally and ecologically connected in the web of life.

9.6 Conclusion

In terms of the statement in chapter 1 that "there have been many calls for practical methods and frameworks which encourage and facilitate systemic thinking in psychology", the essential contribution of this dissertation is the development of teleonics as a useful process-based systems method. In addition, the teleonics maps which are presented are useful tools which operationalize process-based systems thinking in psychological practical.

> "Finally, what is important is that human inquiry is a process of human experience and of human judgement.
> There are no procedures that will guarantee valid knowing, or accuracy, or truth.
> There are simply human beings in certain place and time, working away more or less honestly,
> more or less systematically,
> more or less collaboratively,
> more or less self-awarely
> to seize the opportunities of their lives,
> solve the problems which beset them,
> and to understand the things that intrigue them."
>
> (Reason, 1988d, p. 231)

REFERENCES

Adler, A. (1927). Understanding Human Nature. Oxford: Oneworld Publications Ltd.

Allport, G. (1961). Pattern and Growth in Personality. New York: Holt, Rinehart & Winston.

Allport, G.W. (1981). The general and the unique in psychological science, in P. Reason & J. Rowan (Eds.), Human Inquiry: A Sourcebook of New Paradigm Research. Chichester: John Wiley & Sons. 258-273.

Andolfi, M. (1979). Family Therapy. New York: Plenum Publishing Corporation.

Atkins, K. (1993). A bat without qualities? In M. Davies & G.W. Humphries (Eds.). Consciousness. Oxford: Blackwell Publishers. 267-269.

Auerswald, E.H. (1985). Thinking about thinking in family therapy. Family Process. 24, 1-12.

Baas, N.A. (1993). Emergence, hierarchies, hyperstructures and self-organization. In R. Packham (Ed.). The Ethical Management of Science as a System. Hawkesbury, Australia: International Society for Systems Sciences. 170-193.

Bailey, K.D. (1993). Living Systems Theory and Functionalism. In R. Packham (Ed.). The Ethical Management of Science as a System. Hawkesbury, Australia: International Society for Systems Sciences. 350-358.

Bannister, D. (1981). Personal construct theory and research method. In P. Reason & J. Rowan (Eds.). Human Inquiry: A Sourcebook of New Paradigm Research. Chichester: John Wiley & Sons. 191-200.

Bateson, G. (1973). Steps to an Ecology of Mind: Collected essays in anthropology, evolution and epistemology. London: Jason Aronson Inc.

Bateson, G. (1979). Mind and Nature. London: Fontana Paperbacks.

Bateson, G. (1991). Further Steps to an Ecology of Mind. New York: Harper Collins Publishers.

Beitman, B.D. (1990). Why I am an integrationist (not an eclectic). In W. Dryden & J.C. Norcross (Eds.). Electicism and Integration in Counselling and Psychotherapy. Essex: Gale Centre Publications. 51-70.

Biro, J. (1993). Consciousness and objectivity. In M. Davies & G.W. Humphries (Eds.). Consciousness. Oxford: Blackwell Publishers. 178-196.

Blanshard, B. & Skinner, B.F. (1976). A Debate on Mind. In M.H. Marx & F.E. Goodson (Eds.). Theories in Contemporary Psychology (2nd ed.). New York: Macmillan Publishing Co. Inc. 205-217.

Boden, M.A. (1972). Purposive Explanation in Psychology. Sussex, England: The Harvester Press Limited.

Boulding, K.E. (1978). Ecodynamics. London: Sage Publications.

Brennan, J.F. (1982). History and Systems of Psychology. New Jersey: Prentice-Hall, Inc.

Bridger, R.S. (1995). Introduction to Ergonomics. New York: McGraw Hill.

Bromley, D.B. (1986). The Case-study Method in Psychology and Related Disciplines. Chichester: John Wiley & Sons.

Burnham, J.B. (1986). Family Therapy. London: Tavistock.

Campbell, D.T. (1991). Autopoietic Evolutionary Epistemology and Internal Selection. Journal of Social And Biological Structures, 14, 166-173.

Capra, F. (1987). The Turning Point. London: Fontana Paperbacks.

Capra, F. (1988). Uncommon Wisdom. New York: Simon and Shuster.

Carlson-Sabelli, L. & Sabelli H.C. (1984). Reality, Perception and the Role Reversal, Journal of Group Psychotherapy , Psychodrama & Sociometry. 36, 162-174.

Carlson-Sabelli, L., Sabelli H.C., Patel, M. & Holm, K. (1992). The Union of Opposites in Sociometry, Journal of Group Psychotherapy , Psychodrama & Sociometry. 44(4), 147-171.

Chaiklin, S. (1992). From theory to practice and back again: what does postmodern philosophy contribute to psychological science? In S. Kvale (Ed.). Psychology and Postmodernism. London: Sage Publications. 194-209.

Chopra, D. (1989). Quantum Healing. New York: Bantam Books.

Cloete, A. & Jaros, G.G. (1994). Teleonics: A model of goal-directed living processes. In B. Brady & L. Peeno (Eds.). 38th Annual Meeting of the International Society for the Systems Sciences: June 14-19. Asilomar Conference Center, Pacific Grove, California. 633-640.

Cunningham, I. (1988). Interactive holistic research: Researching self managed learing. In P. Reason (Ed.). Human Inquiry in Action: Developments in New Paradigm Research. Sage Publications: London. 163-181.

Davies, M. & Humphries, G.W. (1993). Introduction. In M. Davies & G.W. Humphries (Eds.). Consciousness. Oxford: Blackwell Publishers. 5-15.

Dell, P.F. (1985). Understanding Bateson and Maturana: Towards a biological foundation for the Social Sciences. Journal of Marital and Family Therapy. 11, 1-20.

Dell, P.F. (1986). Why do we still call them paradoxes? Family Process, 21, 223-234.

Denzin, N.K. (1990). Triangulation. In J.P. Keeves (Ed.). Educational Research, Methodology and measurement. Oxford: Pergamon Press. 511-513.

Dodds, M. & Jaros, G.G. (1994). The human development process from the biomatrix perspective - requirements and obstructions. World Futures. 40, 1-28.

Dostal, E. & Jaros, G.G. (1994a). Applying the Biomatrix Theory to the governance of societies. In B. Brady & L. Peeno (Eds.). 38th Annual Meeting of the International Society for the Systems Sciences: June 14-19. Asilomar Conference Center, Pacific Grove, California. 1213-1220.

Dostal, E. & Jaros, G.G. (1994b). The Teleonics view of a matrix organisation. In B. Brady & L. Peeno (Eds.). 38th Annual Meeting of the International Society for the Systems Sciences: June 14-19. Asilomar Conference Center, Pacific Grove, California. 981-990.

Dryden W. & Norcross, J.C. (1990). Introduction. In W. Dryden & J.C. Norcross (Eds.). Eclecticism and Integration in Counselling and Psychotherapy. Essex: Gale Centre Publications. 1-2.

Edwards, L.B. & Jaros, G.G. (1994a). Psychology, a discipline with a structure-based history and a process-based future (some developing ideas). In B. Brady & L. Peeno (Eds.). 38th Annual Meeting of the International Society for the Systems Sciences: June 14-19. Asilomar Conference Center, Pacific Grove, California. 431-438.

Edwards, L.B. & Jaros, G.G. (1994b). A survey of rural cancer patients: Using Teleonics for a process-based interpretation. In B. Brady & L. Peeno (Eds.). 38th Annual Meeting of the International Society for the Systems Sciences: June 14-19. Asilomar Conference Center, Pacific Grove, California. 767-772.

Edwards, L.B. & Jaros, G.G. (1994c). Process-based systems thinking - challenging the Boundaries of structure. Journal of Evolutionary and Social Systems. 17, 339-353.

Edwards, L.B. & Jaros, G.G. (1995). Psychology, a discipline with a structure-based history and a process-based future. Journal of Evolutionary and Social Systems. 18, 67-85.

Elliot, T.S. (1963). Collected Poems 1909-1962. London: Faber Paperbacks.

Estés, C.P. (1994). Women who run with the wolves. London: Rider.

Eysenck, M.W. (1993). Principles of Cognitive Psychology. Hove, UK: Lawrence Erlbaum Assocites, Publishers.

Feixas, G., Procter, H.G. & Neimeyer, G.J. (1993). Convergent lines of assessment: Systemic and constructivist contributions. In G.J. Neimeyer (Ed.). Constructivist Assessment. California: Sage Publications. 143-178.

Fielden, K. (1993). In search of the myth: An integrating Force for Science, Systems and Spirituality. In R. Packham (Ed.). The Ethical Management of Science as a System. Hawkesbury, Australia: International Society for Systems Sciences. 455-465.

Foucault, M. (1972). The Archaeology of Knowledge. London: Tavistock Publications Ltd.

Frankel, C. (1976). The History of Irrationalism. In M.H. Marx & F.E. Goodson (Eds.). Theories in Contemporary Psychology (2nd ed.). New York: MacMillan Publishing Co., Inc. 87-97.

Frankl, V.E. (1969a). The will to meaning: Foundations and applications of logotherapy. New York: New American Library.

Frankl, V.E. (1969b). Reductionism and nihilism. In A. Koestler & J.R. Smythies (Eds.). Beyond Reductionism. London: Hutchinson Pub. Group. 396-409.

Feuerstein, M., Papciak, A., Shapiro, S. & Tannebaum, S. (1989). The weight loss profile: A biopsychosocial approach to weight loss. International journal Psychiatry in Medicine. 19, 181-192.

Fuenmayor, R. (1991). Between Systems Thinking and Systems Practice. In R.L. Floode & M.C. Jackson (Eds.). Critical Systems Thinking. West Sussex, England: Wiley. 227-239.

Gerdes, L.C., Ochse, R., Stander, C. & Van Ede, D. (1981). The Developing Adult. Pretoria: Butterworths.

Gergen, K.J. (1992). Towards a postmodern Psychology. In S. Kvale (Ed.). Psychology and Postmodernism. London: Sage Publications. 17-30.

Gharajedaghi, J. (1985). Towards a Systems Theory of Organization. Seaside, Calafornia: Intersystems Publications.

Gleick, J. (1987). Chaos. Making a New Science. New York: Viking Press.

Goertzel, B. (1992). Organizing evolution of pattern and structure. Journal of Social and Evolutionary Systems. 15, 7-54.

Goodson, F.E. (1976). The Problem of Intercommunication. In M.H. Marx & F.E. Goodson (Eds.). Theories in Contemporary Psychology (2nd ed.). New York: MacMillan Publishing Co., Inc. 279-289.

Goodson, F.E. & Morgan, G.A. (1976). On levels of psychological data. In M.H. Marx & F.E. Goodson (Eds.). Theories in Contemporary Psychology (2nd ed.). New York: MacMillan Publishing Co., Inc. 393-404.

Greben, S.E. (1981). The essence of psychotherapy. British Journal of Psychiatry. 134, 449-455.

Greenberg, L.S. (1984a). A task analysis of intrapersonal conflict resolution. In L.N. Rice & L.S. Greenberg (Eds.). Patterns of Change. New York: The Guilford Press. 67-123.

Greenberg, L.S. (1984b). Task analysic: A general approach. In L.N. Rice & L.S. Greenberg (Eds.). Patterns of Change. New York: The Guilford Press. 124-148.

Greif, G.L. & Lynch, A.A. (1983). The Eco-Systems Perspective. In C. Meyer (Ed.). Clinical Social Work in the Eco-Systems Perspective. New York: Columbia University Press. 36-44.

Gut, E. (1989). Productive and Unproductive Depression. London: Tavistock & Routledge.

Harding, S. (1992). After the neutrality ideal: Science, politics, and "strong objectivity". Social Research. 59, 569-587.

Harding, S. (1993). Whole Science? Whose Knowledge? New York: Cornell University Press.

Harré, R. (1981). The positivist-empiricist approach and its alternative. In P. Reason & J. Rowan (Eds.). Human Inquiry: A Sourcebook of New Paradigm Research. Chichester: John Wiley & Sons. 3-17.

Harris, T. (1969). I'm OK - You're OK. London: Harper & Row.

Harris, T. & Harris, A. (1985). Staying OK. London: Richard Clay Ltd.

Harvey, L. (1990). Critical Social Research. London: Unwin Hyman.

Hayes, S.C. (1992). Single-case experimental design and empirical clinical practice. In A.E. Kazdin (Ed.). Methodological Issues and Strategies in Clinical Research. Washington DC: American Psychological Association. 491-521.

Heap, K. (1977). Group Theory for Social Workers. Oxford: Pergamon Press.

Hearnshaw, L.S. (1972). Psychology. In C. B. Cox & A.E. Dyson (Eds.). The Twentieth Century Mind: 1900-1918. London: Oxford University Press. 22-31.

Hepworth, D.H. & Larson J.A. (1986). The Direct Social Work Practice: Theory and Skills. Chicargo: The Dorsey Press.

Heron, J. (1981a). Philosophical basis for a new paradigm. In P. Reason & J. Rowan (Eds.). Human Inquiry: A Sourcebook of New Paradigm Research. Chichester: John Wiley & Sons. 19-36.

Heron, J. (1981b). Experiential research methodology. In P. Reason & J. Rowan (Eds.). Human Inquiry: A Sourcebook of New Paradigm Research. Chichester: John Wiley & Sons. 153-166.

Heron, J. (1988). Validity in co-operative inquiry. In P. Reason (Ed.). Human Inquiry in Action: Developments in New Paradigm Research. London: Sage Publications. 40-59.

Hill, C.E. & Corbett, M.M. (1993). A perspective on the history of process and outcome research in counseling psychology. Journal of Counselling Psychology. 40, 3-24.

Hill, S. (1993). Science, scientists and the evolution of responsible systems of personal and planetary management. In R. Packham (Ed.). The Ethical Management of Science as a System. Hawkesbury, Australia: International Society for Systems Sciences. 2-5.

Horgan, T. (1976). Reduction and the mind-body problem. In M.H. Marx & F.E. Goodson (Eds.). Theories in Contemporary Psychology (2nd ed.). New York: MacMillan Publishing Co., Inc. 223-228.

Hoshmand, L.T. (1993). The personal narrative in the communal construction of self and life issues. In G.J. Neimeyer (Ed.). Constructivist Assessment. California: Sage Publications. 179-205.

Hughes, H.S. (1974). Consciousness and Society. St Albans, Herts: Paladin.

Hunter, I.M.L. (1972). Psychology. In C.B. Cox & A.E. Dyson (Eds.). The Twentieth Century Mind: 1945-1965. London: Oxford University Press. 89-101.

Jacobson, J.D. (1994). The ecology of stress in work-related human systems. Unpublished doctoral dissertation: University of South Africa, Pretoria.

Janoski, M.L. & Schwartz, G.E., (1985). A synchronous systems model for health. American Behavioral Scientist. 28, 468-485.

Jantsch, E. (1979). The Self Organizing Universe. New York: Pergamon Press.

Jaros, G.G. & Cloete, A. (1987). Biomatrix: The web of life. World Futures. 23, 203-224.

Jaros, G.G. & Cloete, A. (1993). Teleonics: The science of purposeful processes. In R. Packham (Ed.). The Ethical Management of Science as a System. International Society for Systems Sciences. 359-365.

Jaros, G.G. & Cloete, A. (1994). Stress in the biomatrix. In B. Brady & L. Peeno (Eds.). 38th Annual Meeting of the International Society for the Systems Sciences: June 14-19. Asilomar Conference Center, Pacific Grove, California. 655-664.

Jaros, G.G., Dostal, E. & Cloete, A. (1993). Teleonics, a process-based General Systems Approach. Discussion Document: University of Cape Town.

Jaynes, J. (1976). The Routes of Sciences. In M.H. Marx & F.E. Goodson (Eds.). Theories in Contemporary Psychology (2nd ed.). New York: MacMillan Publishing Co., Inc. 98-103.

Jordaan, W.J. & Jordaan, J.J. (1984) Man in Context. Johannesburg: McGraw-Hill Book Company.

Joynson, R.B. (1976). Breakdown of Modern Psychology. In M.H. Marx & F.E. Goodson (Eds.). Theories in Contemporary Psychology (2nd ed.). New York: MacMillan Publishing Co., Inc. 104-118.

Jung, C.G. (1954). The nature of the psyche. London: ARK Paperpacks.

Jung, C.G. (1964). Man and his Symbols. London: Aldas Books.

Kahn, C.H. (1981). The art and thought of Heraclitus. Cambridge University Press. Cambridge.

Kanfer, F.H. (1980). Self-management methods. In F.H. Kanfer & A.P. Goldstein (Eds.). Helping people change. New York: Pergamon Press. 334-381.

Kantor, J.R. (1976). Behaviorism in the History of Psychology. In M.H. Marx & F.E. Goodson (Eds.). Theories in Contemporary Psychology (2nd ed.). New York: MacMillan Publishing Co., Inc. 487-502.

Katakis, C. (1986). Avoiding artificial fragmentations: Some basic unifying concepts and principles as guidelines for planning interventions. Dynamic Psychotherapy. 4, 177-184.

Katakis. C. (1989a). Viewing individuals and families as purposeful systems: Implications for therapy. Laboratory for the Study of Human Relations. Chalandri, Greece.

Katakis, C. (1989b). Coexisting and Conflicting Self-Referential Conceptual Systems: A Model for Describing Malfunctioning in the Contemporary Family Implications for Therapy. Laboratory for the Study of Human Relations. Chalandri, Greece.

Katakis, D. & Katakis, C. (1982). Teleonomic entropy in biopsychosocial systems. Behavioral Science. 27, 118-124.

Katakis, C. & Thomassin, P. (1988). The Concept of Myth and the Properties of Living Systems: An Operational Definition. Laboratory for the Study of Human Relations. Chalandri, Greece.

Kauffman, L.H. (1987). Self-reference and recursive forms. Journal Social Biological Structure. 10, 53-72.

Kazdin, A.E. (1992). Drawing valid inferences from case st^^s. In A.E. Kazdin (Ed.). Methodological Issues and Strategies in Clinical Research. Washington DC: American Psychological Association. 475-490.

Keeney, B. (1983). Aesthetics of Change. New York: The Guilford Press.

Keeney, B.P. & Sprenkle, D.H. (1982). Ecosystemic epistemology: Critical implications for the aesthetics and pragmatics of family therapy. Family Process. 21, 1-19.

Kendler, H.H. (1976). The Unity of Psychology. In M.H. Marx & F.E. Goodson (Eds.). Theories in Contemporary Psychology (2nd ed.). New York: MacMillan Publishing Co., Inc. 610-624.

Kendler, H.H., & Spence, J.T. (1976). Tenets of neobehaviorism. In M.H. Marx & F.E. Goodson (Eds.). Theories in Contemporary Psychology (2nd ed.). New York: Macmillan Publishing Co., Inc. 501-522.

Kirk, G.S., Raven, J.E. & Schofield, M. (1983). The Presecroatic Philosophers (2nd Ed.). Cambridge: Cambridge University Press.

Koestler, A. (1969). Beyond atomism and holism - the concept of the holon. In A. Koestler & J.R. Smythies (Eds.). Beyond Reductionism. London: Hutchinson Publishing Group. 207-227.

Koestler, A. (1978). Janus: A summing up. London: Hutchinson & Co. Ltd.

Koestler, A. (1981). Kaleidoscope. London: Hutchinson Pub. Group.

Kvale, S. (1992). Postmodern Psychology: A Contradiction in Terms. In S. Kvale (Ed.). Psychology and Postmodernism. London: Sage Publications. 31-57.

L'abate, L. (1976). Understanding and Helping the Individual in the Family. New York: Grune & Stratton.

Lather, P. (1992). Postmodernism and the Human Sciences. In S. Kvale (Ed.). Psychology and Postmodernism. London: Sage Publications. 88-109.

Laszlo, E. (1972). The Systems View of the World. Oxford: Basil Blackwell.

Lazarus, A. (1990). Why I am an Eclectic (not an Integrationist). In W. Dryden & J.C. Norcross (Eds.). Eclecticism and Integration in Counselling and Psychotherapy. Essex: Gale Centre Publications. 34-50.

Lee, P.A. (1981). Thymós as biopsychological metaphor: The vital root of consciousness. In R.S. Valle & R. von Eckartsberg (Eds.). The Metaphors of Consciousness. New York: Plenum Press. 487-500.

Levin, J.D. (1992). Theories of self. New York: Hemisphere Publishers.

Linstone, H.A. (1994). New century - new challenge (ISSS Presidential paper). 38th Annual Meeting of the International Society for the Systems Sciences: June 13-17. Alisomar, California.

Lötter, M. (1994). An ecosystemic approach to psychodrama: Aesthetics and pragmatics. Unpublished masters dissertation: University of South Africa, Pretoria.

Lyddon, W.J. & Alford, D.J. (1993). Constructivist assessment: A developmental-epistemic perspective. In G.J. Neimeyer (Ed.). Constructivist Assessment. California: Sage Publications. 31-57.

Marková, I. (1991). The concepts of the universal in the Cartesian and Hegelian frameworks. In A. Still & A. Costall (Eds.). Against Cognitivism. London: Harvester-Wheatsheaf. 81-103.

Marmar, C.R., Wilner N. & Horowitz, M.J. (1984). Recurrent client states in psychotherapy: Segmentation and quantification. In L.N. Rice & L.S. Greenberg (Eds.). Patterns of Change. New York: The Guilford Press. 192-212.

Marshall, J. (1981). Making sense as a personal process. In P. Reason & J. Rowan (Eds.). Human Inquiry: A Sourcebook of New Paradigm Research. Chichester: John Wiley & Sons. 295-399.

Marshall, J. & Mclean, A. (1988). Reflection in action: Exploring organizational culture. In P. Reason (Ed.). Human Inquiry in Action: Developments in New Paradigm Research. London: Sage Publications. 199-220.

Marton, F. (1986). Phenomenography: A research approach to investigating different understandings of reality. Qualitative Research. 21, 28-49.

Marx, M.H. & Goodson, F.E. (1976). Introduction. In M.H. Marx & F.E. Goodson (Eds.). Theories in Contemporary Psychology (2nd ed.). New York: MacMillan Publishing Co., Inc. 1-9.

Mathieu-Coughlan, P. & Klein, M.H. (1984). Experiential psychotherapy: Key events in clinet-therapist interaction. In L.N. Rice & L.S. Greenberg (Eds.). Patterns of Change. New York: The Guilford Press. 213-248.

Maturana, H.R. & Varela, F.J. (1992). The Tree of Knowledge: The Biological Roots of Human Understanding. Boston and London: Shambhala.

McNeil, D.H. (1981). A thesis in Social Systems Sciences. Graduate Faculty: Univ of Pennsylvania.

McNeil, D. H. (1992a). How will emergence come out? Proceedings of the 36th Annual Meeting of the International Society for Systems Science. Denver.

McNeil, D.H. (1992b). A Systemological Terrain for Conceptual Maps. Proceedings of the 36th Annual Meeting of the International Society for Systems Science. Denver.

McNeil, D.H. (1992c). The `Problem' is the Problem. Proceedings of the 36th Annual Meeting of the International Society for the Systems Sciences. Denver.

McNeil, D.H. (1993). Architectural criteria for a general theory of systems. In R. Packham (Ed.). The Ethical Management of Science as a System. Hawkesbury, Australia: International Society for Systems Sciences. 194-213.

Melser, P. (1993). Participative action research: Connecting research and implementation. In R. Packham (Ed.). The Ethical Management of Science as a System. Hawkesbury, Australia: International Society for Systems Sciences. 13-22.

Messer, S.B. (1990). Integration and eclecticism in counselling and psychotherapy: Cautionary notes. In W. Dryden & J.C. Norcross (Eds.). Eclecticism and Integration in Counselling and Psychotherapy. Essex: Gale Centre Publications. 71-88.

Miles, M.B. & Huberman, A.M. (1994). Qualitative Data Analysis. California: Sage Publications.

Mills, W.C. (1978). The Sociological Imagination. New York: Pelican Books.

Mindell, A. (1988). City Shadows, Psychological Interventions in Psychiatry. London: Routledge.

Mindess, H. (1988). Makers of Psychology - The Personnel Factor. New York: Human sciences Press, Inc.

Miller, J.G. (1978). Living Systems. New York: McGraw-Hill.

Miller, G.M. & Miller, J.L. (1982). The earth as a system. Behavioral Science. 27, 303-322.

Moustakas, C. (1981). Heuristic research. In P. Reason & J. Rowan (Eds.). Human Inquiry: A Sourcebook of New Paradigm Research. Chichester: John Wiley & Sons. 207-217.

Mouton, J. (1985). Contemporary philosophies of science and the qualitative paradigm in the social sciences. South African Journal of Sociology. 16, 81-89.

O'Dowd, S. (1990). There's method in our madness: A deconstruction of the paradigm problem through psychopathology. In J. Mouton & D. Joubert (Eds.). Knowledge and Method in the Human Sciences. Pretoria: Human Sciences research Council. 407-416.

Munro, D. (1992). Process versus structure and levels of analysis in psychology. Theory and Psychology. 2, 109-127.

Neale, J.M. & Liebert, R.M. (1980). Science and Behavior. Englewood Cliffs, New Jersey: Prentice Hall, Inc.

Neimeyer, R.A. (1993). Constructivist approaches to the measuring of meaning. In G.J. Neimeyer (Ed.). Constructivist Assessment. California: Sage Publications. 58-103.

Neimeyer, G.J. & Neimeyer, R.A. (1993a). Defining the boundaries of constructivist assessment. In G.J. Neimeyer (Ed.). Constructivist Assessment. California: Sage Publications. 2-19.

Neimeyer, R.A. & Neimeyer, G.J. (1993b). Constructivist assessment: What and when. In G.J. Neimeyer (Ed.). Constructivist Assessment. California: Sage Publications. 206-218.

Norcross, J.C. & Grencavage, L.M. (1990). Eclecticism and integration in counselling and psychotherapy: major themes and obstacles. In W. Dryden & J.C. Norcross (Eds.). Eclecticism and Integration in Counselling and Psychotherapy. Essex: Gale Centre Publications. 1-33.

Oatley, K. (1993). Freud's cognitive psychology of intention: The case of Dora. In M. Davies & G.W. Humphries (Eds.). Consciousness. Oxford: Blackwell Publishers. 90-95.

Paivio, A. & Begg, I. (1981). Psychology of Language. New Jersey: Prentice Hall Inc.

Parlett, M. (1981). Illuminative evaluation. In P. Reason (Ed.). Human Inquiry in Action: Developments in New Paradigm Research. London: Sage Publications. 219-226.

Pastoll, G. & Jaros, G.G. (1994). The central place of the "sense-of-self" in education, and the implication of the concepts of the teleon and telentropy for the development of the sense-of-self. World Futures. 37, 1-17.

Piaget J. & Inhelder B. (1969). The gaps in empiricism. In A. Koestler & J.R. Smythies (Eds.). Beyond Reductionism. London: Hutchinson Pub. Group. 118-160.

Pincus, A. & Minahan, A. (1973). Social Work Practice: Model and Method. Illinois: Peacock Publishers, Inc.

Polkinghorne, D.E. (1992). Postmodern Epistemology of Practice. In S. Kvale (Ed.). Psychology and Postmodernism. London: Sage Publications. 146-165.

Poynton, J.C. (1987). Smuts's holism and evolution sixty years on. Transactions of the Royal Society of South Africa. 46, 181-189.

Purce, J. (1974). The Mystic Spiral. Singapore: Thames & Hudson.

Reason, P. (1988a). Introduction. In P. Reason (Ed.). Human Inquiry in Action: Developments in New Paradigm Research. London: Sage Publications. 1-17.

Reason, P. (1988b). Ventures in co-operative inquiry: Whole person medical practice. In P. Reason (Ed.). Human Inquiry in Action: Developments in New Paradigm Research. London: Sage Publications. 102-126.

Reason, P. (1988c). The co-operative inquiry group. In P. Reason (Ed.). Human Inquiry in Action: Developments in New Paradigm Research. London: Sage Publications. 18-39.

Reason, P. (1988d). Reflections. In P. Reason (Ed.). Human Inquiry in Action: Developments in New Paradigm Research. London: Sage Publications. 221-231.

Reason, P. & Hawkins, P. (1988). Storytelling as inquiry. In P. Reason (Ed.). Human Inquiry in Action: Developments in New Paradigm Research. Sage Publications: London. 79-101.

Reason, P. & Rowan, J. (1981a). Methodological approaches to social science, by Ian Mitroff and Ralph Kilmann: An editorial appreciation. In P. Reason & J. Rowan (Eds.). Human Inquiry: A Sourcebook of New Paradigm Research. Chichester: John Wiley & Sons. 43-51.

Reason, P. & Rowan, J. (1981b). Patterns of discovery in the social sciences, by Paul Diesing: An editorial appreciation. In P. Reason & J. Rowan (Eds.). Human Inquiry: A Sourcebook of New Paradigm Research. Chichester: John Wiley & Sons. 183-190.

Reason, P. & Rowan, J. (1981c). The psychology of science, by Abraham Maslow: An editorial appreciation. In P. Reason & J. Rowan (Eds.). Human Inquiry: A Sourcebook of New Paradigm Research. Chichester: John Wiley & Sons. 83-91.

Rice, L.N. & Greenberg, L.S. (1984). The new research paradigm. In L.N. Rice & L.S. Greenberg (Eds.). Patterns of Change. New York: The Guilford Press. 7-26.

Rice, L.N. & Saperia, E.P. (1984). Task analysis of the resolution of problematic reaction. In L.N. Rice & L.S. Greenberg (Eds.). Patterns of Change. New York: The Guilford Press. 29-66.

Robbins S.S. & Olivia T.A. (1982). The empirical identification of fifty-one core general systems theory vocabulary components. Behavioral Science. 27, 377-386.

Robson, C. (1993). Real World Research: A Resource for Social Scientists and Practitioner Researchers. Oxford: Blackwell.

Rosen, S.I. (1981). One researcher's self-questioning. In P. Reason & J. Rowan (Eds.). Human Inquiry: A Sourcebook of New Paradigm Research. Chichester: John Wiley & Sons. 401-414

Rosen, R. (1991). Beyond Dynamical Systems. Journal of Social and Biological Structures. 14, 217-220.

Rosnow, R.L. & Rosenthal, R. (1992). Statistical procedures and the justification of knowledge in psychological science. In A.E. Kazdin (Ed.). Methodological Issues and Strategies in Clinical Research. Washington DC: American Psychological Association. 293.

Ross, N.P. (1965). Ecology. Netherlands: Time-Life International.

Rowan, J. (1981a). The subjective side of science, by Ian Mitroff: An editorial appreciation. In P. Reason & J. Rowan (Eds.). Human Inquiry: A Sourcebook of New Paradigm Research. Chichester: John Wiley & Sons. 37-42.

Rowan, J. (1981b). A dialectical paradigm for research. In P. Reason & J. Rowan (Eds.). Human Inquiry: A Sourcebook of New Paradigm Research. Chichester: John Wiley & Sons. 93-112.

Russel, P. (1987). The T.M. Technique. London: Routledge & Kegan Paul Ltd.

Sabelli, H. (1989). Union of Opposites. Virginia: Brunswick Publishing Corporation.

Sabelli, H.C. (1991a). Process theory, a biological model of open systems. In L.P. Peeno (Ed.). General Systems Approaches to Alternative Economics and Values: International Society for the Systems Sciences. Louisville, Kentucky. 219-225.

Sabelli, H.C. (1991b). Process theory, a general theory of natural and human systems. In L.P. Peeno (Ed.). General Systems Approaches to Alternative Economics and Values: International Society for the Systems Sciences. Louisville, Kentucky. 168-174.

Sabelli, H.C. & Carlson-Sabelli, L. (1989). Biological priority and psychological supremacy: A new integrative paradigm derived from process theory. American Journal of Psychiatry. 146, 1541-1550.

Sabelli H.C. & Carlson-Sabelli, L. (1991). Process Theory as a Framework for Comprehensive Psychodynamic Formulations. Genetic, Social and General Psychology Monographs. 117, 5-27

Sabelli, H.C. & Synnestvedt, J. (1991). Personalization, a new system of social organization. (Unpublished Paper). Rush University and Moraine Valley College: Chicago, Illinois.

Salthe, S.N. (1988). Notes toward a formal history of the levels concept. In G. Greenberg & E. Tobach (Eds.). Evolution of Social Behaviour and Integrative Levels. New Jersey: Lawrence Erlbaum Associates, Publishers. 55-58.

Salthe, S.N. (1989). Self-organization of/in hierarchically structured systems. International Federation for Systems Research. 6, 199-208.

Sanford, J.A. (1980). The Invisible Partners. New York: Paulist Press.

Sass, L.A. (1992). The epic of disbelief: The postmodern turn in contemporary psychoanalysis. In S. Kvale (Ed.). Psychology and Postmodernism. London: Sage Publications. 166-182.

Schein, E.H. (1987). The clinical perspective in fieldwork. Beverly Hills: Sage Publications.

Sharp, D. (1990). The Survival Papers. London: Quantum.

Skarda, C.A. (1991). The biology of life and learning. Journal of Social and Biological Structures. 14, 221-228.

Shannon, B. (1991). Alternative theoretical frameworks for psychology: A synopsis. In A. Still & A. Costall (Eds.), Against Cognitivism. London: Harvester-Wheatsheaf. 237-264.

Shotter, J. (1992). *Getting in touch*: The meta-methodology of a postmodern science of mental life. In S. Kvale (Ed.). Psychology and Postmodernism. London: Sage Publications. 58-73.

Skinner, B.F. (1976). A Science of Behaviour. In M.H. Marx & F.E. Goodson (Eds.). Theories in Contemporary Psychology (2nd ed.). New York: MacMillan Publishing Co., Inc. 522-534.

Sluzki, C.E. (1992). Transformations: A blueprint for narrative changes in therapy. Family Process. 31, 217-230.

Smuts, J.C. (1926). Holism and Evolution. Cape Town: N & S Press.

Sowden, S. & Keeves, J.P. (1990). Analysis of evidence in humanistic studies. In J.P. Keeves (Ed.). Educational Research, Methodology and measurement. Oxford: Pergamon Press. 513-526.

Stor, A. (1983). A psychotherapist look at depression. British Journal of Psychiatry. 143, 431-435.

Strijbos, S. (1993). How can systems thinking help us in bridging the gap between science and wisdom? In R. Packham (Ed.). The Ethical Management of Science as a System. Hawkesbury, Australia: International Society for Systems Sciences. 700-712.

Thorpe, W.H. (1969). Retrospect. In A. Koestler & J.R. Smythies (Eds.). Beyond Reductionism. London: Hutchinson Publishing Group. 428-434.

Torbert, W.R. (1981). Empirical, behavioural, theoretical, and attentional skills necessary for collaborative inquiry. In P. Reason & J. Rowan (Eds.). Human Ifquiry: A Sourcebook of New Paradigm Research. Chichester: John Wiley & Sons. 347-446.

Troncale, L. (1993). Qualitative and Quantitative Research on Hierarchies as a Case Study of General Systems Research. In R. Packham (Ed.). The Ethical Management of Science as a System. Hawkesbury, Australia: International Society for Systems Sciences. 233-247.

Twerski, A.J. (1991). I'd like to call for help but I don't know the number. New York: Pharos Books.

Valle, R.S. (1981). Relativistic quantum psychology: A reconceptualization of what we thought we knew. In R.S. Valle & R. von Eckartsberg (Eds.). The Metaphors of Consciousness. New York: Plenum Press. 419-436.

Van der Hoorn, S. (1995). Systemic thinking in adult education. Unpublished Phd dissertation, University of Stellenbosch, South Africa.

Van Gulick, R. (1993). Inderstanding the phenomenal mind: Are we all just armadillos? In M. Davies & G.W. Humphries (Eds.). Consciousness. Oxford: Blackwell Publishers. 137-154.

Varela, F.J. & Frenk, S. (1987). Journal Social Biological Structure. 10, 53.

Viney, L.L. (1993). Listening to what my clients and I say: Content analysis categories and scales. In G.J. Neimeyer (Ed.). Constructivist Assessment. California: Sage Publications. 104-142.

Von Bertalanffy, L. (1968). General System Theory. New York: George Braziller.

Von Bertalanffy, L. (1969). Chance or law. In A. Koestler & J.R. Smythies (Eds.). Beyond Reductionism. London: Hutchinson Publishing Group. 56-84.

Walker, J.C. & Evers, C.W. (1990). The epistemological unity of educational research. In J.P. Keeves (Ed.). Educational Research, Methodology and measurement. Oxford: Pergamon Press. 28-36.

Walrond-Skinner, S. (1980). Family Therapy. London: Routledge & Kegan.

Wason, P.C. & Johnson-Laird, P.N. (1972). Psychology of Reasoning: Structure and Content. London: Batsford.

Watzlawick, P., Bavelas J.B. & Jackson, D.D. (1967). Pragmatics of Human Communication. New York: W.W. Norton & Company.

Weber, R. (1981). Reflections on David Bohm's holomovement: A physicist's model of consmos and consciousness. In R.S. Valle & R. von Eckartsberg (Eds.). The Metaphors of Consciousness. New York: Plenum Press. 121-140.

Weiss, P.A. (1969). The living system: Determinism stratified. In A. Koestler & J.R. Smythies (Eds.). Beyond Reductionism. London: Hutchinson Pub. Group. 3-55.

Wheelwright, P. (1959). Heraclitus. New Jersey: Princeton University Press.

White, E. (1993a). Human values. In R. Packham (Ed.). The Ethical Management of Science as a System. Hawkesbury, Australia: International Society for Systems Sciences. 437-442.

White, E. (1993b). Science and religion. In R. Packham (Ed.). The Ethical Management of Science as a System. Hawkesbury, Australia: International Society for Systems Sciences. 496-503.

White, M. (1986a). Family escape from trouble. Case Studies. 1, 59-63.

White, M. (1986b). Negative explanation, restrain & double description: A template for family therapy. Family Process. 25, 169-184.

White, M. (1986c). Anorexia nervosa: A cybernetic perspective. In J. Elka-Harkaway (Ed.). Eating Disorders and Family Therapy. New York: Aspen. 65-75.

White, M. (1986d). The conjoint therapy of men who are violent and the women with whom they live. Dulwich Centre Newsletter. Spring.

White, M. (1988). The process of questioning. Dulwich Centre Newsletter. Winter.

White, M. & Epston, D. (1990). Narrative means to therapeutic ends. New York: Norton.

Wicker, A. (1992). Getting out of our conceptual ruts: Strategies for expanding conceptual frameworks. In A.E. Kazdin (Ed.). Methodological Issues and Strategies in Clinical Research. Washington DC: American Psychological Association. 41-61.

Wilson, J. (1993). Naturalism and Norm-Setting: A partial response to Vickers. In R. Packham (Ed.). The Ethical Management of Science as a System. Hawkesbury, Australia: International Society for Systems Sciences. 29-35.

Winburn, R. W. (1991). Cybernetics, Teleology and Science. Cybernetics and Systems: An International Journal. 22, 553-582.

Winchester, J.T. (1993). The synchronous systems model - an orienting vehicle for an educational design displaying requisite variety. In R. Packham (Ed.). The Ethical Management of Science as a System. Hawkesbury, Australia: International Society for Systems Sciences. 658-660.

Woodhill, J. (1993). Science and the facilitation of Social learning: A systems perspective. In R. Packham (Ed.). The Ethical Management of Science as a System. Hawkesbury, Australia: International Society for Systems Sciences. 36-43.

Woody, R.H. & Springer, J.R. (1985). A holistic health model for family therapy. Family Therapy Collections. 13, 36-45.

Yalom, I.D. (1975). The Theory and Pracice of Group Psychotherapy (2nd ed). New York: Basic Books.

Young, A.M. (1984). The Foundations of Science: The Missing Parameter. San Francisco: Robert Briggs Associates.

Yule, H. (1993). Narrative Therapy in the South African Context: A Case Study. Dissertation for the Degree of Masters in Educational Psychology: University of Cape Town.

Zangwill, O.L. (1972). Psychology. In C.B. Cox & A.E. Dyson (Eds.). The Twentieth Century Mind: 1918-1945. London: Oxford University Press. 43-54.