

# Chapter 6

## THE STRUCTURED SYSTEMS APPROACH TO MODEL CONCEPTUALISATION AS AN ALTERNATIVE MANAGEMENT MECHANISM

“The empires of the future are the empires of the mind”

Winston S. Churchill

### 6.1 INTRODUCTION

The analytical process followed thus far, is graphically depicted in Figure 6.1, which places the chapters in context with the overall thesis objectives, and furthermore indicates the relative positioning of this chapter.

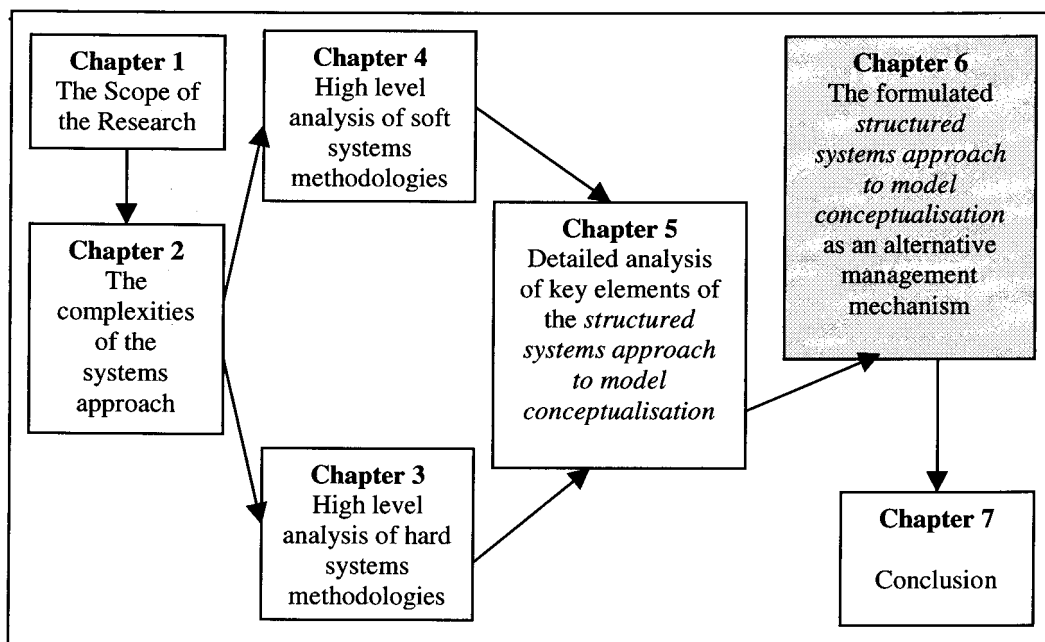


Figure 6.1: Chapters in context of the overall research

An analysis of Figure 6.1<sup>1</sup>, shows Chapter 1 as the overall research approach to the thesis. Chapter 2, contains a number of key elements (complexities), which are explained in lieu of the high level analysis of hard systems (contained in Chapter 3), and the high level analysis of soft systems, (contained in Chapter 4). Key elements from the high level analysis of hard systems and soft systems

<sup>1</sup> Arrows in Figure 6.1 represents 'information flows' (inputs) from one chapter to the other.

methodologies, served as preliminary input mechanisms to Chapter 5, where the elements were analysed in detail to ultimately culminate in a formulated *structured systems approach to model conceptualisation*. This chapter depicts the *structured systems approach to model conceptualisation* as an alternative management mechanism in practice, while Chapter 7 contains a summary of the thesis content.

## 6.2 THE STRUCTURED SYSTEMS APPROACH TO MODEL CONCEPTUALISATION IN PRACTICE: A CASE STUDY

While the author was not availed of the opportunity to formally validate<sup>2</sup> the formulated *structured systems approach to model conceptualisation*, the impact of the concept will be demonstrated by means of an implementation in a real world situation, using a case study. Several such implementations have successfully been executed, however the case study depicted here was especially selected to take advantage of the spectrum of diverse unstructured complex phenomena it offered. The implementation spectrum included unstructured complex phenomena ranging from process reengineering, technology implementation and societal issues. In addition, the case study called for organisational restructuring, bringing into play the author's approach to 'structure' including the 'midway approach' between over control and chaos within the context of the *structured systems approach to model conceptualisation*.

The case study will furthermore serve as a test bed for the *structured systems approach to model conceptualisation* as an alternative management mechanism to address unstructured complex phenomena. The case study depicted below, is a true rendition of a real world situation, and will be subject to the following *caveats*:

- No confidentiality will be breached or compromised in terms of the organisation involved, its staff, processes, technical or functional data pertaining to the case study or the associated business case.

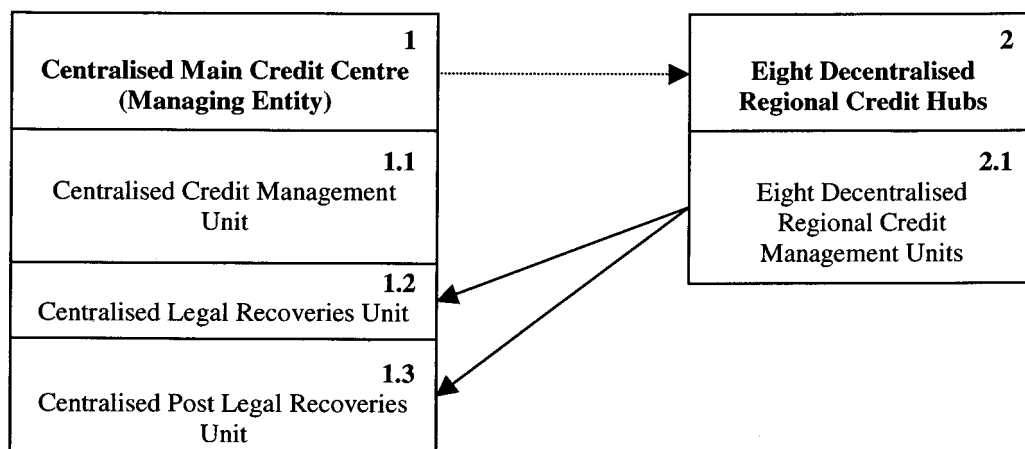
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<sup>2</sup> See Appendix B, Paragraph B1.

- All of the issues of a sensitive nature observed in the limited survey depicted in Appendix B, would apply to the case study.

### 6.2.1 CURRENT REALITY: THE IMPETUS TO THE BUSINESS CASE

The ‘current reality’, which created a spectrum of unstructured complex phenomena and impetus to the business case can be explained in terms of the global infrastructure pertaining to the credit operations of a large commercial bank and shown in Figure 6.2.



**Figure 6.2:** Global Credit Infrastructure: Current Reality

The centralised main credit centre, shown as Frame 1 in Figure 6.2, served as overriding ‘managing entity’ for the eight decentralised regional credit hubs shown as Frame 2, with the following functionality pertaining thereto:

- Overall credit policy.
- Vision and mission of credit countrywide.
- Full credit client credit management capabilities including providing legal recoveries and post legal recoveries as a centralised service to the eight decentralised regional credit hubs.

The eight decentralised regional credit hubs operated as autonomous entities from the centralised main credit centre in terms of their:

- Processes.
- Procedures.

- Organisational structures.
- Salary structures.
- Management structures.
- Client approaches.
- Credit targets.
- Standards.
- Technical infrastructures.
- Credit granting norms.

Unstructured complex phenomena manifested from this ‘current reality’ shown in Figure 6.2, are listed below in bullet format for ease of reference:

- Processes not uniform across the global infrastructure culminating in:
  - Clients not being handled in a similar manner by the different units, causing client dissatisfaction with service provided.
  - Process audit trails becoming ‘fuzzy’ making the audit of processes virtually impossible.
  - Skills diversification, a requirement within the centralised main credit centre to handle the diverse process implications emanating from the eight decentralised regional credit hubs with respect to legal recoveries. Furthermore, this aspect culminated in the requirement for costly differentiated training courses to meet the skill demands of the eight decentralised regional credit hubs.
  - Controls, which are compromised in the eight decentralised regional credit hubs, reflect negatively on the books of the centralised main credit centre, and furthermore, ultimately result in money lost to the company.
- Procedures not standardised across the global infrastructure culminating in:
  - Cross-functional skill levels being compromised, and as in the case above, the requirement for costly differentiated training courses.
  - Frequent ‘misunderstandings’ with clients and between the centralised main credit centre and the eight decentralised regional credit hubs.
- Differentiation in organisational structure between the eight decentralised regional credit hubs, and between the latter and the centralised main credit centre resulting in:
  - Differentiated job descriptions and job content.

- Differentiated remuneration structures being applied for the same job level and job content resulting in dissatisfied employees.
- Differentiated career paths been mapped for staff of equal status and potential.
- Inflexible inter-unit transfer program due to level of diversification, thus limiting employee growth.
- The centralised main credit centre becoming the 'elite' group as a result of the centralised main credit centre acting as the 'managing entity' of the global infrastructure.
- Differentiation between the eight decentralised regional credit hubs, and between the latter and the centralised main credit centre, resulted in a differentiation in the handling of the different client profiles (based on income), resulting in:
  - Client dissatisfaction of not being treated equal.
  - Staff confusion of not knowing how to handle the different client profiles.
- Differentiation in management structures between the eight decentralised regional credit hubs, and between the latter and the centralised main credit centre resulting in:
  - Operating executives having different career aspirations as a result of profile differentiation between the units.
  - Middle and lower management having different career aspirations as a result of profile differentiation between the units.
- Uniform credit targets across board creating dissatisfaction with management and staff alike. Should growth targets be set at say eight percent, the same target applies to each of the units irrespective of their individual size, growth potential, demographic placement or client distribution. The same maxim is applied to budget allocations/cuts and staff numbers resulting in certain units becoming 'unmanageable'.
- Losses (write-offs) within credit, are attributable to the fact that client credit management is done 'too late' or 'not at all' during the lifecycle of a defaulting client. This aspect, which escalated to not only unacceptable proportions in terms of company profitability, but also rated far above the lower quartile, set by international 'best practice' standards resulting in:
  - Losses of multiples of millions to the company.

- Company profitability being affected adversely.
- Shareholder income impacted.
- The technical infrastructures at the eight decentralised regional credit hubs, and at the centralised main credit centre can be described having no incumbent formal technology solutions in place for credit management. This situation was further exacerbated and impacted by:
  - Low computer literacy levels of staff.
  - Diverse, ‘developed in need’ personal computer applications to facilitate processes and workflow.
  - No computer generated management information.
  - No networked, integrated technical infrastructures.
- Credit granting rules, while in existence and clear in terms of the approach for different client segments, not implemented uniformly resulting in confusion of both staff and clients
- *Esprit de corps*, a unknown concept within the ambit of the eight decentralised regional credit hubs and the centralised main credit centre resulting in unhappy staff, no job satisfaction and uncertainty about future careers.
- Under utilisation of staff.

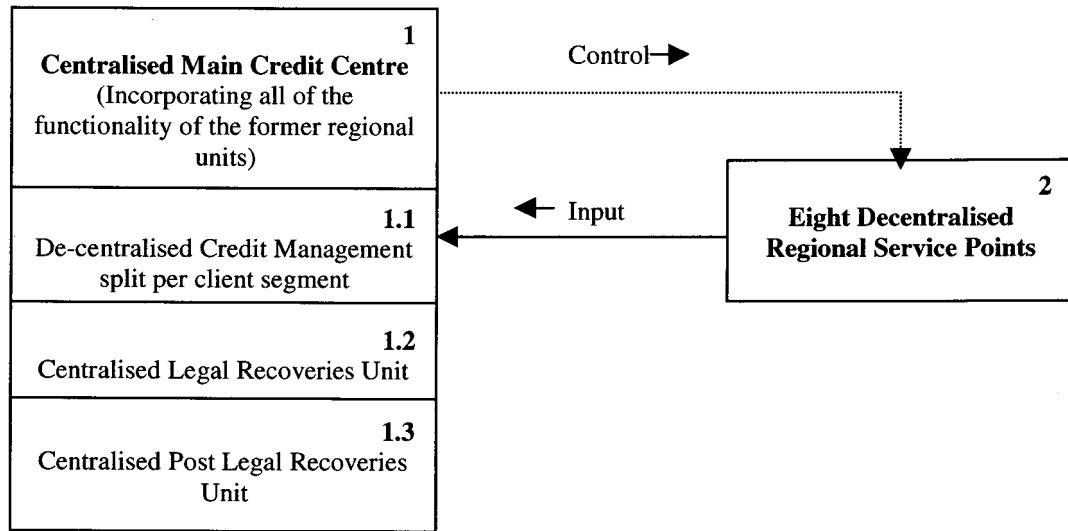
All of the above entities represents the ‘current reality’ and served as impetus to a business case for global remedial action.

## 6.2.2 KEY ELEMENTS OF THE BUSINESS CASE

An external company specialising in the analysis and formulation of professional business case compilation for the credit industry, was charged with the task to investigate the ‘current reality’ pertaining to the eight decentralised regional credit hubs and the centralised main credit centre. The brief had to include high level remedial recommendations to the board of directors contained within the ambit of an official business case.

Key elements of the business case recommendations (at a high level), are listed below, which is to apply universally across board, and can be explained in terms

of the global infrastructure pertaining to the future credit operations and shown in Figure 6.3



**Figure 6.3:** Global Credit Infrastructure: Future Credit Operations

- **Technology:-** The proposed technology solution forms the key component of the whole business case as all of the recommendations listed below have direct tangent planes thereto. In fact, the technology proposal, which was based on international best practice standards, was so dramatic in that it affected all of the known process and societal issues pertaining to the organisation.
- **Centralisation:-** Based on the proposed technology solution, the eight decentralised regional credit hubs are to be collapsed into the centralised main credit centre, the latter incorporating all of the credit management functionality of the former. Furthermore, the only element, which is to remain of the collapsed eight decentralised regional credit hubs, will be their service point capability to clients. The centralised legal recoveries unit and centralised post legal recoveries unit, will retain their status quo within the centralised main credit centre. The centralised main credit centre will retain the control over the eight decentralised regional service points.
- **Decentralisation:-** Functionality of the eight decentralised regional credit management units, will be decentralised within the centralised main credit centre, not in terms of demographic placement, but in terms of client segment and technology demands.

- **Processes:-** All processes and controls are to be automated in terms of the technology recommendation, and thereafter reengineered in terms of world best practice standards.
- **Procedures:-** Procedures are to be standardised across board in terms of the technology recommendation, and thereafter centralised utilising the most up to date technological innovations.
- **Organisational structure:-** The high-level recommendations suggested an organisational restructure based on control and sustained improvement of processes, procedures and technological automation. Furthermore, staff savings would be based on the 'to be' environment proficiency measurements of time and motion studies.
- **Client profiles:-** The proposed technology would in future base client profiles on client segment, which in turn is determined by client behaviour (how a client conducts his account over time).
- **Staff structure:-** The client credit management split per client segment are to be used to formulate not only standardised managerial and staff structures, but also job descriptions, individual job content, salary structures and career paths. A productivity increase of twenty five percent, and a staff reduction of forty percent was prescribed.
- **Credit targets:-** The targets set will only pertain in future to the centralised main credit centre as an entity.
- **Losses:-** Will in future become a focus point of the organisational structure where control will be exercised.
- **Esprit de corps:-** The recommendation was that this element be formulated to become part of the organisational structure.

The business case, based on the above high level recommendations, reflected a payback of capital in excess of one hundred and fifty million rand over a five year period and returned a positive internal rate of return and net present value. Primarily, savings would culminate from technology, staff reductions, improved processes and procedures, improved productivity and improved service to client and reduced write-offs. The organisation's board of directors approved the business case, and the results were communicated to staff.



### 6.2.3 A NEW WAVE OF UNSTRUCTURED COMPLEX PHENOMENA.

Executive management was suddenly confronted with a new wave of unstructured complex phenomena when the board decision and results from the business case and organisation goal directives were communicated to staff. These new issues which were primarily organisational and societal based, and listed below in bullet format for ease of reference, appeared to be even more formidable<sup>3</sup> than the previously identified unstructured complex phenomena pertaining to the ‘current reality’<sup>4</sup>

- The potential of retrenchments for all managerial levels and staff alike became an issue of very real concern and importance as the business case clearly alluded to this fact, calling for a forty percent reduction of staff. This aspect was even more daunting in the regional areas as the ability to procure new jobs in these areas was nearly impossible.
- The potential of being uprooted from a regional setting to a metropolitan environment should people be drawn from the regional hubs to the centralised main credit centre was extremely unsettling.
- The idea to transform from manual to automated processes was a potential threat, in particular to semi-skilled staff, who would not fit into the realm of a computerised world.
- The concept ‘technology’ a threat. This pertained not only to the computer literate, but also the computer illiterate, due to the notion that ‘technology reduces headcount’.
- Staff opposed the business case recommendations and a formal complaint was lodged with the labour unions. This was based on the fact that they were not consulted on the possible impact of the recommendations prior to it being made public as they were under potential threat of facing significant job losses.
- Individual career paths were under threat, in particular as a result of the centralisation.

<sup>3</sup> Giving effect the ‘wisdom’ of Albert Einstein, who was of the opinion that: “*The world that we have made as a result of the level of thinking we have done thus far creates problems that we cannot solve at the same level as they were created*”.

<sup>4</sup> As listed in Paragraph 6.2.2.

- Personal aspirations, ‘me issues’, of staff being curtailed by the proposal.
- Normal human ‘resistance to change’, whereby staff refused to co-operate in their retraining, facing new process and systems challenges as a result of the technology impact.
- Limited communication of the real impact of the proposals created confusion for both staff and clients on the impact of the changes.
- Clients lodging complaints against proposed restructuring based on empathy for staff and limited information.
- Impact of the proposal exasperated by ‘out of proportion’ grape vine information and the natural fear of the unknown.
- Provided with only the high level recommendations to ‘steer’ by, executive management was confronted with not only the formidable task to implement the technology and associated solutions in terms of the business case recommendations, but also to find a solution for the existing and new unstructured complex phenomena. The initial issues they were confronted with were, ‘what it is to be done’, ‘why it is to be done’, ‘who is to do it’, ‘who is to benefit or suffer from it’, and ‘what environmental constraints facilitates or limits the proposed actions and activities’.
- Managers (and in some instances senior staff), jostling for power, authority, control and position, using all the sources of power<sup>5</sup> available to them to achieve their individual goals prior to the proposed changes taking effect. Ironically, this gives effect to the words of Davidson (**undated reference**) cited by Skyrme [157], who is of the opinion that, “management policy decisions may actually contribute to creating the dynamic problems they are intended to solve”.

This situation left executive management little choice, but to opt for a structured approach to problem solving and it is at this particular point, that the *structured systems approach to model conceptualisation* was initiated to address the business case recommendations and unstructured complex phenomena in a structured way.

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<sup>5</sup> Refer to Chapter 1, Paragraph 1.1.2, and Appendix A.

### 6.3 THE SYSTEMS APPROACH TO MODEL CONCEPTUALISATION APPLIED

To provide the reader with an incumbent analysis of the impact of the formulated *structured systems approach to model conceptualisation* as it was applied to the business case as described, would be inappropriate from a thesis perspective due to the voluminous nature of the ensuing data. Various approaches can be deployed to demonstrate the application of the formulated *systems approach to model conceptualisation* to the case study, which will also serve to validate the concept. As this thesis deals with unstructured complex phenomena, a logical approach would be to map the remedial actions in terms of approach to the unstructured complex phenomena as identified in the case study. Furthermore, this will not only demonstrate the approach to model conceptualisation as an alternative management mechanism, but also clearly prove its applicability in the solving of unstructured complex phenomena.

The following bullet points demonstrate how the structured *systems approach to model conceptualisation* was applied to complex phenomena identified in the case study<sup>6</sup>:

- In terms of Phase 1, nine interdisciplinary teams were identified to address the unstructured complex phenomena resulting from:
  - Technology.
  - Process.
  - Procedures.
  - Structure.
  - Change management (people issues).
  - Client dissatisfaction.
  - Controls.
  - Staff dissatisfaction.
  - Training.
- In terms of Phase 2, an intensive analysis was embarked upon, which confirmed the unstructured complex phenomena from the ‘current reality’ as

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<sup>6</sup> Using the same phases as described in Chapter 5, Paragraph 5.6, and shown in Figure 5.5.

described in Paragraph 6.2.1. Furthermore, ‘the new wave’ of unstructured complex phenomena described in Paragraph 6.2.3, was mapped into the former to provide a holistic perspective of ‘all’ of the issues, which needed to be solved.

- Phase 3 resulted in an interesting development. The plethora of unstructured complex phenomena was grouped into the following logic categories using the tangent planes between the entities as guide:

- Technology.
- Process.
- Structure.

Correspondingly, this also results in the interdisciplinary teams being reduced to three to address the various categories. The attention of the reader is drawn to the fact that some of the interdisciplinary teams (i.e. change management) operated from within the newly formulated organisation structure discussed below.

- The formulation of the alternative worldview in Phase 4 resulted in a formidable, yet interesting exercise. Both of the concepts ‘centralisation’ and ‘de-centralisation’ were deployed to attain diverse yet optimised and effective results namely:

- To provide enhanced personal and value driven service to clients, the eight de-centralised regional credit hubs are reconfigured to create client focus orientated service hubs in the various regions.
- To contain cost, operations are centralised, which had a cascading effect with the following being impacted:
  - Staff numbers.
  - Training.
  - Process standardisation.
  - Procedure standardisation.
  - Levels of expertise.
  - Skills standardisation.
- Processes were mapped to optimise the technology deployment impacting:
  - Audit trails.
  - Client service.
  - Resource utilisation

- Process and procedures
- Cost ratios.
- Organisational structure (now centralised), was reconfigured with respect to:
  - The operations unit dealing with:
    - Audit.
    - Controls.
    - Process.
    - Technology deployment.
    - Systems support.
    - Structured project management.
    - People issues impacted by the change.
    - Resource management.
- A competent senior management structure was formulated, where the overriding maxim of 'expertise' determined the ultimate positions in the hierarchy to ensure a stable internal environment and appropriate support to executive management. The executive management contingent was restructured with clear focus, in particular in dealing with the identified unstructured complex phenomena, utilising the structured *systems approach to model conceptualisation* as management mechanism.
- The technology solution formed the crux of the alternative worldview, as all of the technology and networked infrastructures could be addressed with the introduction of this mechanism. Furthermore, in addition, some of the unstructured complex phenomena which included some of the social phenomena was impacted by the technology solution, the ensuing list serves as examples:
  - Computer literacy.
  - Skills requirements.
  - Training.
  - Audit trails.
  - Client service
  - Process automation.
  - Job structure.
  - Remuneration.
  - Career paths.

- Client profiles.
- Control of financial losses.
- Management information.
- Increased productivity.
- The change management unit (now part of the organisational structure) was deployed to address specifically the following:
  - Retrenchment.
  - Relocation.
  - Technology intervention.
  - Resistance to change.
  - Career paths.
  - Personal aspirations.
  - Staff communication.
  - Client communication.
  - ‘Power’ struggles.
  - Trade union communication.

The underpinning element was based on a structured and open communication strategy. The internal component of the communication strategy was addressed by specially appointed ‘change agents’, which were selected from the ranks of those staff feeling most threatened about the whole forced change intervention. Leading the initiatives and taking a leading role in this *structured systems approach to model conceptualisation*, the executives who provided the required impetus with respect to communication both external and internal, buy-in, acceptance, and drive. Furthermore, the executives specifically established a much needed and dynamic *esprit de corps* within the ranks of the organisation.

- It is of importance for the reader to note the fact that the alternative worldview formulated in the case study, included the element of organisational structure and was considered part of Phase 4. As a result of this, most of the unstructured complex phenomena were directed from the established interdisciplinary teams to the entities, which formed part of the organisational structure.

- Phase 7 included a structured and phased implementation approach, whereby a detailed plan was suitably formulated and tested within the ambit of the pilot test solution in Phase 8.
- The pilot test was compiled of a multiplicity of solutions formulated from within the context of the alternative worldview, of which the following serves as examples:
  - A marketing plan.
  - A resource management plan.
  - An organisational structure hierarchy.
  - Process mapping
  - Time and motion studies to measure the ensuing result.
  - Organisational change management forums.
  - Change management agents.
- The implemented ‘midway approach’ to regulate between over control and chaos, proved to create the required equilibrium within the organisation for successful people and organisation management.

### **6.3.1 THE FINAL OUTCOME**

The *structured systems approach to model conceptualisation* returned the following documented outcomes in respect to its application to the case study over a nine-month period:

- An organisational infrastructure which not only remedied from within the identified inherent unstructured complex phenomena it was subjected to, but also sustained ongoing improvement after the final implementation of the ultimate model.
- A viable alternative worldview enhanced by technology to the extent that all of its unstructured complex phenomena, including the social aspects pertaining thereto, could be satisfactorily addressed and as thus sustained in the future.
- The *structured systems approach to model conceptualisation*, was accepted as a viable an alternative management mechanism to address unstructured complex phenomena.

## 6.4 RESULTS MAPPED TO THE FINDINGS IN APPENDIX B

Should the overall results from the application of the *structured systems approach to model conceptualisation* as applied to the case study be mapped to the expectations of the wider industry to model conceptualisation as depicted in Appendix B, a number of interesting analogies can be drawn therefrom namely:

- Technology implementation has a broader application than just ‘automation’.
- Planning can be incumbent to extent long range and strategic perspectives as a result of the structured approach being deployed to model conceptualisation.
- ‘Me issues’, can effectively be addressed, not directly from the *structured systems approach to model conceptualisation*, but from its internal mechanistic functioning as a result of organisational restructuring and the mechanisms created therein. These issues include:
  - Resource management.
  - People problems.
  - Human resource planning.
- The *structured systems approach to model conceptualisation* results in technology and process forming a symbiotic relationship whereby both entities culminate in a formidable mechanism to the solving of unstructured complex phenomena commonly associated thereto.
- The *structured systems approach to model conceptualisation* facilitates communication. This communication extents beyond the normal demands of an organisation and ‘forces’ executives to involve themselves with not only external, but also critical internal communication.
- The *structured systems approach to model conceptualisation* establishes itself unequivocally as an alternative management mechanism to the solving of unstructured complex phenomena.

More specific to the research as a whole, the following tangent planes are present in the results from the case study and the industry requirements as depicted in Appendix B:

- The uniqueness of the *structured systems approach to model conceptualisation* was reinforced as an alternative management mechanism to current executive management approaches.



- It was unequivocally established that the *structured systems approach to model conceptualisation* had the potential to deal with the most challenging aspects pertaining to executive management namely:
  - Facilitating the identification of issues causing unstructured complex phenomena.
  - Structuring plans to deal with such unstructured complex phenomena.
- The *structured systems approach to model conceptualisation* manifested as the most suitable structured management mechanism, specifically aimed at the engineer in the emergent role of executive management dealing with unstructured complex phenomena.

## 6.5 CONCLUSION

This chapter availed the author of the opportunity to formally validate the formulated *structured systems approach to model conceptualisation*, the impact of the concept being demonstrated by means of an implementation in a real world situation, using a case study. The case study depicted here was especially selected to take advantage of the diverse spectrum of unstructured complex phenomena, which required solving. The unstructured complex phenomena ranged from process reengineering, technology implementation to societal issues. In addition, the case study called for organisational restructuring, bringing into play the author's approach to 'structure' including the 'midway approach' between over control and chaos within the context of the *structured systems approach to model conceptualisation*.

The case study furthermore served as a test bed for the *structured systems approach to model conceptualisation* as an alternative management mechanism to address unstructured complex phenomena, and in the process unequivocally established the fact when mapped backed to real world industry requirements. From this the conclusion can be drawn that the systems dynamics of the formulated *structured systems approach to model conceptualisation* specifically applied to the art of executive management, can be used to structure the outcomes of paradigm shifts introduced into organisations as a result of unstructured complex phenomena.

# Chapter 7

## CONCLUSION

*“And thus we do not comprehend the practical unconditional necessity of the mortal imperative, we yet comprehend its incomprehensibility, and this is all that can fairly be demanded of a philosophy which strives to carry its principles up to the very limit of human reason”.*

**Immanuel Kant<sup>1</sup>**

### 7.1 INTRODUCTION

It was only when coming to write this concluding chapter that the author came to realise that the single factor, which unites all of the elements of the problem solving methodologies contained within the developed *structured systems approach to model conceptualisation*, is the fact that all were vehicles of the same thing namely:

*“The development of principles concerning the use of system ideas in problem solving of real world situations”. “All the studies had in common – the ‘systems approach’ to unstructured complex phenomena”.*

These facts, culminate in the analogy that the outcome of this research is not as much ‘*an approach*’, as it is a ‘*set of principles to an approach*’, which in any particular situation have to be reduced to a method uniquely suitable to the particular situation, hence the applicability of the *structured systems approach to model conceptualisation* over a spectrum of disciplines.

### 7.2 CHAPTER AND CONTENT ANALYSIS

The chapter and content analysis, which is in line with the research design and methodology described in Chapter 1, Paragraph 1.5) provided the following details:

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<sup>1</sup> From: “Foundations of the Metaphysics of Mortals”.

- **Abstract:-** Provided the reader with a short synopsis of the extent of the research pertaining to the *structured systems approach to model conceptualisation* from an executive management perspective and associated complex phenomena in ‘real world’ situations.
- **Chapter 1 – The scope of the research:-** Set the scene for the research contained within the ambit of the thesis, starting with a brief introduction and background to the concept systems approach, the history thereof, which were expanded upon in Appendix C. This was followed by an insight into ‘real world’ phenomena and the mechanisms available to deal with such phenomena, primarily contained in the ‘Sources of Power’. The latter concept, which was expanded upon in Appendix A. The remainder of the chapter focused on the Research Problem, the Research Question, the Research Process, the Research Design and Methodology and concluded with an item dealing with the Demand for a Qualitative Research Strategy.
- **Chapter 2 – The complexity of the systems approach:-** This chapter contained the key issues, which contribute to the complexities of the systems approach. Furthermore, these issues, which were considered to be pre-requisites to the understanding of the reader to ensure that the interrelationships which these entities have with the systems approach, were understood and viewed in context of the overall research. The concepts which were discussed in this chapter were:
  - The concept ‘system’.
  - General Systems Theory.
  - The concept ‘systems approach’.
  - The concept ‘cybernetics’.
  - Closed and open systems.
  - The role of models.
  - The notions ‘*Weltanschauung*’ and ‘appreciative systems’.
  - ‘Causal loop diagrams’ and ‘reinforcing and balancing processes’.
  - Science and Technology impact.
- **Chapter 3 – A high level analysis of the hard systems approach:-** In this chapter, the major ‘hard’ systems methodologies, selected especially for their particular applicability to the research in this thesis were contextually analysed

at a high level in terms of literature reviews. The analysis covered the following hard systems methodologies:

- Systems engineering.
- Systems analysis.
- Operational research.
- Management cybernetics.
- Systems Dynamics.

Included in this chapter and in lieu of Chapter 4, which dealt with the soft systems approach, hard and soft systems methodologies were compared to add to the conceptual understanding of the reader of the two concepts. Furthermore, to provide a balanced analysis, the hard systems approach was analysed to highlight its major criticisms, positive aspects and features.

- **Chapter 4 – A high level analysis of the soft systems approach:-** In this chapter, the major soft systems methodologies, selected especially for their particular applicability to the research in this thesis were contextually analysed at a high level in terms of literature reviews. The analysis covered the following ‘soft’ systems methodologies:
  - The Viable Systems model of Beer (organisational cybernetics).
  - Churchman’s Social Systems Design.
  - Checkland’s Soft Systems Methodology.
  - Ackoff’s Interactive Planning.
  - Mitroff and Mason’s Strategic Assumption Surfacing and Testing methodology.

As in the case of Chapter 3 to provide a balanced analysis, the soft systems approach were analysed to highlight its major criticisms, positive aspects and features.

- **Chapter 5 – In depth analysis of the construction elements for the structured systems approach to model conceptualisation:-** Chapter 5, in the opinion of the author, was the key chapter in this thesis, as the chapter contents were focused on a detailed analysis of all of the construction elements, which culminated in the formulated *structured systems approach to model conceptualisation*. This chapter also provided impetus to the author’s objective with this thesis whereby, a ‘set of principles to an approach’, based on the philosophies formulated by revered academics during the Twentieth

Century, which includes the author's own contribution, can add value to the existing body of knowledge, in particular in the application of a *structured systems approach to model conceptualisation* by executive management of the Twenty First Century, when dealing with unstructured complex phenomena in a formalised and structured way.

- **Chapter 6 – Model conceptualisation as an alternative management mechanism:-** In this chapter the full potential of the *structured systems approach to model conceptualisation* were demonstrated using a case study. The benefits were compared to the requirements set in an analysis pertaining to an industry perception of the structured systems approach to model conceptualisation, which were contained in Appendix B.
- **Chapter 7 – Conclusion:-** In this concluding chapter, the research is summarised and evaluated in terms of 'real world' phenomena and the mechanisms available to deal with such phenomena, with particular reference to the formulated *structured systems approach to model conceptualisation*. Furthermore, the Research Problem and associated Research Questions are compared with the deliverables of the *structured systems approach to model conceptualisation* as an alternative management mechanism.

### 7.3 THE RESEARCH QUESTION

The research question, which was posed in this thesis, reads as follows:

- Can the systems approach, which is currently embedded in academic literature in various authoritative publications in various forms and permutations, be applied to 'model conceptualisation' to solve unstructured complex phenomena from an executive management perspective?

### 7.4 INVESTIGATIVE QUESTIONS

The investigative questions, which were posed in this thesis read as follows:

- Can the most pertinent elements and dominant traits of the systems approach as described by revered academics be extracted therefrom to culminate in a

new formulated *structured systems approach to model conceptualisation*, from an executive management perspective?

- Can management philosophies formulated during the Twentieth Century, in any way apply to the technology driven, dynamic and constantly changing management environments of the Twenty First Century?
- Can the systems dynamics of the formulated *structured systems approach to model conceptualisation* specifically applied to the art of executive management, be used to structure the outcomes of paradigm shifts introduced into organisations as a result of unstructured complex phenomena?

## 7.5 THE SIGNIFICANCE OF THE STRUCTURED SYSTEMS APPROACH TO MODEL CONCEPTUALISATION

In this thesis, this author provided a balanced view of the entire problem solving methodologies afforded by the hard and soft systems approaches. All of the methodologies contained ‘some’ elements, which could be applied to unstructured complex phenomena with proven track records as proof of the success. It is ironic that not one of these methodologies researched afforded the operating organisation executive *per se* with a structured systems approach and all-incumbent solution to the solving of unstructured phenomena.

The significance of the *structured systems approach to model conceptualisation* as upheld in this thesis is contained within the ambit of the following three elements:

- The *structured systems approach to model conceptualisation* is directed to the solving of unstructured complex phenomena from an executive management perspective’.
- The *structured systems approach to model conceptualisation* can be applied as an alternative management mechanism for the operating executive
- The *structured systems approach to model conceptualisation* can be applied and fulfil the requirements as set in the research and associated investigative questions in this thesis.

This thesis is then about a formulated *structured systems approach to model conceptualisation*, the use of a particular derived set of systems norms to facilitate the art of executive management. Furthermore, the *structured systems approach to model conceptualisation*, made conscious use of a particular concept of wholeness captured in the word ‘system’ to order a set of executive management norms.

## 7.6 AVENUES FOR FURTHER RESEARCH

From a perspective of solving unstructured complex phenomena, within an organisation marred with societal issues, which may emanate from a diverse range of sources, some of which may be as a result of forced interventions, open a plethora of avenues for future research, which are listed below:

- Psychological impact of unstructured complex phenomena on the employee.
- Psychological impact of unstructured complex phenomena on the organisation.
- Impact of unstructured complex phenomena on organisational profitability.
- Impact of unstructured complex phenomena on morale.
- The ‘hard’ systems approach applied to societal issues.
- The ‘soft’ systems approach applied to societal issues.
- The ‘hard’ systems approach as a management mechanism.
- The ‘soft’ systems approach as a management mechanism.

## 7.7 KEY OBJECTIVES

The key objectives of the author with this thesis and by implication forming the basis of any research undertaken at doctoral level according to Easterby-Smith, Thorpe and Lowe [47] and Kennedy [85], were:

- That the results of the proposed research make a significant contribution (add value) to the existing body of knowledge.
- That the results should be of such a nature that it can be applied immediately and effectively in any corporate or commercial business environment to enhance the art of executive management.

In view of this author, the *structured systems approach to model conceptualisation* as formulated in this thesis, amicably fulfils the above requirements as shown in Chapter 5 and Chapter 6.

## 7.8 FINAL CONCLUSION

In final conclusion then, this thesis, has been undertaken with the true belief that my years of ‘thinking’ and ‘practising’ a unique structured approach to management, can facilitate the task of every managing executive to the extent of solving unstructured complex phenomena. Furthermore, it is my conviction that this ‘set of principles to an approach’, which is based on the philosophies formulated by revered academics during the Twentieth Century, which includes the author’s own contribution, can add value to the existing body of knowledge and the art of executive management. This with particular reference to the systems dynamics of the formulated *structured systems approach to model conceptualisation* when applied by executive management of the Twenty First Century to structure the outcomes of paradigm shifts introduced into organisations as a result of unstructured complex phenomena.

While this thesis has at its core the objective to introduce the concept of a *structured systems approach to model conceptualisation* into the realm of executive management within a broader context, it is in the view of the author the most suitable structured mechanism specifically aimed at the engineer in the emergent role of executive management dealing with unstructured complex phenomena.