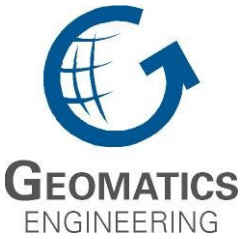

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Fiscal Cadastral Systems Reform
A Case Study of the General Valuation Project 2000 in the City of Cape Town

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by

Jennifer Whittal

September 2008

UNIVERSITY OF CALGARY

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A Case Study of the General Valuation Project 2000 in the City of Cape Town

by

Jennifer Whittal

A THESIS
SUBMITTED TO THE FACULTY OF GRADUATE STUDIES
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ABSTRACT

In 2000, the City of Cape Town generated market values of approximately 550 000 residential properties in Metropolitan Cape Town, employing Computer Assisted Mass Appraisal (CAMA). These valuations form the basis for local government property taxation. A high level of risk and, hence, uncertainty, dominated the landscape of complex change, such as that undertaken in Cape Town's General Valuation Project 2000 (GV2000 Project). To guide policy and practice in complex situations, current research in the area of fiscal cadastral reform focuses on formulating an appropriate framework for reform, with CAMA as a primary element. This research identifies a suitable theoretical and methodological framework for fiscal cadastral systems reform. This framework is informed by theory which is tested in application on the case study of the GV2000 Project and thereafter inductively extended. The main contributions of the research are in the exploration of an appropriate philosophical paradigm for fiscal cadastral systems research, the application of social systems theory in the consideration of the processes of property valuation and taxation as sub-systems of a fiscal cadastral system, which in itself is part of a larger whole (the cadastral system), and in the development of a methodological framework for fiscal cadastral systems reform. The findings of this research are that critical realism is a suitable theoretical basis for research in fiscal cadastral systems, that a social systems approach facilitates a holistic investigating including both the natural and social aspects of the system, that a pluralist multimethodological approach accommodates both positivist and interpretivist approaches and facilitates the identification of a suite of suitable and complementary tools for research and analysis of cases of fiscal cadastral systems reform. A further research outcome is the inductive extension of what are understood to be "best practices" in property valuation and taxation to an integrated, social systems, strategic framework for reform of fiscal cadastral systems.

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GLOSSARY OF TERMS

African National Congress: Political party leading first democratic government of South Africa since 1994 – was a banned resistance movement in the Apartheid years.

Apartheid: a race-based policy implemented in favour of the white population of South Africa between 1948 and 1994. It resulted in separation of all aspects of public and private life in accordance with race. Job reservation, mass evictions and relocations of people into areas demarcated according to race, creation of separate education systems, separate public facilities, pass laws restricting movement, and a race based legislative framework through which apartheid was enacted, are memorable results. Apartheid was enforced using military-style suppression of opposition.

Appeal: process whereby taxpayers may challenge their assessments (Eckert *et al*, 1990)

Appraisal Review: review of appraised value by a government body.

Appraised Value: market value as determined at a specific base date.

Assessed Value: value published in the valuation roll; either the full appraised value or a defined percentage of it. Sometimes called the "valuation".

Average Percentage Error: the average absolute error between actual and predicted sales prices.

Benchmark: a measure of performance derived from practice achieved by a similar organization, operating in a similar environment, with similar constraints. This is a useful tool for performance measurement of non-profit organizations such as government organizations (see section 2.6.1*)*.

"Best Practice": set of practices, or methodology, which is commonly, and internationally, believed to result in optimal performance. "Best practice" constitutes an achievable level of practice which strives towards an ideal which may never be practically achievable. "Best practices" are used in benchmarking (see section 2.6.1) processes to measure performance.

"Black": in the context of apartheid racial classification in South Africa prior to 1994, means persons of African ethnic groups. This definition only includes people who are

ethnically related to one of the Bantu linguistic groups; it does not include native Khoisan peoples.

Black Local Authority: In the Cape Town area this includes Nyanga, Langa, Gugelethu, Khayelitsha, Mufeni, Llwandle, and Crossroads. Breaklines: lines defining areas within which one can assume value correlation – neighbourhoods.

Cadastre: "A systematic and official description of land parcels, which includes for each parcel a unique identifier. Furthermore, the description includes text records on attributes of each parcel. The prototypical means of identification is a large-scale map that provides information on parcel boundaries" (Silva and Stubkjær, 2002, 410).

Cadastral System: "the combination of a cadastre – with its spatial focus – and a land register – with its legal focus" (Silva and Stubkjær, 2002, 410), including all aspects of the juridical, fiscal and regulatory cadastres, and developed and assessed considering its political, legislative, economic, technological, and social aspects and relationships.

Calibration: the process of determining the coefficients (or adjustments) in a model.

CAMA: computer assisted mass appraisal – "a system of appraising property, except for unique or special properties, that incorporates computer-supported statistical analyses, such as multiple regression analysis and adaptive estimation procedure, to assist the appraiser in estimating value." (Gloudemans, 1999, 360).

CAMA system: includes all aspects of information (collection of real data), management analysis and CAMA modelling for the purposes of property valuation.

Cape Divisional Council: a regional government structure established in 1855 for rural administration. By 1970 it consisted of five magisterial districts nine municipalities and 17 local areas.

Capitalisation:

Capitalisation 1: the conversion of the annual income into a lump sum value.

Capitalisation 2: the imposition of property tax, because of the fixed supply of property, induces reductions in property price. The investment potential of property becomes less desirable when compared with other forms of investment. This affects the current owner

each time the property tax rate is increased (Youngman and Malme, 1994). Decapitalisation would be the converse of the above.

City: refers to the City of Cape Town (renamed from the UniCity) and includes all previous MLC's within the Cape Metropolitan Area. The previous substructure of the MLC of Cape Town is included in the City.

Coefficient of Correlation (r): the degree of linear relationship between variables.

Coefficient of Determination: see R^2

"Coloured": in the context of apartheid racial classification in South Africa prior to 1994, means persons of mixed race including those from the Malay archipelago and other Southern African and East Indian Islands, Khoisan native peoples, and Chinese.

Critical Realism: This maintains the reality of the world, while accepting that knowledge of it is socially and historically influenced. It presumes that the real world contains objects and structures which are causally active and may (not always) give rise to events/perturbations which can be measured/perceived in the human realm. However, knowledge of these real objects and structures cannot be fully accessed due to flawed human intellectual mechanisms and our abilities to perceive these phenomena.

Critical Theory: Is committed to critical awareness on all levels, improvement, and pluralism. Otherwise known as post-structuralism and postmodernism.

Data: "a collection of signs …" of objects, elements, structures, or events in the real world "… relevant to a particular purpose" (Mingers, 2006, 128). Data elements are objective, but collections of data, by the nature of what forms the collection, contains and element of subjectivity. Data can be singular (sample size unitary) or plural.

Economic matters: to do with the management of concerns and resources of a community.

Effective Tax Rate: work the calculation of property tax rate backwards to get the actual rate charged. This is a calculation after rebates have been applied.

Emancipatory Paradigm: participatory and aims to expose and eliminate discrimination, unequal power influences/domination, conflict, and coercion, and in so doing promotes

equity and empowerment. Measures of performance are empowerment and emancipation (Jackson, 2003).

Emergent Properties: "The principle that whole entities exhibit properties which are meaningful only when attributed to the whole, and not to its parts. … (they) derive from its component activities and their structure, but cannot be reduced to them."(Checkland, 1999, 314)

Epistemology: "the study or a theory of the nature and grounds of knowledge especially with reference to its limits and validity" (Merriam Webster Online Dictionary), or how knowledge can be uncovered (assuming it is there all the time).

Equalisation: the process of making sure that equity is achieved between districts or assessment areas.

Equality: the sharing of a resource, asset or liability equally between parties. In this context, equality of the property tax burden should be achieved in a fair manner.

Equity1/Fairness 1: burden of payment should fall on those with the ability to pay (McMaster, 1991). See also *tax burden*.

Equity 2: the equal treatment of all parties. In this case, the fair treatment of all property owners in the valuation process i.e. the achievement of comparable market values for comparable properties. In a system in which market values are the overall aim above all else, equity cannot be achieved in all cases. In a situation of a flawed valuation, equity and market value are non-compatible, and one gives way to the other. See Horizontal Equity and Vertical Equity.

Fairness 2: "… should be related to the legislation upon which the tax is promulgated. In other words, the legislation should specify whether different types of property are to be taxed at different percentages of market value or whether different groups of 'taxpayer' are to be given some form of preferential treatment, such as reliefs, rebates or exemptions." (Plimmer *et al*, 2001).

Falsification: the process of disproving a theory, hypothesis or proposition

Financial matters: to do with the management of money

Fiscal Cadastral System: a systems conception including all elements of the input, structure, process, management and output for property valuation and taxation including material/technical, personal/cognitive, and social aspects of the system.

Fiscal Cadastral Systems Reform: refers to the reform of the system – it occurs when one or more aspects of the fiscal cadastral system is subject to substantial change.

Fiscal Cadastre: an official inventory of land parcels and often the improvements thereon, which constitutes the necessary information to be able to determine the value of property (land and, possibly, improvements) for the purposes of taxation.

Fiscal matters: of or relating to taxation, public revenues, or public debt, financial matters.

Formal Review: review of the fiscal cadastre by the property owning public for the purpose of verification of data, and review of property values. It is part of the formal process of valuation and generally takes place immediately at the close of a valuation cycle. The first round of appeals occurs due to objections to the fiscal cadastre generated following the formal review.

Functionalist paradigm: concentrates on improving efficiency and efficacy. Goal seeking and viability analysis are key mechanisms (Jackson, 2003).

Highest and Best Use: the most profitable use of the land at a specified time, given legal, physical, and financial limitations. This is used in the assessment of property value. It should reflect the thinking of buyers and sellers, and their market realities. Land economics and trends need to be considered.

Horizontal Equity: owners of properties of similar value should pay equal tax.

Improvements: additions made to the property, of a permanent nature, which (positively or negatively) contributes to the determination of the value of the property.

Incidence of property tax: how the tax burden varies with income. This term is also often used to include the spread of the tax burden not only between owners of property, but also between owners of capital, labour, consumers of housing services, and consumers of all goods and services (Bahl and Linn, 1992). This takes place indirectly through the influence

of the property tax on the land market and its determinants. The economic impact of property taxation is not fully resolved (Youngman and Malme, 1994).

Income (rental) market value: the present value of future benefits

Induction: a process of generalization from specific individual cases to general cases – it is usually associated with generalization from description to theory (Denzin and Lincoln, 1998a).

Information: same as data, real and objective, but also possibly abstract.

Information Technology (IT): refers to the hardware and software relating to computers – i.e. the tangible and intangible computer equipment.

Information System (IS): refers to system involving people, social structures and technology, and may include computers – in other words IT is a subset of IS. It involves IT, instruments/tools, information, organizations, people, processes and management. Success in all of these aspects is essential for overall success (Heeks and Bhatnagar, 1999, Lee, 2004).

Informal Review: review of the fiscal cadastre by the property owning public for the purpose of verification of data, which is voluntarily conducted by the administrators of the fiscal cadastre prior to its adoption. It may or may not include the actual valuation of properties.

Interpretive Paradigm: reality can never be known as knowledge of the real world is always subjective. Concentrates on achieving greater understanding between stakeholders – values, culture, politics, plurality of purpose, etc are understood. Measures of performance are effectiveness and elegance (Jackson, 2003). Otherwise known as subjectivist, constructivist, or soft.

Juridical Cadastre 1: an official record of land parcels including boundaries and tenure, which is established for legal purposes.

Juridical Cadastre 2: Register of ownership of parcels of land (Dale and McLaughlin, 1999).

Land Information System (LIS): an information system which is established and maintained for purposes of land management. The cadastral system is a subsystem of an LIS, which incorporates further subsystems of the juridical, regulatory, and fiscal cadastral systems.

Market value (or capital market value): the cash value which a willing buyer would pay a willing seller in a free market. This is often called an "arms-length transaction".

Market Value 1: "the highest price estimated in terms of money which the property will achieve if exposed for sale in the open market allowing a reasonable time to find a purchaser who buys with knowledge of all the uses to which it is adapted for, and for which it is capable of being used." (Baraquero, 1991).

Market Value 2: "the true economic value determined as that which could be assigned to the property if an unencumbered right could be transferred for immediate and complete acquisition by a purchaser of the property in its actual condition." (Kruimel, 1991).

Market Value 3: "the most probably price in cash that a property would bring in a competitive open market, assuming that the buyer and seller are acting knowledgeably, sufficient time is allowed for the sale, and price is not affected by special influences." (Eckert *et al*, 1990, 515).

Market Value 4: "The estimated amount for which an asset should exchange at the date of valuation between a willing buyer and a willing seller in an arms length transaction after proper marketing wherein the parties had each acted knowledgeably, prudently and without compulsion." (RICS, 1996, np)

Market Value 5: "the Present Worth of future benefits realized from ownership." Cannon (2001, 354).

Meaning: intersubjective interpretation of data and information which is dependent on the observer and on the structural coupling between observer and data/information (ability to understand and make sense of data/information).

Method: deals with how to do something – it may not be generally accepted, and can be project specific, rather than generally applied. Methods are taken to be unrelated to particular philosophy/theory underpinning research and practice (see also ***Tools***).

Methodology: refers to a structured group of methods/procedures which are generally accepted and executed in accordance with logical principles derived from underlying philosophy/theory/paradigm – methodology cannot be divorced from this.

Model: a representation of reality, often simplified, or "smoothed" – does not include outliers.

Model specification: the process of development of a mathematical model.

Multi-methodology: a use of combinations of methodologies, or only parts of these, and even individual methods/techniques.

Ontology: a set of ideas, assumptions and beliefs that shape and guide scientific activity – a world view or way of seeing things – the nature of existence/reality. This is the subject of knowledge.

Paradigm: a combination of assumptions about the nature of the world and knowledge. It can be taken to include ontology, epistemology, ethics, and methodology. Three main paradigms are identified: positive, interpretive and critical.

Phenomena: the way real things appear to the observer – in critical realism, phenomena are at the interface between, and provide the link between, reality and our knowledge of it.

Pluralism: using parts of methodologies from different paradigms in the same situation (Midgley, 2000).

Positivism: ontology is naïve realism – there exists a "real" reality which is apprehendable directly by observers; epistemology is dualist/objectivist - findings are taken to be true; methodology is mostly experimental/manipulative. Empirical/analytical methods are used. Otherwise known as objectivist, functionalist and hard.

Postpositivism: see ***Critical realism***

Postmodern paradigms: promote diversity (including the marginalized), creativity, involvement of emotions. Resolution of problems is understood to be only locally and

temporally relevant due to the complexity of postmodern society. Exception and engaging emotion are evaluative mechanisms (Jackson, 2003).

Price related differential (PRD): is a statistical measure used to assess the uniformity of an assessment.

Progressive Property Taxation: high valued properties pay more than their share of the tax burden.

Property Sales Price: the actual value paid for a property.

Property Tax: Taxation based on the value of land and possibly improvements.

Property Tax Levy: total income derived from property tax – determined in conjunction, or from the budget.

Property Tax Rate: the percentage of the property tax levy to the total tax base – this percentage is then used when determining individual tax liability based on the assessment. This is usually expressed as cents in the Rand, Dollars per $100 etc. This is the nominal tax rate and is calculated prior to rebates.

Property Valuation and Taxation: the process of ascribing values to real property, determining property taxes from those valuations, and collecting those taxes.

Proportional Property Taxation: high and low valued properties pay their share of the property tax burden.

R2: The coefficient of multiple determination (R2) is the percentage of the variance in the sale price explained uniquely, or jointly, by the independent variables in accordance with the model.

Regional Services Council (RSC): a regional South African government structure, established in accordance with the Regional Services Council Act No 109 of 1985, to deal with services in a metropolitan area which already displays a high degree of economic interdependence.

Regression Analysis: a statistical technique for correlating independent variables (characteristics of the property) with a dependant variable (market value) to estimate market value.

Regressive Property Taxation: low valued properties pay more than their share of the tax burden. Residential property tax has also been purported to be regressive as the proportion of wealth spent on housing decreases with total wealth – i.e. the use of property value as an indicator of wealth is regressive and favours the wealthy (Youngman and Malme, 1994).

Revenue: the income stream.

Sectional Title: A form of freehold ownership in South Africa which accommodates multiple owners on a registered land parcel through the spatial definition of single units, exclusive use areas, common property. Each owner's contribution to communal costs of maintenance etc. is recorded. A Sectional Title Plan is compiled and signed by a Professional Land Surveyor. It is approved and stored in the local office of the Surveyor General. A sectional title register is opened and registered with the Deeds Office.

SEE: The standard error of the estimate is a measure of the amount of deviation between the sale price and the estimated market value that is the standard deviation of the regression residuals.

Standards: in the context of this research standards are a set of minimum measures of performance which are set by international professional bodies such as the International Association of Assessing Officers. These will generally be quantitative measures and statistically derived.

System: a group of interrelated elements, treated as a whole, working towards a common purpose, and which exhibits properties which are different from those of its requisite parts (definition uses concepts from Checkland, 1999).

Systems Thinking: is known as the "fifth discipline" added to the other four learning organization disciplines of personal mastery, mental models, shared vision and team learning. It is a conceptual framework based on system dynamics, and provides tools to see interrelationships rather than linear cause-effect chains, and to see processes and patterns of change. Linked terms are feedback, recurrent structures, inter-relationships (Fullerton, 2004).

Systems Theory: is concerned with problems of relationships, of structures, and of interdependence, rather than with the constant attributes of objects (Katz and Kahn, 1966).

Social System: a parent term for various types of systems deemed to have a social origin including (but not limited to) economic systems, legal systems, political systems, cultural systems.

Tax burden: the ratio of tax relative to income paid by an individual.

t-statistic: is used to assess the significance of the individual regression coefficients.

Tools: tools range from tangible hardware/software, conceptual models, comparative frameworks etc.

Validation: the process of checking if a theory, hypothesis or proposition holds true (it is applied to particular test conditions).

Valuation: the process of determining the assessed value, or the "valuation".

Valuations Board: a board established to hear appeals against the fiscal cadastre by the property-owning public.

Vertical Equity: owners of properties of different value should pay different tax proportional to the difference in value of their properties (assessment ratio studies).

"White": in the context of apartheid racial classification in South Africa prior to 1994, means persons of European ethnic background.

LIST OF ACRONYMS

ANC:	***African National Congress (political party)***
BIP:	***Billing interface project***
BLA:	***Black Local Authority***
CAMA:	***Computer Assisted Mass Appraisal***
CDC:	***Cape Divisional Council***
CEO:	***Chief Executive Officer***
CMA	***Cape Metropolitan Area***
CMC:	***Cape Metropolitan Council***
COC:	***Coefficient of Concentration***
COD:	***Coefficients of Dispersion***
COV:	***The COV is equivalent to the ratio standard error of the estimate (SEE) to the average sale price expressed as a percentage.***
DA:	***Democratic Alliance (political party)***
DCF:	***Data Collection Form***
DP:	***Democratic Party (political party)***
GBA:	***Gross Building Area***
GEAR:	***Growth, employment and Redevelopment programme***
GIS:	***Geographic Information System***
GPS:	***Global Positioning System***
GV:	***General Valuation***
IAAO:	***International Association of Assessing Officers***
ICT:	***Information and communications technology***
IDW:	***Inverse Distance Weighting***
IMF:	***International Monetary Fund***
IPTI:	***International Property Tax Institute***
LGNF:	***Local Government Negotiating Forum***
LGTA:	***Local Government Transition Act No 209 of 1993***

LIS:	***land information system***
LOGRA:	***Lotus River, Ottery, Grassy Park Residents Association and another v South Peninsula Municipality 1999 (2) SA 817 I; [1999] 4 BCLR 440 I***
MLC:	***Metropolitan Local Council***
MRA:	***Multiple Regression Analysis***
NEPAD:	***New Partnership for Africa's Development***
NNP:	***New National Party (political party)***
NP:	***National Party (political party)***
PAC:	***Pan-African Congress***
PID:	***Project Initial Document***
PRD:	***Price related differential***
PVO:	***Provincial Valuation Ordinance***
RAG:	***Rates Action Group***
RDP:	***Reconstruction and Development Programme***
RSA:	***Response Surface Analysis***
RSC:	***Regional Services Council***
SABS:	***South African Bureau of Standards***
SANCO:	***South African National Civic Organization***
SAPOA:	***South African Property Owners Association***
SAST:	***Strategic Assumption Surface Testing***
SEE:	***The standard error of the estimate***
SSM:	***Soft Systems Methodology***
UN:	***United Nations***
USPAP:	***Uniform Standards for Professional Appraisal Practice***
VAT:	***Value Added Tax***
VTT:	***Valuation Task Team***
WLA:	***White Local Authority***

Part I: Setting the Scene

The aim of Part I is to identify the research area, highlight recent advances and debates within this area, and identify the philosophical position and assumptions that underpin the research work. Chapter 1 offers an overview of the research project. It sets out the research questions upfront, as well identifying the contribution to the sum of human knowledge that is expected to result from this work. Chapter 2 identifies current research in fields allied to reform of fiscal cadastral systems, while Chapter 3 is dedicated to an exploration of "best practices" in fiscal cadastral systems and is informed by research as well as standards and benchmarks used in practice. Chapter 4 develops the theoretical framework that underpins the research, and provides the philosophical basis for research design, execution and analysis in the following parts of the thesis.

CHAPTER 1. INTRODUCTION

1.1. INTRODUCTION

This study examines property valuation and taxation structures and processes from a systems perspective. It strives to add to the body of scientific knowledge in developing the concept of a fiscal cadastral system and its reform, and in proposing a suite of *methodologies*, *methods* and *tools* (see Glossary and 5.4.1) with which to research fiscal cadastral systems, as well as developing a strategic process framework to guide the fiscal cadastral reform process. The validity of these in the context of complex change processes is demonstrated through the case study of the General Valuation 2000 Project (GV2000) in the City of Cape Town, South Africa, between 2000 and 2007. The use of Computer Assisted Mass Appraisal (CAMA) systems in this project provides a particular focus on management information systems (MIS) and the role of technology in complex cadastral change management projects. This case study also serves inductively to extend the methodological framework for fiscal cadastral system reform.

1.2. STATEMENT OF THE PROBLEM

Underlying philosophical approaches (paradigms, ontology, and epistemology) to research in cadastral systems are seldom explored and almost never explicitly communicated in the literature (Silva and Stubkjær, 2002). Further, choice of methods and methodologies used in cadastral research are often not well argued. Most recent cadastral research has focussed on benchmarking processes (see 2.6.1) aimed at creating efficient cadastral systems. Case studies are also often used to inform theoretical development in this field (Silva and Stubkjær, 2002).

There is a need for a body of basic theoretical and methodological theory in the field of cadastral research (Silva and Stubkjær, 2002). Initial explorations in this area have identified social systems theory as of paramount importance (Bittner *et al*, 2000, Fourie and

van Gysen, 1995, Stubkjær, 2000, Stubkjær and Ferland, 2000, Williamson and Fourie, 1998). Although holistic and systemic approaches are advocated for reform of fiscal cadastral systems, systems thinking and practice is not embraced.

Drawing on existing scientific knowledge from allied disciplines is advocated as a way to extend theory, and establish cadastral research (and hence also fiscal cadastral research) as a discipline in its own right (Silva and Stubkjær, 2002). The need to include theoretical developments from information science, which is in the early stages of integrating social science theory, is recognized as a way forward (Silva and Stubkjær, 2002). Well-reasoned definitions of commonly used terms (cadastre, cadastral system, hence also fiscal cadastre, fiscal cadastral system) have not been fully developed (Silva and Stubkjær, 2002).

Extension of knowledge, not only in the description of reality, but also in the area of changing that reality (change management, cadastral systems reform) is required, in particular in the area of performance measurement (Silva and Stubkjær, 2002). Technical metrics for assessment of performance dominate the cadastral discourse, as well as so called “best practice” models and benchmarks whose validity across cultures and contexts remains questionable (Silva and Stubkjær, 2002). Critical research in fiscal cadastral systems performance measurement has as yet not been undertaken from a social systems perspective.

1.3. THE RESEARCH

This research is interdisciplinary, investigating the natural and social worlds in combination, drawing on theory and practice from a variety of hard and soft traditions such as cadastral systems, social science (social systems), information systems management, change management, operations research, and case study research.

A critical realist paradigm and theory from the social sciences, which is increasingly being applied in the field of information systems, informs the theoretical framework of the research.

A multimethodological approach to research and analysis of "best practices" in fiscal cadastral reform, and of the case study, is adopted. Appropriate *methodologies/ methods/tools* are identified and used to analyse what are understood to be "best practices" fiscal cadastral systems reform. An exploratory and descriptive single case study is conducted of the reform process undertaken by the City of Cape Town through the GV2000 Project. The analysis of this case study further tests the proposed theoretical and methodological frameworks. This process serves to confirm or refute their applicability, as well as inductively extending the methodological framework. A view of the fiscal cadastral system and its reform emerges in the course of the social systems analysis of the GV2000 Project. The logical progression of the thesis in four Parts is illustrated in Figure 1.1.

The main contributions of the research are in the identification of an appropriate philosophical paradigm for cadastral systems, the application of social systems theory in the consideration of the processes of property valuation and taxation as sub-systems of a fiscal cadastral system, which in itself is part of a larger whole (the cadastral system), and in the development, testing and inductive extension of a framework for fiscal cadastral systems reform.

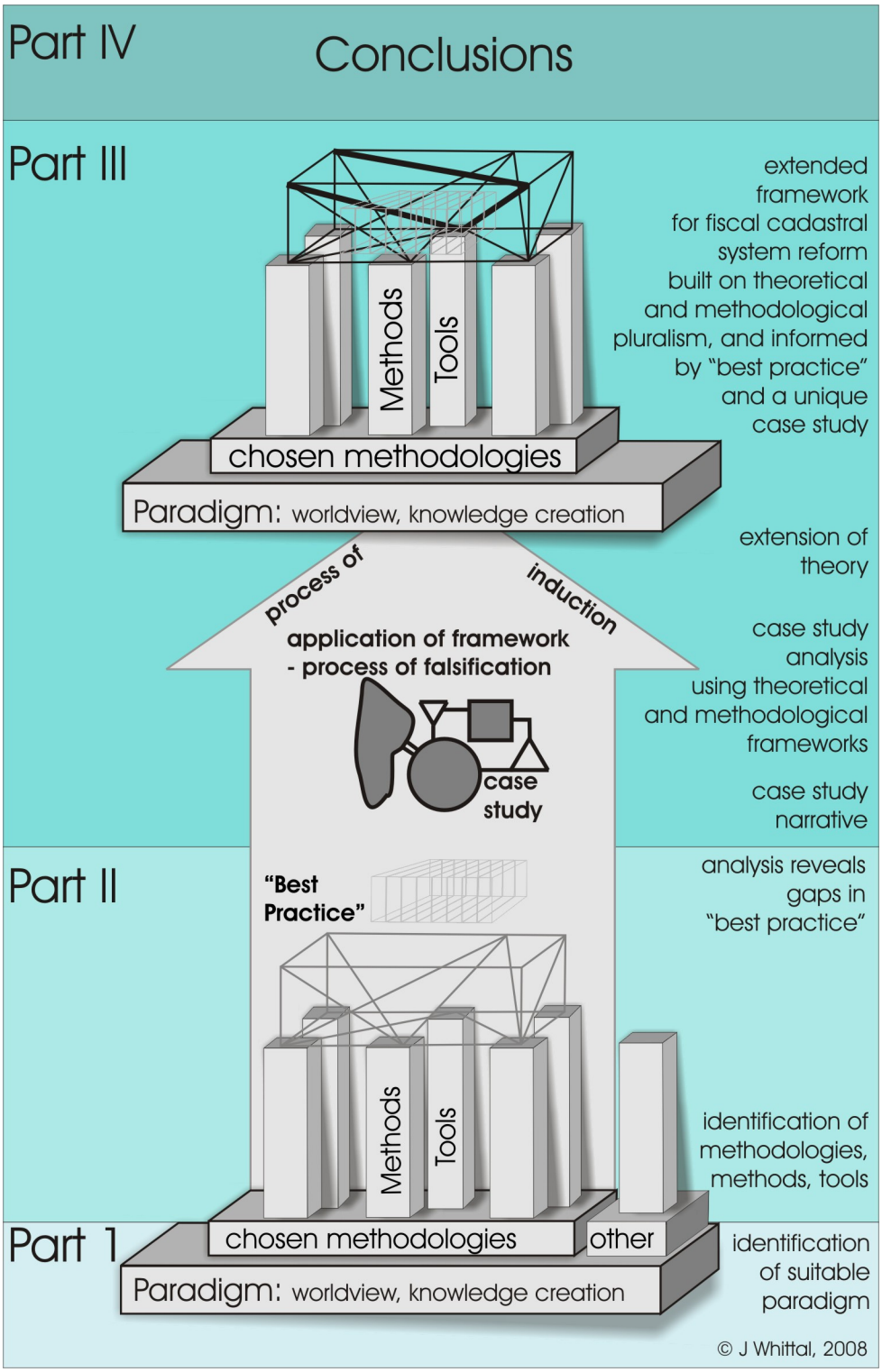


Figure 1.1 Logic of thesis development

1.4. RESEARCH OBJECTIVES

1.4.1. Primary research objective

The primary objective of this research is to attempt to develop a framework to guide the processes of reform of a fiscal cadastral system.

1.4.2. Secondary research objectives

The secondary objectives of this research are necessary precursors to the realization of the primary objective:

a) To identify an appropriate philosophical theoretical framework for studying fiscal cadastral systems reform using information technology.
b) To identify suitable methodological and analytical frameworks to describe and analyse fiscal cadastral system reform in general and in a complex case study

1.5. RESEARCH ACTIVITIES

1.5.1. Theoretical framework

a) The predominant philosophical approaches to knowledge creation (that is positivism, interpretivism and critical realism) are investigated and critiqued for the purpose of research of complex real world projects such as reform of fiscal cadastral systems.
b) An investigation is conducted whether a systemic approach is appropriate in conjunction with the philosophical approach identified in a).

1.5.2. Methodological and analytical frameworks

a) Various systems methodologies are investigated and critiqued with a view to identifying a suitable combination of approaches for this research, and for guiding the implementation of fiscal cadastral systems reform in general.
b) Suitable systems tools with which to research and analyse the processes of reform of fiscal cadastral systems are identified.

c) Fiscal cadastral establishment and property valuation and taxation structure and processes, purported to be "best practice" by leading researchers and practitioners, are identified. These are critiqued from a critical realist and systems perspective.
d) A single case study of the GV2000 Project of the City of Cape Town is undertaken in order to provide a rich description of the case and to identify substantive issues in implementation, risks, drivers of reform, structures used and processes undertaken.

1.5.3. Framework for reform of fiscal cadastral systems

a) This single case study is critiqued using the adopted theoretical position and the identified methodologies, methods and tools, as well as models of the fiscal cadastral system developed earlier.
b) The multi-methodological framework for fiscal cadastral systems reform is inductively extended based on the findings of the case study analysis.

1.6. THE CITY OF CAPE TOWN AND THE CASE STUDY OF THE GV2000 PROJECT

1.6.1. Post-apartheid transformation and urbanisation

The Metropolitan City of Cape Town (referred to here as "the City") is situated at the south-western tip of Africa with a footprint of over 2100 square kilometres. The spatial structure of the City is typical of post-apartheid South African cities.

Following the end of apartheid in 1994, transformation has been undertaken in many spheres of South African society to reform race-based structures and processes created by the apartheid system, and to achieve social and political stability and economic growth. At local government level, municipal boundaries were restructured along non-racial lines, and service provision was extended to areas previously excluded. However, racially defined settlement patterns and concomitant economic, health, education and service provision disparities are a legacy of apartheid policies.

The City has doubled in size in the last 20 years and is currently home to over 3.2 million people (Powell, 2007). Over 30% of the urban population is inadequately housed in informal and backyard dwellings, or in overcrowded conditions in formal housing (City of Cape Town, 2006). About 115 000 families were estimated to be living in informal settlements in 2005, which are mostly on the "Cape Flats", away from the central business district of Cape Town and the Table Mountain Chain. Social housing programmes in the City have produced about 40 000 sub-economic housing units in 5 years (City of Cape Town, 2006, Tshose, 2007). The backlog is estimated to be over 300 000 housing units and continues to increase (City of Cape Town, 2006). In contrast, high-end residential properties on the international market are also in evidence, and are located around the City's attractive natural features – the Table Mountain chain and the Atlantic and Indian Oceans.

1.6.2. The need for fiscal cadastral reform

Reform of the fiscal cadastral system became a priority towards the end of the 1990s. Prior to 1994 there were 18 municipalities, within greater Cape Town, whose boundaries were racially defined. In 1994-95, transitional councils were established called the Transitional Metropolitan Local Councils (abbreviated to MLC's), of which Cape Town (the city centre/downtown and surrounds) was one of six. An additional structure, the Cape Metropolitan Council (CMC), was established to deal with issues of a metropolitan nature. After new legislation governing the structure of municipalities was passed and, after local elections were held in 2000, the transitional structures were amalgamated into the Cape Town City Council, which covers the entire metropolitan area.

Inequalities in property valuation and taxation across the City were apparent within the newly formed municipal areas, while many properties had not been valued nor taxed prior to the GV2000 Project. Their inclusion in the property tax base was a priority, as well as the creation of a common valuation roll.

Not the least of the challenges facing local government was the merging of fiscal cadastres inherited from the previous administrations. These were of varying ages, completeness, and correctness. It was soon apparent that a new process of valuation was required, rather than a revision of the existing system, in order to facilitate the generation of an inclusive valuation roll upon which equitable property taxes could be based. With over 500 000 formal properties in the new City of Cape Town, the data collection and processing challenges were enormous.

The City's ability to conduct property valuations and levy property taxes in an acceptable and sustainable manner was negatively impacted by the many multifaceted challenges to local governance during the process of restructuring municipal boundaries, the resulting processes of organizational transformation, as well as the rapid differential changes in the residential property profile of Cape Town. Historically, legislation governing the processes of valuation and taxation was enacted at provincial level. This was subject to reform and replacement with property tax legislation at the national level, adding to the complexity of fiscal cadastral reform.

1.6.3. The GV2000 Project of the City of Cape Town

The GV2000 Project was conceived within a climate of rapid change and complexity. In order to deal with lack of capacity in local government, international consultants were appointed, and a public-private partnership was formed with Africon (Epstein, 2000a, GVPMT, 2000a). In August 2000 data collectors began visiting every residential property in the City of Cape Town in order to record property characteristics.

Information technology in the form of CAMA offered a solution to the technical problem of assessing many thousands of residential properties in a short time. Historically, property valuations had been conducted using single property appraisal methods using comparative sales, but these methods are time consuming and require professional valuation expertise, which is in short supply and is too costly (IPTI, 2002). CAMA offers a technological solution to mass valuations. It estimates the market value of every property based on

mathematical modelling of the relationship between actual sale prices (dependent variable) and property characteristics (explanatory variables). Sales data is obtained for a period of time and reduced to a common date using property price indices.

Use of CAMA within the context of a developing African city was untested at the start of the GV2000 Project. Implementing CAMA in Cape Town faced many challenges such as sparse sales data in some areas, as well as clustered, non-homogenous, outdated, incorrect and inconsistent property data in many areas. In addition, an active property market is required. This is not the reality in many areas of Cape Town in which government housing programmes have been executed, nor for former "black" areas which are well established but were held in ownership only after the demise of apartheid. Land and housing shortages impede the development and maturation of a formal active market in sub-economic housing areas as few properties are transferred. When properties are transferred, informal sales are common (Marx and Royston, 2007) and formal registration of ownership is not changed. Informal sale data is not recorded by the Deeds Office, and is therefore not included in the fiscal cadastral database.

Legislative reform occurring concurrently with the GV2000 Project added a further layer of complexity to the use of CAMA in Cape Town. There was no legal provision for the implementation of CAMA at the outset of the project. Implementing a new technology outside of the current legal framework added a high degree of uncertainty and risk.

The deadline for the GV2000 Project was July 2002. The process of property valuation was completed in February of that year and informal review followed. Project handover took place in June 2002. This was followed by a process of formal review (appeals) after which the property valuation roll was adopted as final. The next cycle of property valuation took place in 2006-7 and in mid-2007 a new valuation roll was adopted.

1.7. PERSONAL BIAS

The bias and qualities of the researcher are commented on fully in section 6.2.4. In brief, the primary researcher has academic degrees which are highly technically oriented with no social or political components and seated firmly in the positivist paradigm and hard science tradition. She worked as a Professional Land Surveyor for the City of Cape Town for 4 ½ years and has built up relationships of trust and respect with various key individuals in the organization. During this time she was immersed in the culture of the organisation, and this familiarity is a strength in the case study, but it also adds to the researcher's bias.

Possible influence of bias on the research outcomes and on the generalizability of the findings was limited through multifaceted triangulation in the acquisition and analysis of the case study data. Evidence of inclusion of personal and social aspects outside of the material/technical bias of the researcher is demonstrated in the Three Worlds Model of the case study (see section 9.4.3).

1.8. RESEARCH SCOPE

The scope of this research project is limited to:

- Analysis of the fiscal cadastral system, as a subset of the broader cadastral system, but which includes all aspects associated with property valuation and taxation.
- Cases of fiscal cadastral systems reform involving the valuation and taxation of hundreds of thousands of residential properties in a metropolitan area using CAMA.

Aspects beyond the scope of this research:

- Medium and long term feedback of the societal, economic, political and financial impacts of the reform of fiscal cadastral systems are considered to be beyond the scope of this research, but would provide a useful topic of analysis should other researchers take up this investigation (economic and financial outcomes of a fiscal cadastral system are generally known as the incidence of property taxation).

- Technical issues relating to application of CAMA and statistical software, and interfacing with data from the land information system (LIS), are included but not investigated in detail in this research.The details of the mathematical modelling of market values on a large scale are not the primary subject matter of this work. Theory relating to this is well documented in Eckert *et al* (1990) and Gloudemans (1999).The concept of property taxation based on market value of land and improvements is an operating constraint for this case study as specified in the Local Government: Municipal Property Rates Act (No. 6 of 2004, hereafter referred to as the Property Rates Act) and its preceding Bills. It is in line with international trends to move to systems of market value taxation. The followers of Henry George, and other land economists and taxation experts, question this system of taxation. It cannot be assumed to be acceptable to property owners, and is often referred to as a "wealth tax". An analysis of the market value system does not form part of this research, although it influences public perception and acceptance of the system employing this prescribed method.This research does not investigate in detail the relationship between the fiscal cadastral system and higher order systems such as are commonly termed multipurpose cadastral systems, or management information systems (MIS)/land information systems (LIS).

1.9. RESEARCH ASSUMPTIONS

The case study of the GV2000 Project, from which knowledge is inductively extended, has the following context:

- A large city or metropolitan structure in the process of socio-political, legislative, organizational/structural/procedural, and technical change.
- Social challenges:
  - A multi-cultural population with diverse belief systems, norms, perceptions, political persuasions, etc., relating to property ownership and payment of land taxes.

  - Large rich-poor scale within the area under consideration, ranging from below the poverty line informal settlements to extremely wealthy neighbourhoods.
  - Large scale geographical differences in public services largely based on apartheid city structure and historic underinvestment in many areas
- A secure system of land tenure is generally (apart from informal settlements in the city) in place and an accurate register of properties and property owners is mostly available, or can be generated.
- Current land tenure issues do not unduly complicate the political issues surrounding property taxation.
- Access is available to an up-to-date Land Information System (LIS) that can provide the base property extent and ownership data for the fiscal cadastre.
- Adequate information technology, office and Geographical Information System (GIS) support staff are available from the public offices, or can be recruited for the project duration, or that the requisite skills can be accessed through public-private partnerships, contracts and consultancies.
- CAMA systems are available and have the potential to be integrated compatibly with existing systems.

1.10. CONTRIBUTION TO KNOWLEDGE

As a basis for this research the underlying philosophical framework of critical realism is adopted (Mingers, 2006, see Chapter 3). This does not appear to have been used to date in research or practice within the cadastral, or property valuation and taxation communities. Theoretical foundations of these fields of study have not generally been explored, and so this level of enquiry within these domains is a significant contribution. The understanding of scientific enquiry into real world systems explored in this thesis will be of interest to these communities, which have, to varying degrees, become familiar with Soft Systems Methodology (SSM), but have not moved significantly beyond this approach, nor delved in

depth into its philosophical assumptions about the nature of reality and the creation of knowledge.

This research also identifies a suite of methodological approaches from a number of relevant disciplines which can be applied to fiscal cadastral system reform projects. It provides a critique of different systems approaches to the application of technology in organizations, and investigates different change management models, proposing an inclusive change management methodology. It provides a synopsis of what is understood internationally to be "best practice" in fiscal cadastral systems reform. Further, it investigates the case study methodology as a suitable research approach in this field of inquiry.

Finally, this research extends the fiscal cadastral data and property valuation and taxation process methodology to a fiscal cadastral systems framework. No similar research study has been identified to date. The major impact of this study is therefore a contribution in terms of methodological theory in the field of fiscal cadastral systems and their reform.

1.11. ORGANIZATION OF THE DOCUMENT

Part I: Setting the Scene

The aim of Part I is to identify the research area, highlight recent advances and debates within this area, and identify the philosophical position and assumptions which underpin the research work.

Chapter 1: Introduction

In this chapter the research problem is introduced, the objectives of the research are outlined, and the specific research questions to be addressed are tabulated. Research methods employed and data types used are reported upon, together with the scope of the research and the underlying assumptions. Finally, the contribution of the research to the sum of human knowledge is presented.

Chapter 2: Review of research in allied fields relevant to fiscal cadastral reform

This chapter identifies recent advances in research and practice in technology and information systems, identifies operating definitions for these, and highlights relevant research. It further reports on change management methodologies and methods of performance assessment.

Chapter 3: International "best practice" in fiscal cadastral systems

This Chapter details what are understood internationally as "best practices" for the establishment, operation and maintenance of the fiscal cadastre and for property valuation and taxation processes, as well as reform of these and measuring their performance. This "best practice" framework is derived from literature reflecting research and practice in the field, and is interpreted further in the form of a conceptual model in Chapter 7.

Chapter 4: Development of the theoretical framework

In this Chapter a theoretical framework that seeks to conceptualize the use of information systems to effect change in complex organisational systems, is identified. The predominant approaches to Information Technology and Information Systems (IT/IS), forming the foundations of research and practice in this field, are summarized and a critique of these is conducted. After consideration of the alternatives, critical realism is argued to be an appropriate and useful paradigm from which to approach this research. From this basis, a holistic approach to knowledge creation in real world problems is identified as suitable. General systems theory, as approached from a critical realist perspective, is argued to be a useful way to view complexity in society, which, in turn, is the platform for all case studies on the "real world" stage.

Part II: Methodological and Conceptual Frameworks

The aim of Part II is to link the underlying philosophical assumptions of critical realism to appropriate methodologies which can be combined to good effect in a pluralist approach to answering the research questions.

Chapter 5: Multi-methodological approach

Having identified the social systems approach in Chapter 4 as suitable for this research, this Chapter summarizes and critiques social systems methodologies in management science in order to identify an appropriate methodological framework for conducting the research and analysis. A multi-methodological framework is identified and a combination of the methodological approaches of Mingers (2006) and Zhu (1999, 2001) is proposed.

Chapter 6: Tools of observation and analysis

The GV2000 Project provides an opportunity to observe and analyse a real-world case of fiscal cadastral reform in Cape Town. Case study research methods of longitudinal data collection, analysis and generalization are identified as appropriate. Change management strategies can go a long way towards increasing performance and sustainability of initiatives. A pluralist change management framework offers a holistic and inclusive approach to analysing complex change of this nature including context, content, process and structure.

Chapter 7: Analysis of fiscal cadastral systems "best practice"

This chapter interprets the "best practices" in fiscal cadastral establishment and in the processes of property valuation and taxation (in Chapter 3) from a critical realist and multi-methodological approach. This process forms the first critique of the proposed theoretical and methodological frameworks. The resulting conceptual models also highlight aspects of "best practices" which require review and development.

Part III: The Case Study

The aim of this part is to present and explore the case study itself from a pluralist critical realist perspective, in order to assess to what extent systems and change management theory and methodologies were applied in the Project which impacted on its success/failure, and to inductively extend the "best practice" methodological framework to a holistic systems framework.

Chapter 8: Case study of the General Valuation Project 2000 of the City of Cape Town

The specifics of the case study on which this research is inductively extended are introduced in this chapter. This involves a detailed description of the context of the General Valuation Project 2000, its goals, risks, challenges, design, and execution, as well as performance measures used. The chapter is written in narrative style, and interpretations of the data are kept to a minimum in this chapter to facilitate the process of naturalistic generalization by future researchers. Analysis of the case study is conducted in Chapter 9.

Chapter 9: Analysis of the case study and extension of frameworks

The case of the GV2000 Project is analysed with respect to:

- The underlying philosophical assumptions and world views of Project role players
- Approach to implementation of technology in a change project
- Evidence of systems thinking and systems approaches
- Change management tools and processes employed (drivers, risks, stages processes etc.)
- Organisational structure and processes (VSM)
- Change elements, historic influences, logical and cultural streams in design and implementation (SSM Two Streams Modelling)
- Measures of performance used (7E's framework for performance measurement)

Following this analysis, a conceptualisation of the fiscal cadastral system emerges, and methodological and analytical frameworks for fiscal cadastral systems and their reform are inductively extended.

Part IV Conclusions

The aim of this Part is to draw together the main conclusions which have emerged from the preceding chapters and to relate these back to the research objectives.

Chapter 10: Conclusions

This chapter summarizes the research conclusions in a systematic manner structured along the lines of the research objectives. Recommendations for future research conclude the chapter.

CHAPTER 2. REVIEW OF RESEARCH IN ALLIED FIELDS RELEVANT TO FISCAL CADASTRAL REFORM

2.1. INTRODUCTION

The aim of this chapter is to highlight current research in various areas of interest to the primary research objective of developing of a framework for fiscal cadastral systems reform. Specific research in fiscal cadastral systems is presented in Chapter 3, while this Chapter focuses on research from related fields.

2.2. IDENTIFICATION OF RELEVANT ALLIED FIELDS OF RESEARCH AND PRACTICE

An integrated land information system (LIS), of which the fiscal cadastre is a part, relies heavily on computerized management information systems (MIS) whose establishment and maintenance are a function of the public sector in most, if not all, countries. Research in *information technology* and *information systems* (*IT/IS*) is thus highly relevant. It is evident in Chapters 3 and 4 that a social systems approach is appropriate for cadastral systems reform in general and thus also for fiscal cadastral systems reform. Social systems methodologies in IT/IS change projects are therefore of interest and are included in this review of current research. Case study and change management tools are identified in Chapter 6 as essential in the research design, observation and analysis of the case of fiscal cadastral reform in the GV2000 Project in Cape Town. The use of such tools in the IT/IS and cadastral research communities are highlighted. An important, but often omitted, component in change management, particularly in cadastral systems reform, is performance measurement. This chapter concludes with commonly used measures of performance in the public sector, especially in change projects involving IT/IS.

2.3. RESEARCH IN INFORMATION SYSTEMS

Providing a basis for any approach to information systems is a common understanding of the nature of *information*, *data*, *meaning*, *information technology*, and an understanding of what is meant by an *information system*. In order to develop these concepts, it is essential to have an understanding of the philosophical approaches towards using information technology in organisations.

2.3.1. The nature of information, data, information technology, and information systems

A theoretical understanding of the nature of data, meaning and information is required before approaches to information systems can be considered. Mingers (2006, 128) defines data as "a collection of signs relevant to a particular purpose" – it is thus a collective term for information elements (signs) and not primary to this theoretical discussion. A simpler and more useful understanding of data is that it is the raw acquired material. Acquisition of data is by human or non-human sensing (e.g. eye or camera). Data itself is objective although the mechanism of collection and choice of what data to collect will have an element of subjectivity.

Meaning is understood to be the interpretation of data. It is inter-subjective and inhabits the domain in which data is shared (Mingers, 2006). There is shared consensual understanding (like language) through signs (language is also a sign). Its nature is dependent not only on the individual observer, but also on the structural coupling between the source of the information and the receiver (Mingers, 2006).

One approach to information is synonymous with the meaning derived from data – it concludes that it is subjective and formed through the process of interpretation of data. In this interpretation meaning is a subjective tool to interpret data, and hence information itself is entirely subjective (Checkland and Scholes (1990), Lewis (1993)).

This interpretation of information is inconsistent with common understanding of the term "information" (e.g. library information is understood to mean cumulative objective data about library holdings) as being objective and excluding any process of ascribing meaning. The interpretation of Mingers (2006) is more in line with this common understanding of information (see Chapter 4 on *critical realism* which is the paradigm adopted in this research). It is understood to be objective and real although possibly abstract. This definition of information allows for the co-existence of natural and social information to exist independent of observation (objective), and yet also to be interpreted and understood as meaningful in the context of the observer (subjective) (see Section 4.3.3 and Figure 4.3).

To summarize, operating definitions for the purposes of this research are as follows:

Data: "a collection of signs …" of objects, elements, structures, or events in the real world "… relevant to a particular purpose" (Mingers, 2006, 128). Data elements are objective, but collections of data, by the nature of what forms the collection, contains and element of subjectivity. Data can be singular (sample size unitary) or plural.
Information: same as data, real and objective, but also possibly abstract.
Meaning: inter-subjective interpretation of data and information which is dependent on the observer and on the structural coupling between observer and data/information (ability to understand and make sense of data/information).

This discussion leads on directly to an exploration of the terms "information technology" and "information system". Understanding of the term "technology" has evolved over the years. Berman's (1989) understanding is focussed on the physical, while Vig (1988, 10) was, in the author's opinion, ahead of his time in identifying a body of knowledge rules and concepts, practices, physical artefacts, structure and processes, as well as the influence of technology on society in his interpretation of technology. Baark and Heeks (1999) include infrastructural requirements, management and technical skills, as well as less tangible factors such as the social and cultural environment in which technology is employed.

A more systemic understanding of technology and information technology emerged in the literature, and led to the development of the concept of information systems. Infrastructure is tangible (hardware, software, personnel) as well as intangible (knowledge, processes). Knowledge itself can be tacit or explicit. If one agrees with the contention that tacit knowledge is inherent in technological systems, then the human element and human-held skills and knowledge are vital to its successful implementation.

Mingers (2006) identifies the information system as only the material/technical component, whereas the "meaning system" involves human beings and interpretation and is hence subjective. Furthermore, in line with critical realist thinking, he states that it is impossible for human beings to behave objectively as we operate in a world of interpretation and subjective meaning. Mingers (2006) has challenged the IS community to focus more attention on "meaning systems", which is a conception derived from thinking about the nature of information. The operating definitions of information technology (IT), information system (IS) and "meaning system", appear in themselves to be highly subjective, and it is necessary therefore to identify operating definitions for this research.

The definitions of IT and IS commonly used (however not by Mingers (2006)), are derived from the distinction between the material/technical and the integrated techno-social system, and will be used in this thesis:

Information Technology (IT): refers to the hardware and software relating to computers – i.e. the tangible and intangible computer equipment.
Information Systems (IS): refers to the systems involving people, social structures and technology, and may include computers – in other words IT is a subset of IS. It involves IT, instruments/tools, information, organisations, people, processes and management. Success in all of these aspects is essential for overall success (Heeks and Bhatnagar, 1999, Lee, 2004).

The synergy between this definition of information systems and those of cadastral systems and fiscal cadastral systems, is a reflection of the systems thinking which underscores these definitions.

2.3.2. Theoretical basis of information systems research

The location of information systems research at the intersection of the natural and social worlds is highlighted by Gregor (2006) as well as its link to other disciplines of application, such as in cadastral systems research. "To understand IS, theory is required that links the natural world, the social world, and the artificial world of human constructions. Thus, the body of knowledge that is needed draws on natural science, social science and what has been termed design science" (Gregor, 2006, 614).

Gregor (2006) classifies theories in IS into five primary goals of theory. This case-based research into fiscal cadastral systems reform is situated under goals a), and e):

a) Analysis and description: theory attempts to describe a phenomenon, relationships and boundaries between entities, and to generalize the findings.
b) Explanation: theory attempts to describe how, why and when things happened – it establishes causality and is used when greater understanding is desired than can be gained from analysis and description alone.
c) Prediction: theory attempts to predict future outcomes – what will happen with a certain degree of probability given certain preconditions.
d) Prescription: defines a method which will lead to a particular structure being produced (e.g. in a recipe) – it explains how, why, when and what will be.
e) Design and Action: theories of this nature explain how to do something, usually through constructs, models, methods, and implementations.

2.3.3. A critical realist perspective in IS research

Walsham (1995) is well known for his writing on interpretive research in the field of information systems. He has accepted (Walsham and Sahey, 2006) the plausibility of the ontological position of critical realism adopted by Mingers (2006) noting that it could be

used for interpretive research along with phenomenology and hermeneutics. However, he personally stands by pure interpretivism. Critical realism is supported by Carlsson (2004) who posits arguments against the common alternatives to positivist IS research. Grounded theory is said to be too focused on the micro-level and not able to adequately include macro features. Structuration theory is criticized for its overemphasis on the link between agency and structure. Actor-network theory also overemphasizes agency, structure, and micro-factors. Mingers (2001) is a strong proponent of critical realism in IS research and its adoption as the underlying approach for this research is argued extensively in Chapter 4.

2.3.4. World views and IS

Three predominant models of world views applicable in IS research and practice are the TOP model of Linstone (Linstone and Zhu, 2000), the Three Worlds model of Mingers (2006) after Habermas, and the Wuli, Shili, Renli model of Zhu (2000a, 2000b, 2001, 2002). There have been various comparisons of the WSR approach, in particular the comparison of WSR with the TOP approach of Linstone (1984 and 1985). These are further critiqued in Chapter 5.

The debate of hard- versus soft-systems and functionalism versus interpretivism is put to rest with both TOP and WSR approaches which identify a holistic and inclusive approach to these concepts (what is otherwise known as a multiparadigm approach – see Chapter 4). Both TOP and WSR approaches embrace uncertainty and dynamic operational environments such as that of the case study analysed as part of this research.

Tettey (2002) has applied the WSR approach in Ghana, Africa, and found it to be a useful tool in the investigation of the dual paradigm shifts in IT and *reinventing government (REGO)* (see 2.5). Initially favouring the information technology transfer *life-cycle* (see 2.4.7) of Baark and Heeks (1999), he identified its limitations when coupled with the social systems approach in that it concentrates on IT development and ignores dynamics which are not related directly to IT development, but may have an impact on outcomes. The WSR approach does not fall into this trap as it eliminates the reductionism of one-dimensional

analysis. It allows one to include analyses of the conception-reality gap, factors which shape IT related projects, as well as facilitating an interactive process of learning.

2.3.5. Holism and a systems approach

Westrup (1996) addresses the process of using technology as a tool for change implementation, and in particular the application of organisational theory to the IT change process. He argues that neither the organisation, nor the technology, can be described as social or technical. Rather, what becomes social and what becomes technical are by-products of the systems development process. This can only be revealed if a systems approach is adopted which will allow interrogation of multiple elements and their interactions. Heeks (2002) also advocates the use of soft systems tools. Dalcher (2004) has conducted research in the reasons for failure of change projects involving IS and has identified that a holistic (systems perspective), inductive (meaning derived from the elements and the context, overall patterns can emerge) approach is preferred.

Four main approaches to IS implementation are given by Heeks (1999): ignore, isolate, idolize, and integrate with the integrate model being identified as the most desirable, but least used (Heeks and Davies, 1999). Berman and Tettey (2001) advocate the approach of integration of IT and use of Soft Systems Methodology (SSM) tools (see section 5.3.2 and Figure 5.3). A cultural analysis (socio-political process) as well as a logic-based stream of analysis (in which technological changes should be in line with institutional reform) is advocated in SSM. In the implementation of IS, training is required, the way in which public service works, as well as values and attitudes may require change. Closing gaps between expectations and performance, and changes in political processes to include openness and accountability (Berman and Tettey, 2001) are also deemed important.

Boundary setting in defining the system should be flexible in order to facilitate investigation beyond the boundaries of the system (Dalcher, 2004). Naturalistic enquiry (observation of phenomena in their natural setting) is also preferred by Dalcher (2004) since context plays an important role in understanding a system. Another important caution

of Dalcher (2004) is against simplistic causality in which cause and effect couplings are made without due consideration of the overall system.

2.3.6. Synopsis

This section has highlighted research in IT/IS as relevant to research in LIS and cadastral systems. In particular, the objective nature of data, the understanding of information as collective, real and objective (although possibly abstract) is explained. Information systems are introduced as a holistic concept which generally includes technology and information technology, but also other aspects from a systems perspective.

Information systems are often used as a means to execute, or may even drive, organisational change. Research into the management of organisational change, particularly when IT/IS is involved, is thus of relevance.

2.4. RESEARCH IN CHANGE MANAGEMENT

Change management processes have much to offer in the implementation of complex change projects involving information systems (IS) which involve more than a simple IT implementation process life-cycle (OECD, 1995). By change management is meant strategic, planned, and managed change efforts. In the midst of complexity this process takes the form of simply steering the process so as to maintain the course rather than controlling outcomes (Beckhard and Harris, 1987). However, Beckhard and Harris (1987) note the importance of recognising that the process is most likely cyclic/spiral rather than linear. Also important are an understanding of the organisational system including its environment, knowledge of how to optimize system performance, and, more critically a knowledge of the vision, or destination (Beckhard and Harris, 1987). Adaption during change implementation is facilitated by a constant process of feedback (Beckhard and Harris, 1987).

2.4.1. Approach to change management

Adopting a useful philosophical approach to change management is important. In change management projects involving IT/IS in complex contexts, identifying and managing *conception-reality gaps* (see 2.4.6), as well as use of *soft systems* tools (see 2.4.7), a modular and incremental approach, and encouragement of "hybrids" (who are people who understand the technology side as well as the business of government and the role which information can play in government) are suggested as possible solutions (Heeks, 2002). A *contingency approach* (see 2.4.7) is advocated and assumes that there is no blueprint for success/failure, but rather that there are situation-specific factors which determine failure and/or success (Heeks, 2002). Heeks (2002) advises that a strategy of adaptation should be followed. However, the functional/contingency and instrumental approaches to change management, largely focusing on organisational structure, have been criticized and linked to project failure (Hughes, 2006). Change management tools can also have negative effects such as hindering change, increasing surveillance, and increasing conformity, as well as stifling creativity and innovation (Hughes, 2006).

2.4.2. Complex change

Heffron (1989, 67) states in the strongest terms that the technological environment is "characterized by rapid change, complexity, uncertainty, and 'fundamental unknowability,' (quoting Kenyon DeGreene, 1982, 240) introducing an element of turbulence into the specific environments of many organisations." Complexity in the *change management* field usually refers to complex systems (rather than complex theory) in which the inter-relationships between different elements of the system (section 4.4) are interwoven and dynamic, and able to respond to a changing environment (Jackson, 2003). Dynamic complexity is differentiated from detail complexity in which there are many variables. Dynamic complexity refers to the same action having radically different effects in the short term and in the long term (Senge, 2006). There are often large numbers of subsystems with non-stable structural interactions, and outcomes are not predetermined (Jackson, 2003). The macro and micro multi-level and multi-directional relationships (multiple layers of

dependency) which are taken to exist in a real world organisation are conceptualized in complex models.

In the context of an organisation, change can take place in the external/macro environment, in organisational priorities, in organisational structures, in the way work is done, in personnel policies, in roles, and in organisational culture (Beckhard and Harris, 1987) amongst other things. A selling point of complex systems change is the ability to self-organize and exhibit innovative behaviour (Jackson, 2003) – this has lead to developments in management science geared towards promoting "edge of chaos" states in organisations, in order to achieve the leading edge in terms of creativity. The nature of change in public organisations is dialectic - change drives further change (Heffron, 1989). Complex change, such as that of fiscal cadastral systems reform is multi-facetted. At the macro level it includes technological, social, political, economic, legal elements/influences and physical elements.

2.4.3. Drivers of change in cadastral systems

Drivers of change are the unbalanced forces on the system. In the context of cadastral systems these have been identified as globalization, and the expectation of internationally accepted practices such as democracy, transparency, standardization, freedom from corruption, efficiency, freedom of information etc., as well as international competition, automation through computerization, streamlining governance, and meeting changing user demands (Robertson, 2002). In public organisations, such as the primary organisation of the case study, Heeks (1999) identifies a sense of crisis, as well as an overriding ideology of reform (as mentioned above) as necessary in order to begin the trajectory of change, while political will and power to change are also required.

2.4.4. Staged processes of change management

Staged processes are standard in change management literature. Hayes (2002) advocates a seven staged approach, while Kotter (1996) identifies eight stages in the process of creating major change. Mento *et al* (2002) (quoted in Hughes, 2006) compares the three main staged

processes as those of the strategic eight stage method of Kotter, the tactical ten-step model of Jick, and the seven step change acceleration model of General Electric. Mento *et al* (2002) include interim measures of performance, as well as feedback (stage 12). Clarke and Manton (1997) also propose a nine stage change management model they term a benchmark, which deviates from the accepted definition of benchmarking identified in Chapter 2 (see section 2.6.1), and should rather be termed a standard. It is noted that standards and benchmarks are differently constructed and serve different purposes. Neither is promoted above the other. Ammons (1996) also lists a stepped process very like that of Kotter (1996), but which has a strong emphasis on setting and refining performance measures.

2.4.5. Public-private partnership structure as a tool of change

The case study of the GV2000 Project in Cape Town involves the use of a public-private partnership as part of the change process. This is a common mechanism for government project-based delivery. Public-private partnerships (PPP's) are normally undertaken when the internal capacity is insufficient to effect the change, and the time period, costs of training, and employment of new staff required in order to facilitate the process is not viable. Often institutional problems are addressed through technological change and many cases have been known to (at worst) fail, and often to yield the unintended result that problems become institutionalized instead of a solution being provided (Hendrix and Logan, 1996). Hendrix and Logan (1996) highlight the benefits of PPP's for the establishment and maintenance of registries and cadastres, and so their insights are particularly relevant to the case study. These benefits are well addressed by Hendrix and Logan (1996) and cover capacity, knowledge transfer, accountability and performance measurement, and budgetary benefits. There are some limitations and possible negative aspects of PPP's which should be noted. These are issues of sustainability, maintenance of capacity, control, increased administration, cost control, human resource/labour issues, profit motive, and that private partners may take minimal risk (Hendrix and Logan, 1996, MacMaster, 1991). In addition, any use of PPP's needs to be conducted within the legal

framework sometimes requiring a process of legal reform, which is time-consuming (McMaster, 1991).

2.4.6. Risk analysis

The causal link between risk and success in IT/IS projects is well established (Benaroch *et al*, 2006) and has led to research in the concept of risk, risk factors, techniques of risk analysis, and strategies to deal constructively with risk.

Risk, from the point of view of options, rather than behaviour or decision theory, is defined as a "downward or upward variation in expected outcomes" (Benaroch *et al*, 2006, 829), while risk management is "a proactive process aimed at favourably skewing the variation in expected outcomes, by means of building the flexibility needed to respond to the occurrence of risk with corrective actions" (Benaroch *et al*, 2006, 829). An important note on this definition of risk is that it incorporates positive results of unpredictable outcomes. Kraft (1988) highlights methods to identify risks, and to estimate the probability and severity of their negative effects only as well as establishing what level of risk is "acceptable" – this process is thus political rather than technical. Risk analysis is the process of combining risk assessment and risk evaluation (Kraft, 1988).

Heeks and Bhatnagar (1999) identify that the conception-reality gap (also referred to as design-reality gap) is a primary source of risk. This is the difference between the conceptual models held by key stakeholders and the public sector realities (e.g. a rational conceptual model which ignores internal politics). Closing the conception-reality gap falls under the theory of the *contingency models* mentioned in section 2.4.7. Conception-reality gaps have been investigated by Heeks and Bhatnagar (1999), Kekana and Heeks (2003), and Lai (2000), and an incremental approach as a risk mitigation strategy is preferred to a "big bang approach", as this provides an opportunity for potentially disastrous gaps to be identified and dealt with. A systematic approach to identifying risk and options (of which there is a great deal of research and practice) is promoted rather than one which relies on the intuition of the management team or project consultants (Benaroch *et al*, 2006).

2.4.7. Analysis of IS-led change

In attempting to analyze IS-led change, researchers have developed and implemented a range of approaches and models. Two dominant approaches are the contingency approach to change which is based on project specific adaptation to the environment, and the strategic choice approach which emphasizes the role of managers in shaping organisational change. Knowledge of the range of approaches and models used in analysing IS and change is an important step in addressing research objective 1.4.2 a).

Discrete Entity Models

Discrete entity models follow hard systems thinking based on a positivist tradition. They are a-contextual, a-historic, and assume no problem with resources, concentrating on the economic, physical and information processing aspects of technology (Kling, 1987). Their failure to consider social and political aspects of change is limiting in the context of IT/IS-led complex change projects in organisations.

Structured Analysis

Structured analysis focuses on functions and assumes that the functional structure is rational and serves the goals of the organisation. It is advocated by Westrup (1996) for analysis using information processes and information usage. Its prime failing is that organisations are most often not purely functional systems; there is conflict (non-harmony) and ambiguity. Westrup (1996) has identified two failings of the application of systems theory as a subset of structured analysis: that there is no *a priori* reason why an organisation should be systemic (common to a system), and that it fails to explain the conflicts and differing objectives that are endemic (characteristic) to organisations. Systems theory is identified as suitable, despite these misgivings, in section 2.3.5.

Business Process Reengineering

Willmott and Wray-Bliss (1996) address the ethos and ideas behind business process reengineering (BPR). They identify information and communication technologies (ICT's) as key facilitators in innovation and change. They further address the combination of new

technology, integrated work processes driven by customer need, and the rhetoric of employee empowerment as key changes embedded in BPR. Willmott and Wray-Bliss (1996) also analyse the implementation of BPR through IT. Negative consequences of BPR have been noted to be in the areas of empowerment, sustainability, maintenance of capacity and capacity building, amongst others. In addition, the attitudes and values of BPR (partly evident in "aggressive and violent language" (Willmott and Wray-Bliss, 1996, 67)) have been linked to unintended consequences such as loss of corporate culture, weaker human relations, loss of security and predictability, casualization of employment and increase in individual workload which can all lead to employee resistance (Willmott and Wray-Bliss, 1996).

Social Process Models

A social process model focuses on the key actors, their operating environment, their actions etc, rather than the equipment or the organisational goals. The model assumes a "production lattice" of interdependent producers and consumers. This lattice is a social organisation within the context of a larger matrix of social and economic relationships. These are dependent on the local infrastructure. Social processes in large, complex, non-voluntary organisations are dealt with by using two perspectives: organisational process and negotiated order (Kling, 1987). Actor networks and web models are social process models.

Actor Networks

This is a socio-technical approach which has the advantage that the distinction between human and non-human elements is not explicit or necessary. Human actors and natural phenomena are broken down into "actor networks". Actor networks have been advocated for analysis of the use of information technology in local government change projects (such as the case study of the GV2000 Project) taking into account driving forces from the local government and the IT sector (internal and external) (Pratchett, 1999).

Web Models

Web models extend this concept further by identifying resource dependency relationships which link the technology with its social, historical, and political contexts (Kling, 1987). Web models are useful in IS applications which are socially complex or when implementation is reliant on social relations within and beyond the boundaries of the development environment (Tatnall and Gilding, 1999). Web models provide a framework for analysis of computer systems in situations of conflict and co-operation between key participants (Kling, 1987). Cooperation between all key participants is identified as unlikely and non-essential, however there are grades of conflict and co-operation that will occur. Web analyses provide a mechanism to account for the key element of negotiating leverage of a computer system. An additional complexity is the role of social practices in mediating between computer based systems. The web of social relationships further complicates the attribution of outcomes to the computer system alone (Kling, 1987).

Soft Systems Methodology (SSM), with its ability to provide a "rich picture" of the situation (Checkland, 1999), has been linked to Object Oriented Analysis (OOA), which is similar to the web models mentioned above, but adds a hierarchical element to that conceptual model.

Object Oriented Analysis (OOA)

Object oriented analysis is similar to web models above, but adds a hierarchical aspect to organisational elements using detailed activity inheritance criteria (Westrup, 1996). The organisation can thus be represented in a rational, structured form. Objects are identified as a bounded set of relationships, properties, and behaviours. In a sense, this bears similarities to the discrete entity analysis mentioned earlier, with the main difference being the hierarchical element of the conceptual model.

Soft Systems Methodology (SSM)

Lai (2000) advocates soft systems methodology (SSM) (see Chapter 5) integrated with object oriented analysis (OOA) in the determination of the requirements of an information

system. The modelling techniques of OOA are then embedded within the SSM. The information systems development (ISD) framework follows two parallel streams of analysis, a logic-based stream of analysis and a cultural analysis stream. The SSM component informs the process of OOA and is also used to evaluate the OOA in a review process. Its primary importance is in concept formulation. SSM information flow tables are used to show the completion of activities after a task is performed (change due to processing of that object) as well as to show the information flows as inputs and outputs of an event. SSM is identified as useful in section 4.4 and 5.3.2.

Life Cycle models of change

In investigating the success of technology transfer from the West to developing nations (in this case China), Baark and Heeks (1999) use the life cycle model with defined phases for evaluation. The role of technology in change processes was noted to be elevated above that of an enabling tool (Baark and Heeks, 1999). The life cycle model tends to be focused on implementation, and fails to reveal project design issues. It also performs poorly in modelling monitoring and evaluation processes (which are poorly performed in many other models). It also does not include contextual issues such as economic and political drivers such as would be accommodated in a more holistic model and issues of sustainability are largely ignored (Baark and Heeks, 1999). However, there are certain benefits of this model in that it is simple and easy to understand – it is logical and has a clear structure. It can be implemented cyclically, and is useful when one project feeds directly into another one. It also caters well for modelling dynamic processes in a project environment (Baark and Heeks, 1999). The life-cycle model has relevance in fiscal cadastral reform processes in that they are followed by cyclic processes of property valuation and taxation in which further changes can be accommodated.

2.4.8. Some other considerations – culture and historical commitments

Gallivan (1996) addresses the fact that technology-based changes (changes in technology and work processes) need to be accompanied by cultural changes. Organisational transformation requires a broad and holistic approach to change (Gallivan, 1996).

The historical commitments in terms of policy, procedures, ideology etc. of computer system acquisition influences current practice. This is sometimes analyzed as part of the "context" of a computer systems study. Development of these is generally incremental over a long time period, and changes cannot easily be effected. Negotiations are identified by Kling (1987) as important in the process of development and change.

2.4.9. Synopsis

This section has highlighted different approaches to change management involving IT/IS in the literature, as well as introducing the issues of complexity, change drivers, and risk as reflected in research. Staged processes are noted to be common practice in change management strategy. Public private partnerships offer a number of advantages in managing change, but can also have negative consequences. Various approaches to research of IS in change management are noted and critiqued. None stand out as superior for all cases. The multimethodological approach argued in Section 5.4. and adopted for this research advocates the use of a combination of approaches to research in IS and change management.

2.5. IT/IS AND CHANGE IN THE CONTEXT OF THE AFRICAN BUREAUCRACY

At this stage, it would be useful to progress from purely theoretical approaches to IS and change, and to look more closely at the use of technology in the context of African government bureaucracies as these are generally the authorities in control of cadastral systems.

2.5.1. Local government and technology

In local government IT/IS investments and innovations are almost exclusively motivated by and directed at the management and delivery of services, resulting in a technology bias towards the service role to the detriment of the development of the other roles (Pratchett, 1999). "Historical commitments" also bias IT/IS decisions. Champions of earlier

technological innovations will resist its replacement, and as IT/IS's become incorporated in the organisations structures and processes, their mere existence mitigates against change as the consequences are likely to be many-fold. Complete innovation becomes complicated and costly. This bias also favours the continuation of IT/IS support in the service delivery sector and the continued emphasis on efficiency and effectiveness (Pratchett, 1999) as opposed to other measures of performance.

2.5.2. Failure of IT/IS reform projects in Africa

More reform projects involving information systems/technology (IS/IT) are partial or total failures than those that can be classified as successes (Heeks and Bhatnagar, 1999) despite the fact that IT/IS is often the primary stimulus and mechanism for implementation of change within organisations. This is particularly true in Africa (Berman and Tettey, 2001) where the reasons for failure are likely to be different from those in the Western world.

In attempting to explore the failure of IT projects in Africa, Charlton (1991) identifies incorrect processes of technocratic system building and lack of comprehensive IT policy as causative. Peterson (1998) blames the internal bureaucratic politics of computerisation (saints, demons and wizards categorization of role players). Failure in Africa is identified by Peterson (1998) as due also to complex systems coupled with weak organisations.

Heeks (2002) identifies the context of e-government in Africa at the intersection of some powerful trends of transfer from the West to Africa. Berman and Tettey (2001) conclude that a mismatch is caused by the Western context of IT/IS development (industrial capitalism and large-scale bureaucratic organisations) and the African context of application (post-colonial context characterized by patron-client relationships, low levels of technical expertise, authoritarian decision making processes, and high levels of corruption).

Reinventing government (REGO) is the term for public sector reform designed with the aim of improved performance (Heeks, 1999). It is of interest here as IT/IS implementation is very often seen as an instrument of REGO. The underlying theoretical approach to

REGO was known as neo-liberalism or the "New Right" (Heeks, 1999), and is still very influential as the historical context for more recent philosophies of change in government organisations, being particularly dominant in post colonial African states (Berman and Tettey, 2001). This has led to reduction in administrative capacity and in the adoption of a capacity-building approach to reform with the aim of socio-economic development.

IT/IS has been used as a key component of these processes in developing and developed countries (Scavo and Shi, 2000; Heeks, 1999). African governments, the IMF, the World Bank, other foreign donors have adopted an instrumentalist technological determinist/autonomous approach to IT/IS, using it as a tool for record keeping, generation and analysis of data, forecasting, and monitoring (in line with REGO principles) (Heeks, 1999). Its ability to promote multifaceted transformation of dysfunctional organisations is elevated beyond the practical, and presumes that technology will also counter the human and structural deficiencies in organisations (Berman and Tettey, 2001).

Scavo and Shi (2000) state that the starting assumptions in REGO and IT are so entrenched as to be seen as normative predicates. The instrumental use of IT/IS (to reduce cost, increase efficiency, effectiveness, transparency, etc.), its use as a measure of REGO success, as well as a number of the other assumptions of REGO are challenged by Scavo and Shi (2000). When analyzing REGO in the context of the information age, Heeks (1999) cautions that the human element is often ignored.

2.5.3. Synopsis

It is clear that there is a need to investigate the approaches and mechanisms for management of information systems, particularly in the context of complex change in Africa, such as that of the case study of the GV2000 Project.

2.6. MEASURING PERFORMANCE AND FEEDBACK

Linear, project-based change processes are often referred to as successful or as failures, or as some combination of these. Heeks and Bhatnagar (1999) have developed a categorization framework for total and partial success and failure, which can be useful in diagnosing the overall effort. However, in order to accomplish this, some measurement framework of performance is required. The primary aim should not be categorization, but further improvement through feedback, which is possible if cyclic/spiral processes of change are accommodated.

2.6.1. Approaches to measure performance of change processes

Heffron (1989) states that there are many different approaches to assessing performance, and that there is no best method of assessing effectiveness – all measures are value judgments. However, there are some basic approaches which are discussed by Heffron (1989) and include goal-based, internal process, political, human resources, systems, and overall effectiveness approaches.

Goal-based approach

The goal-based approach is the simplest, but is rarely applicable to public organisations, as the criteria of definability, coherence, achievability, and having a minimum number of goals, is not met. In particular, "organisations are not rational; individuals are not rational; society is not rational; and most assuredly, politics is not rational" (Heffron 1989, 327). It is helpful to remember that rationality supports pragmatism and is based on a positivist paradigm. However, the use of goals in measuring performance can form a useful part of a more holistic approach.

Often with public organisations, numerical criteria for assessment are not available (such as profit margins), and a comparison with a similar organisation is conducted. This is termed social comparison, although a more generally used term is benchmarking (Ammons, 1996,

Heffron, 1989). Benchmarking is essentially gap analysis as the organization is compared to a top performer instead of to a set of predefined ideal goals.

Benchmarking has been the predominant area of research in cadastral systems of late. Various benchmarks have been developed against which cadastral systems can be measured in order to assess their performance (Steudler *et al*, 1997, FIG, 1995). However, the underlying ontological approach of these benchmarks has not been critically argued, and their application in a variety of non-Western, non-first world contexts could be questioned (Musungu, 2004).

Benchmarking (when the term is used correctly) differs from comparison against a standard in that the benchmark is an example of current "best practice" and is designed to be achievable rather than ideal (Kouzmin *et al*, 1999). It is temporal, contextual (Kouzmin *et al*, 1999) and evolutionary implying that the benchmark organization should be operating within a similar environment to the study organization and face similar constraints.

Open Systems approach

The open systems approach considers the coupling with the environment to be the primary measure of effectiveness. Measures of performance are largely quantitative and are appropriate to business systems, but not generally to political systems such as public organizations (Heffron, 1989). In addition, it is a rational approach to survival, and political bodies do not generally behave rationally (Heffron, 1989).

Strategic Constituencies approach

The strategic constituencies approach considers the key actors (stakeholders) as the judges of performance (Heffron 1989). The process is thus subjective and coupled with power relations. This approach is limited in its usefulness when role-players have conflicting interests, and when the systems are complex or dynamic (Heffron, 1989).

Results and Determinants Framework

The Results and Determinants Framework is endorsed by Ballantine and Cunningham (1999) as mechanism for closure of conception-reality gaps, as it does not favour one aspect of change, or one constituency. Social aspects of performance are accounted for under quality of service delivery, while the remaining aspects appear to be related to economic performance, and production processes. It does not appear to be sufficiently holistic in its assessment.

The Balanced Scorecard

The Balanced Scorecard is another such measure of performance reflecting the primacy of the financial performance for the private sector. It has been criticized for its lack of inclusion of human aspects, external agents, environmental issues and others (Bourne and Bourne, 2007). A proposal is that the financial aspects be replaced by the customer perspectives in order to extend application into the public sector domain (Bourne and Bourne, 2007). Having acknowledged the importance of socio-political aspects in the public sector, and the complexity and non-rationality in this domain, it is doubtful whether the balanced scorecard has much to offer the complex fiscal cadastral reform process.

Public organizations and performance measurement

Heffron (1989) details specific issues and problems in performance measurement in public organizations. A critical issue is that public organizations are part of an overtly political system. As organizational values have been described as the part and parcel of the framework for judging organizational effectiveness, the assessment of public organizations must include political values as well (Heffron, 1989). The generally dominant political values of responsiveness, accountability, representivity, constitutionality, and democracy are well described by Heffron (1989). In addition, performance measurement frameworks (except for benchmarking) are developed for ideal cases, while in reality many underlying assumptions are not valid.

SSM performance measures

Checkland (1999) has developed a systems framework for performance measurement called the 3E's and 5E's models. These include efficacy, efficiency, effectiveness (3E's), ethicality, and elegance. Very little testing or research on the usefulness of these criteria are in evidence in the literature.

2.6.2. Synopsis

The *multimethodological approach* (see section 5.4.3) suggested by Heffron (1989) is in line with *critical realism* (see section 4.3) and endorses the notion that there is no "best practice" when it comes to managing and measuring performance: the methods chosen should be assessed in relation to the specific case in question (contingency approach). However, it is clear from current research literature, that performance measurement has not been adequately addressed from a systems perspective, particularly in the field of cadastral systems reform, and the framework of Checkland (1999) should be explored in order to address the research objectives.

2.7. CONCLUSIONS

This chapter summarizes current research and thinking with regard to the approach to and use of IT/IS in change management projects, and addresses the particular context of application of IT/IS in Africa. It is apparent from previous research that there is a range of approaches to IT/IS in change management projects, and none of these can be promoted above the others for all cases. Rather, it is important to have an appreciation for the strengths and weaknesses of these approaches and their ability to reveal certain aspects of IT/IS implementation. Armed with this knowledge, the researcher/practitioner is in the position to identify a relevant approach or combination of approaches suitable for particular circumstances and purposes. This strategy is in line with the multimethodological approach argued in Section 5.4.

A further aspect of IT/IS implementation investigated in the literature in this chapter is that of the application of IT/IS in the African bureaucracy. This is of relevance to the research questions since the application environment of fiscal cadastral systems reform is within the public sector bureaucracy, while the particular case study of this thesis is conducted in the African context. However, the City of Cape Town is probably not typical of an African municipality, and some of the problems of the failure of IT/IS in Africa are less likely to play a role due to the largely Western in worldview within the City.

Chapter 2 has also briefly covered approaches to performance measurement and highlighted that various methods of performance measurement can be employed in a complementary manner. However, it appears that there is still some development of these concepts required in the field of cadastral systems reform.

The integration of theory in IS and change management with cadastral systems reform is highlighted by its absence in research literature, confirming the conclusion of Silva and Stubkjær (2002), that research integrating theory from allied disciplines is required. Chapter 3 which follows addresses literature relating to fiscal cadastral systems and their reform. Both chapters deal with review of literature, and Chapter 3 is thus not a further development of Chapter 2 material, but rather presents complementary information.

CHAPTER 3. INTERNATIONAL "BEST PRACTICE" IN FISCAL CADASTRAL SYSTEMS AND THEIR REFORM

3.1. INTRODUCTION

This Chapter addresses current research within the cadastral field which is of interest to the development of a framework for fiscal cadastral systems reform in line with research objectives 1.4.2 a) and b) (theoretical, methodological and analytical frameworks) and as specified in activity 1.5.2 c). This deals with identifying fiscal cadastre establishment and property valuation and taxation processes, which are considered to be good by international practitioners and researchers, through relevant literature.

The chapter begins by exploring the nature of cadastral systems in general. It progresses to detail what are understood to be international "*best practices*" (see 3.2) for the establishment, operation and maintenance of the fiscal cadastre and for property valuation and taxation, as well as reform of these and measuring their performance. As such, this chapter should be seen in parallel with Chapter 2 as both function as a review of the relevant literature and are complementary.

3.2. OPERATING DEFINITIONS

Operating definitions for cadastral terms used in this and subsequent chapters are as follows:

Cadastre: "A systematic and official description of land parcels, which includes for each parcel a unique identifier. Furthermore, the description includes text records on attributes of each parcel. The prototypical means of identification is a large-scale map that provides information on parcel boundaries" (Silva and Stubkjær, 2002, 410)

Juridical Cadastre: an official record of land parcels and their attributes, including boundaries and tenure, for legal purposes.

Fiscal Cadastre: an official inventory of land parcels and often the improvements thereon, which constitutes the necessary information to be able to determine the value of property (land and, possibly, improvements) for the purposes of taxation.

Improvements: additions made to the property, of a permanent nature, which (positively or negatively) contribute to the determination of the value of the property.

Property Valuation: the process of ascribing values to real property; otherwise referred to as assessment or appraisal.

Property Taxation: the process of determining property taxes from property valuations, and collecting those taxes.

Cadastral System: "the combination of a cadastre – with its spatial focus – and a land register – with its legal focus" (Silva and Stubkjær, 2002, 410), including all aspects of the juridical, fiscal and regulatory cadastres, and developed and assessed considering its political, legislative, economic, technological, and social aspects and relationships.

Fiscal Cadastral System: a systems conception including all elements of the input, structure, process, management and output for property valuation and taxation including material/technical, personal/cognitive, and social aspects of the system.

Fiscal Cadastral Systems Reform: refers to the reform of the system – it occurs when many aspects of the fiscal cadastral system are subject to substantial change.

"Best Practice": Set of practices, or methodology, which is commonly, and internationally, believed to result in optimal performance. "Best practice" constitutes an achievable level of practice which strives towards an ideal which may never be practically achievable. "Best practices" are used in benchmarking (see section 2.6.1) processes to measure performance. The "best practice" model in property valuation and taxation is derived from literature reflecting research and practice in the field, and is subject to critique in Chapter 7.

3.3. THEORETICAL APPROACHES TO "BEST PRACTICES" IN FISCAL CADASTRAL SYSTEMS AND THEIR REFORM

3.3.1. Approaches advocated in "best practice"

Bittner *et al*. (2000) have conducted fundamental research into the nature of the cadastre relying on Searle's theory and levels of reality – a distinction between facts (reality) and rules (institutionalized understanding of facts – e.g. ownership). However, little development has yet been undertaken as to underlying paradigms for research in cadastral systems, including ontological and epistemological considerations. Silva and Stubkjær (2002) highlight that there is a need to draw on existing scientific knowledge in allied disciplines (such as is undertaken in Chapters 2, 4, 5 and 6) in order to extend theory. In particular, there is a need for extending the validity of cadastral systems theory such that it transcends cultural contexts (Silva and Stubkjær, 2002). An exploration of the underlying philosophical approaches to cadastral systems is a contribution of this research and is addressed in the introductory sections to following chapters.

Conceptually, the fiscal cadastre and the processes of property valuation and taxation are not treated by researchers in this field as part of the broader cadastral system as understood by the cadastral community (e.g. by Bahl and Linn, 1992). Research in property valuation and taxation is often undertaken by those with expertise in economics and hence that world view. "Best practice" frameworks focus on the material/technical triumvirate of the fiscal cadastre and the processes of property valuation and taxation. Attempts at their reform are largely approached from an instrumental and accommodationist perspective (i.e. as tools designed to generate particular outcomes within a particular context). Property taxation, an instrument of revenue generation, leads a purposive and functional approach to the fiscal cadastral system.

3.3.2. Holism and systems thinking in "best practices"

Although holistic thinking has permeated research in fiscal cadastral systems establishment, maintenance and reform, systems thinking is not adopted as an underlying philosophical

approach (e.g. in Eckert *et al*, 1990). Bahl and Linn (1992), Nichols (1993) and Dube and Paré (2003) advocate approaching fiscal cadastral system reform from a systems perspective considering various facets and having the ability to interrogate the complex interactions "among organizations, technologies, and people" (Dube and Paré, 2003, 598). Consequences of not following this approach are outlined by Bahl and Linn (1992) and Dube and Paré (2003) as well as by Kelly (2000). Bahl and Linn (1992) maintain that a systemic approach is particularly important in developing countries. All facets of the system (juridical cadastral input, record keeping, valuation, and collection) must all be reformed as a system in order for long-term efficiency to be achieved (Bahl and Linn, 1992).

3.3.3. Use of the case study approach in research and practice of fiscal cadastral reform

The case study approach to data acquisition is popular with researchers in cadastral systems (Silva and Stubkjær, 2002). In fiscal cadastral systems research, case study methodology and sampling logic/generalization, is dominant. Technical and operational aspects of the cases are for the most part the subject of comparative analyses (e.g. in Bahl and Linn, 1992). Such reflective analyses of real cases do not facilitate enquiry into the philosophical bases of cadastral systems.

3.4. DRIVERS OF REFORM OF FISCAL CADASTRAL SYSTEMS

Property valuation and taxation reform is implemented primarily to increase its effectiveness for the purpose of local government revenue generation. Local governments are restricted in the range of activities they may employ to generate revenue, and independent revenue generation is acknowledged as a key criterion for a thriving (Bahl and Linn, 1992) and independent local government (Dillinger, 1991).

A useful categorisation emerges from a study of the literature to view drivers for reform of property valuation and taxation processes in developing world cities. Change drivers fall

into three categories: increasing financial needs of government, changes in property characteristics and hence inequities and international changes in property valuation and taxation practice, including advances in technology. Driving forces are most often categorized in terms of their endogenous/exogenous nature, as well as their fit in terms of the sub-systems of the technological, legislative, economic, political and social elements (Fahey, 1994). These classifications will be motivated and used later in the analysis of "best practices" (Chapter 7) and the case study (Chapter 9).

3.4.1. Increasing needs for expenditure

Rapid urbanization and the urbanization of poverty are increasingly characteristics of developing world cities. These come hand in hand with increased needs for expenditure to meet service delivery needs. Poverty and unemployment are characteristics of rapidly urbanizing developing world cities, and additional services are required for large populations. The need for housing and basic service is greater per capita for poor people than for wealthy people, while large scale health issues and epidemics further increase needs for expenditure. In addition, expectations of high levels of service are influenced by developed world standards, and there is instability in developing world economies as well as high inflation rates. In many instances poor administration leads to low levels of coverage (too few properties included in the property tax base) and poor levels of tax collection. Simply increasing performance of these can lead to substantial increases in revenue.

Property tax is relatively inelastic to population size compared to other forms of government revenue. It therefore responds slowly to urbanization, effectively increasing the "fiscal gap" which is the difference between ideal service delivery costs and budget. The budget deficit is a measure of the shortfall between the available revenue and the actual service delivery. So, there will be fewer instances of budget deficit than fiscal gap (Bahl and Linn, 1992). Long valuation cycles also increase this effect, which is exacerbated by restrictions on interim cycles and tax increments. Other forms of revenue such as levies are

far more elastic, but the property tax is the primary local source of revenue for growing cities.

3.4.2. Changes in property ownership/occupation characteristics

Rapidly growing cities in developing countries change their character to accommodate greater proportions of poorer people from rural areas. The proportion of rental properties compared to owner-occupier properties increases, while lower levels of investment in improvements results in lower per capita valuation and taxation. The ratio of informal to formal occupations increases as well the ratio of informal to formal to business, land ownership and tenure conditions are often uncertain, while unorthodox urban forms of tenure (such as communal tenure) become more common and require new and creative mechanisms to value and tax land (Bahl and Linn, 1992).

3.4.3. Advances in practice and technology

International practice reflects current advances in technology, such as the extensive use of computers, adoption of CAMA approaches etc. Developing world cities however, lag behind "best practice" in this regard necessitating reform processes to catch up with international trends. Poor performance in revenue generation at the local level is linked to poor levels of service delivery (Bahl and Linn, 1992), and vice versa and is largely attributable to poor technical performance in developing countries in general (Dillinger, 1991).

3.5. GOALS

In processes of change, goals are frequently formulated from explicit or implicit comparisons between the desired situation and the current situation (gap analysis). At times, these are informed by "rules" or moral codes which govern not only the establishment of goals, but also the processes of change. These rules may be part of the vision, mission, and goal statements of the organization. Bahl and Linn (1992) maintain that the fiscal cadastral system is overburdened with such goals which most often are

unrealistic, and that the basic purpose of the system, that of revenue generation is compromised.

There is no comprehensive list of goals and underlying principles for reform within the fiscal cadastral domain. However, the FIG statement on the Cadastre (FIG, 1995), which is considered a standard (see section 2.6.1) and identifies a number of key ingredients for a successful juridical cadastre, includes principles which may be common to a fiscal cadastral system. This list has been extended with reference to McMaster (1991), Bahl and Linn (1992), Eckert *et al* (1990) and McCluskey and Williams (1997):

- Security: the cadastre should be "tamper-proof" and free from corruptive adaption. Tax avoidance and evasion possibilities should be minimized (McCluskey and Williams, 1999).
- Clarity and Simplicity: it is essential that the rate-paying public understands the system used; principles underlying the supporting legislation should be meaningful to the general public and put in place simple, lean processes (McCluskey and Williams, 1999, Bahl and Linn, 1992). Simplicity minimizes exemptions and facilitates uncomplicated rate structures. Reform the administration rather than concentrating on special features to achieve secondary goals (Bahl and Linn, 1992). Public relations should be actively pursued (Eckert *et al*, 1990).
- Timeliness: the information should be up-to-date and complete i.e. all parcels should be included with all relevant information for accurate valuation. Annual reappraisal is advocated (Eckert *et al*, 1990).
- Fairness/equity: the development and operation of the property valuation and taxation system should be both fair and perceived to be fair. This includes insuring that all aspects of the valuation are equitable and that equality in taxation (fair share of the tax burden) is paramount. The process should be apolitical and objective and should be perceived as such by interested parties. Justice goes hand in hand with fairness (McMaster, 1991). Periodic ratio studies that measure the relationship between appraised values and independent estimates of market values (usually sales prices) are advised (Eckert *et al*, 1990). Consideration should be given to the fact that the

interpretation of equity as payment in accordance with a person's ability to pay is not always achieved with taxes on real property (McCluskey and Williams, 1999).

- Accessibility: "Within the constraints of cultural sensitivities, legal and privacy issues, the system should be capable of providing efficient and effective access to all users." (FIG, 1995). This covers the issue of transparency.
- Cost: cost-effective and low cost solutions are required (McCluskey and Williams, 1999), but an adequate budget should be provided (Eckert *et al*, 1990). Efficient and effective cadastres are sited as key to investment, economic efficiency and production, export/trade and economic growth, poverty alleviation, and income generation through property taxation (Hendrix and Logan, 1996).
- Sustainability: "there must be mechanisms in place to ensure that the system is maintained over time. This includes completing the cadastre in a reasonable timeframe and for keeping information up-to-date. Sustainability implies that the organizational and management arrangements, the procedures and technologies, and the required educational and professional levels are appropriate for the particular jurisdiction."(FIG: 1995). This is endorsed by McMaster (1991) and by McCluskey and Williams (1999).
- Completeness and inclusivity, complete maps and property data, accurate sales data (Eckert *et al*, 1990): the fiscal cadastre should be set up in a manner that minimizes the possibility of tax avoidance (Dale and McLaughlin**,** 1988). This would include effective communication and thorough consultation as advocated by McMaster (1991).
- Empowerment (McMaster, 1991).
- Use of world class technology (McMaster, 1991), modern data processing and effective valuation techniques (Eckert *et al*, 1990).
- Adherence to international standards (McMaster, 1991) and effective internal controls (Eckert *et al*, 1990). The property tax should not vary substantially from one cycle to the next (McCluskey and Williams, 1999).

- Maintenance of capacity and capacity building: effective staff training (Eckert *et al*, 1990), recruitment, staff redeployment (McMaster, 1991), competent staff (Eckert *et al*, 1990).
- Legality: legal framework should include data provision, processes, rebates, public notices (Eckert *et al*, 1990).
- Local: taxes should be locally controlled and result in local expenditure (McCluskey and Williams, 1999).

These goals illustrate the diverse range of possible aims of fiscal cadastral reform projects, spanning all three aspects of the material/technical, social and personal. Unfortunately their main failing is that they are framed as ideals rather than achievable objectives, and are often converted into measures of performance without proper consideration. In addition, the process of identifying goals of change is not always considered at the outset, and all role players are seldom involved in the process of goal formulation, which can lead to conflicting goals and objectives.

3.5.1. Multiple/conflicting goals/objectives

The problem of multiple objectives arises due to the treatment of fiscal cadastral reform from a non-systems perspective (Bahl and Linn, 1992). Many independent persons and groups partake in the formulation of property tax policy and goals. This can result in goals which are not in sympathy with each other leading to tradeoffs and conflicts. Assessing the relative importance of goals (weighting them) assists in managing goals and the conflicts they may generate, while putting in place contingencies to manage the consequences (Bahl and Linn, 1992).

3.6. RISK MITIGATION - KEY ELEMENTS FOR FISCAL CADASTRAL SYSTEMS REFORM

Kelly (2000) has drawn up five key elements for successful implementation of reform from his research in African fiscal cadastral systems. These are supplemented by information from the experiences of Bahl and Linn (1992) and Dillinger (1991).

3.6.1. Strong political and operational support

Because of its visibility, localized nature and expenditure, incremental payments, and links to wealth, the property tax is generally acknowledged as one of the most politicized forms of taxation. In addition, the wealthy bear more of the tax burden than the poor, and are also generally the most active in objection to property taxation and the most influential. It is therefore essential to gain their support. Sustainability of reform requires sustained political support and adequate provision of operational and administrative support (Kelly, 2000). Since the property tax is an unpopular tax, it is often necessary to reduce central controls on the property tax – allowing local government structures to determine local property tax policy, and to alter the structure of local finance options (Dillinger, 1991).

3.6.2. Comprehensive integration of policy and administration

The comprehensive integration of policy and administration is echoed by Bahl and Linn (1992) who, along with Kelly (2000) advocate a systemic approach to fiscal cadastral reform.

3.6.3. Strategic implementation

A reform strategy should be holistic and address the entire spectrum of elements of the fiscal cadastre. In particular, Kelly (2000) identifies that most strategies are valuation driven, or collection led, causing piecemeal and non-inclusive reform which has a lower chance of success.

3.6.4. Simplification of policy and administrative procedures.

The policies and procedures should be matched to the capacity required for implementation (Kelly, 2000). This is particularly important when assessing what can be practically achieved in countries in which human, financial, and other resources are limited.

3.6.5. Use of computerized technology

The volume and nature of the data required lends itself to computerization. This raises additional issues of capacity and sustainability, and this should be particularly considered in the importation of first world technologies for use in an African context (Kelly, 2000). For example, the use of CAMA in a developing world context undoubtedly requires a coordinated programme of training in order that local employees are able to continue to operate the technology beyond its initial implementation period.

3.6.6. Other aspects to consider

Bahl and Linn (1992) detail issues of staffing and skills retention, reducing the frequency of valuation (also tackled by Dillinger, 1991), obtaining and maintaining a complete and up-to-date fiscal cadastre, employing interim valuations, and the initial and transition costs. Costs should be reduced if there is a fiscal cadastral system operating in some form (Bahl and Linn, 1992). If this is the case then the incidence of the previous property taxation system is already accommodated, the public is informed of existing processes and they have a measure of political support, start-up costs have been met, and personnel has been trained in the previous structures and processes. If these are not in place (e.g. the system does not enjoy political support) reform processes should be designed to accommodate these additional challenges/risks.

In the City of Edmonton, Canada, identifying, training and retaining modellers (remuneration etc.) and retaining core capacity should modellers leave, defining the role of the consultants, as well as identifying various issues that may affect the implementation process upfront, are aspects identified as key to success (Ruhl, 2001). Ruhl (2001) identifies two types of consultants key to the process, a management consultant and a

modelling consultant with the key tasks of each explicitly identified. Various issues are identified that may affect implementation of a CAMA project. These are the will to change, the budget, timing, resources including staff, and integration with the CAMA system (Ruhl, 2001).

3.7. STAGED PROCESSES OF REFORM IN FISCAL CADASTRAL SYSTEMS "BEST PRACTICE"

3.7.1. Appreciating the reform context

The process of reform is considerably more difficult to achieve in developing countries when compared to industrialized countries due to resource limitations for implementing and sustaining an effective system, as well as due to very poor effectiveness of existing fiscal cadastral systems (Bahl and Linn, 1992). The characteristics of fiscal cadastral systems in developing world cities impact negatively on the preparation and process of reform and are detailed by Bahl and Linn (1992). The challenges if using of IT/IS in change projects in Africa is detailed in section 2.5.2.

In many instances a driving force for change (or a combination of forces) is sufficiently strong to overcome the inherent inertia in bureaucratic systems such as local governments in order for the reform process to be initiated. However, incremental approaches to reform are advocated over "big bang" approaches (Bahl and Linn, 1992, 479) as these are likely to generate less resistance from policy makers, citizens, and even central government.

3.7.2. Operational and technical decisions

Type of property valued and taxed, valuation approach

Decisions as to the type of real property valued (land only, land and improvements separately, and land and improvements combined), the approach to valuation (cost, income and sales comparison/capital), and the types of taxation which result need to be made prior to any operation to effect reform on a fiscal cadastral system. A decision to adopt a

principle of market valuation is also required and is then applied to any of the three approaches to valuation.

There is a great deal of information to direct these choices, and the reader is referred to Bahl and Linn (1992) in which economic and social impacts, and organizational aspects (e.g. resource implications) of these decisions is discussed. The identification of a "best" basis for valuation and taxation should not be attempted as different methods may be more suited to different communities (McCluskey *et al*, 1997).

Market value

The market value (see the Glossary for a range of accepted definitions of market value) is an estimate of an objective value of the land-holders property rights and may differ from a recent sale price due to subjective influences. In a perfect market, sale price, market value, and value in exchange will be the same. A perfect market is in long-run equilibrium, buyers are ample, and land and developed property is in good supply (Eckert, 1990). In other cases, sale price and market value will undoubtedly be different, but sale price is taken to be an estimate of market value (Eckert, 1990). This leads to a bona fide arms-length sale price being considered the best evidence of market value, regardless of valuation approach (cost, income, sales). The sales comparison approach is the method of valuation which is most in harmony with the requirements of legal proof in a court of law, and so the demonstration of recent comparable sales is used in defence of a determined market valuation.

Single and mass appraisal approaches

Single property appraisal is the valuation of a particular property at a given date, whereas mass appraisal is the systematic appraisal of a group of properties at a given date using standardized procedures, a common dataset, and which allows for statistical testing (The Appraisal Foundation, 1987 and 2008-9). Mass appraisal is preferred to single appraisal because it provides a platform for a uniform and consistent approach in the valuation process, and the potential for cost reduction is high (McCluskey et. al., 1997; Ward, 2001a).

Interested and affected parties in single appraisal are the property owner and the local authority, whereas in mass appraisal interested and affected parties are all taxpayers and taxing bodies and fairness/equity and legality across large areas must be shown. The aspects of market analysis, valuation, and particularly quality control in mass appraisal are different from those in single property appraisal. Quality control in the case of single property appraisal is performed using methods of sales comparison. In the case of mass appraisal, statistical methods of quality control are applied. As dispute resolution requires a sales comparison, mass appraisal requires expertise in both methods.

The use of computers to manage mass appraisal systems gives rise to what is termed Computer Assisted Mass Appraisal (CAMA) systems (Eckert *et al*, 1990). CAMA is conceptualized as a system whose main purpose is estimating the value of certain real property using statistical analysis techniques such as Multiple Regression Analysis (MRA) and Adaptive Estimation Procedure (AEP) (Eckert *et al*, 1990). Mathematical models are the "backbone" of CAMA systems and are functions relating the sale price to the property variables. Eckert *et al* (1990) sees CAMA as a relational database management system (RDBMS), which comprises the subsystems of data management, sales analysis, valuation, performance analysis, and administration. The mechanics of CAMA modelling and testing are well covered in Eckert *et al* (1990) and more specifically in Gloudemans (1999).

For the purposes of this research, a CAMA system includes the material/technical aspects of the fiscal cadastre, and the process of property valuation. It excludes the process of property taxation, and is therefore a technical/material sub-system within the fiscal cadastral system. It is not a social system as envisaged in Chapter 5, as it is unable to take into consideration the inherent subjectivity in data collection, modelling and analysis, and has an IT rather than an IS focus.

Following on from the above discussion, the definitions of CAMA and a CAMA system adopted for this research are:

CAMA: Computer Assisted Mass Appraisal – "a system of appraising property, except for unique or special properties, that incorporates computer-supported statistical analyses, such as multiple regression analysis and adaptive estimation procedure, to assist the appraiser in estimating value." (Gloudemans, 1999, 360).

A CAMA system: includes all aspects of information (collection of real data), management, analysis and CAMA modelling for the purposes of property valuation.

Taxation of a property's market value

Property taxes are the most useful form of tax from the perspective of the local authority when they are well administered as they can have a good degree of elasticity, and revenue is easier to collect when compared to other forms of local taxation (Bahl and Linn, 1992). It is also argued that increases in property value can be linked to increased local government spending (tax is accommodationist). The tax is unpopular, however, and has a socio-political nature and influence. The advantages of the property tax, when compared to other possible sources of local government revenue, are thought to outweigh the disadvantages - the tax base can be uniquely identified, taxpayers are easily identifiable, and enforcement is relatively easy to enact (McCluskey and Williams, 1999).

Despite the tension created by linking property value to taxation, acceptance of the tax is critical to its successful implementation and to sustaining the independence of local government. In the context of reform of fiscal cadastral systems, acceptance of the property tax can be critical to overall project success.

3.7.3. Staged approaches to property valuation and taxation

The following section reflects a flow of processes which are similar in design to a typical IT implementation life-cycle model, although this model appears to never have been explicitly used or formally tested in this context. It follows the three main stages for establishment/reform of fiscal cadastral systems understood to be "best practice" and identified by Dale and McLaughlin (1988 and 1999) and Ward (2001a).

Stage 1: Discover and identify all parcels

Parcel identification and property data form the fiscal cadastre, which is the input information required to effect property valuation and taxation. All information of the property at the base date that is considered to affect market value is captured, cleaned and stored. In addition, ownership details and residential address are required in order to effect taxation (Dillinger, 1991). Bahl and Linn (1992) highlight the need for collaboration of government departments in order to obtain and maintain data.

The quality and quantity of the data used is correlated with the accuracy of the resulting valuations. Data quality refers to the currency, completeness and accuracy of the data collected. Data quantity simply refers to the amount of data available or that needs to be collected (Gloudemans, 1999). Obviously a sample of 100% of the data required will lead to the "best possible" model, and as the data set shrinks from this ideal, the predictive ability of the model is expected to deteriorate. The model can at best generate an estimate, as the accuracy of the data itself is limited by subjective aspects in its collection.

Once the property data has been sourced, and sorted, it can be used to determine market value in Stage 2. Stage 1 of the process generates what is understood in this thesis to be the fiscal cadastre (not to be confused with the fiscal cadastral system – see operating definitions in section 3.2).

Stage 2: Classify each land parcel and determine its value

The primary output of the valuation process is the "valuation roll", which is a database of all properties within the area which are subject to taxation, and their respective estimated market values at the base date. There are a number of steps which are followed in this process.

<u>Exploratory data analysis</u>

The first step is called exploratory data analysis and involves cleaning the data. Various mathematical and statistical processes are used and are explained in Musekiwa (2004). An

in-depth knowledge of the social, economic, and political features of the area are important, and the modeller should ideally be of local origin in order to have this awareness and sensitivity. So, although objective methods are used in the exploratory data analysis phase, additional subjective knowledge is required in order to effectively filter out unwanted data. Exploratory data analysis is impacted by the structural coupling (see 2.3.1) between the modeller, knowledge of the property market he/she is attempting to model, and the model itself. It is therefore a theoretically very important step in the process of CAMA.

Time adjustments

Actual sales data is always historic and valuation is most often retrospective. As few actual sales would have been effected on the date chosen for the valuation (base date), sales data either side of the base date (within a specified margin) is used. In some CAMA models a time adjustment is included. In other cases, a suitable property value inflation index is used to estimate sale price at the base date. This essentially leads to a quasi-sales data set used for modelling. Decreased model precision and additional errors are introduced by using sales data not generated on the actual base date (O'Connor, 2002).

Mathematical modelling

A CAMA mathematical model consists of a dependent variable (sale price), and at least one independent variable (property characteristic). Model specification is the process of determining the functional relationship between the property characteristics and the sale price. Model calibration is the process of ascribing coefficients of terms in this function using the sales data and property characteristics. Multiple Regression Analysis (MRA) is usually used in model calibration for CAMA. Once the model is determined, it can be used to estimate market values for all properties, including those for which there is sales data available. Types of valuation models are detailed in Musekiwa (2004) and Gloudemans (1999).

There are two main CAMA modelling principles: explainability and accuracy. In other words, the model must be defensible from a logical valuation perspective and must yield small residuals when applied to the sales data and property characteristics data sets.

Statistical evaluation of MRA results

Choice of statistical software to use for MRA (chosen for suitability, prior knowledge, and confidence) was noted by Ruhl (2001) as a critical management challenge in the case of fiscal cadastral reform in the City of Edmonton, Canada. The most well known method of determining the predictive strength of the model is comparison between the determined market value and the quasi-sales data for each property. These values are divided and are hence termed ratio studies. The ***ratio*** of the estimated market value $\left(\hat{S}\right)$ to the quasi-sale price $\left(S\right)$is calculated as $\left(\frac{\hat{S}}{S}\right)$, and thus a good model will achieve ratios close to unity. From the ratio studies, equity can be interpreted, as well as where performance of the model is good or weak. Ratio studies are conducted before the final valuations are produced and made public in order that any serious deficiencies can be addressed. Eight statistics are used for assessing regression results: these are detailed in Eckert *et al* (1990).

Ethical issues

Mathematical modelling is not free from ethical issues and subjectivity. In order to meet the stated requirement of a sales ratio analysis which meets the 10% market value target, there is sometimes opportunity to increase the valuation, or eliminate outlier sales on the basis of non-validity (Reavey, 2001). By manipulating the data and or the generated statistics it is thus possible to avert a mandatory revaluation (Reavey, 2001).

Communication processes

In democratic countries it is often a legal requirement that the public is adequately informed of processes undertaken by various tiers of government, particularly those which may affect them. Communication processes are not explicitly included in the literature dealing with "best practices" of fiscal cadastral systems and their reform, but are inherent in meeting a

number of the goals of the system and its reform. Communication is, however, often overtly part of strategic change in practice (Atkin, 2001).

Appeal processes

Appeal boards

Systems of appeal in "best practices" in fiscal cadastral systems involve objections/appeals against the valuations, as well as appeals against the decisions of valuations appeal boards, which are a type of court. Various problems with appeal boards in the city of Vancouver, Canada, have been documented by Wronko (2001).

Fairness in appeals

A moral restriction on valuers and appeal boards is to ensure fairness through the appeal process. It can be tempting to reduce a contested value in order that the complainant removes their objection, or valuers and the appeal board may become stubborn and not objective when assessing an appeal (Reavey, 2001). Both of these scenarios decrease equity. If many valuations decrease upon appeal, this results in reduced property tax income and can lead to fiscal management problems.

The courts and mathematical proof

Objections to the valuation processes and principles are reserved for the courts of justice and are argued from a perspective of legality.

The reliance on a mathematical formula to derive property value implies that such a formula should be accessible to the general public and open to scrutiny. "Lawyers have always dealt with matters of proof, but the everyday proofs of the courtroom are examples of worldly reasoning, acknowledged to be less than absolute…. 'beyond reasonable doubt, not beyond all doubt.' ….Mathematical proof, seemingly pristine and absolute, has moved from the abstract realms of logic and pure mathematics into the mundane world of technology, litigation, power and money." (MacKenzie, 1996, 2). This is of particular

relevance to the application of CAMA for mass appraisal as the mathematical formulae used could be challenged in court.

Having generated a valuation roll, this is then used to generate property taxes in Stage 3.

Stage 3: Determining and collecting taxes from property owners

The valuation roll is used to determine the amount of property tax required from each property owner, which is followed by the billing (communication of the property tax due as well as the process, the budget etc.), collection and enforcement processes. Automatic billing once the valuation roll has come into effect, as well as automatic management of outstanding accounts and automatic triggering of debt collection from defaulters, is advocated (Bahl and Linn, 1992). This is then followed by a process of appeal.

Property tax policy

As the local property tax is such a useful tool for generation of income in support of local government, and since its effects on the property market, business and investment can be significant, it is often controlled by the highest level of government. There is a strong contention that property tax policy and implementation should be conducted by local government, and not by national government (Bahl and Linn, 1992).

Property tax rates

A tax rate is the percentage of tax per unit of value. In order to determine the tax rate, knowledge of the total budget requirements for the area, other sources of revenue such as government grants and sales of services and knowledge of the total value of the taxable property (the tax base) is required. The tax rate is determined by division of the budgeted income from property taxation by the tax base.

$$\text{Property tax rate} = \frac{budget - other.income}{tax.base}$$

Different types of tax rates are possible (Connellan, 2001). In developing countries when fiscal cadastral systems are reformed, land should be taxed at a higher rate than

improvements (Bahl and Linn, 1992) in order to encourage development of improvements and reduce land speculation and underdevelopment.

In many cases the total tax rate a local government may charge is capped by local or national legislation, and the local authority is not free to charge taxes above this rate (Bell and Bowman, 2002, Bahl and Linn, 1992). In cases where there is no capping, or when tax rates have traditionally been below a capped rate, administrations are still restrained in setting their operating budget too high as the resulting tax rate will be unacceptable to the property owning (and renting) public and a tax revolt is likely to occur. The determination of the annual budget and the property tax rate are public processes, which generally attract a great deal of media attention, and involve some risk (as evident in the case of the GV2000 Project reported in Part III, Chapter 8).

Another method of applying property tax rates is through banding. Discrete data on a continuous linear scale are divided into defined ranges/categories. Property tax banding is advocated by Plimmer *et al* (2001) as a method of simplifying property taxation and reducing appeals on valuation. The benefits and negative impacts of property tax banding are well documented, and it is not a universally accepted practice.

Property tax rebates

Tax relief of any kind, if not applied uniformly to all tax payers, automatically goes against the principle of fairness and equality, but may promote equity considering the interpretation of equity as taxation according to means to pay. A moral consideration is that exemptions cause a shift in tax burden and are a "grant of public money" (Reavey, 2001). It must therefore be cautiously applied to only those who are most in need. It is recommended that exemptions be legislated as they are often subject to political pressure (Reavey, 2001). Sometimes the tax base is skewed across local government boundaries and it is fairer to employ sharing of a percentage of the tax base at a higher level or to employ differential tax rates for businesses and residences (Bell and Bowman, 2002).

Exemptions for low income families (or rather, those owning low-valued properties) are advocated by Bahl and Linn (1992). There is a double positive effect of this strategy – lowering the administrative burden on collection (*yield ratio* is poor on these properties) and increasing the progressive nature of the property tax system (Bahl and Linn, 1992). The cost of accurate valuation, billing, collection and enforcement would be substantially higher compared to the value of revenue obtained by administering the property tax in this population segment. In addition, it is easier to offer a blanket rebate rather than a property value cut-off, which would lead to gross inequality for property owners close to this threshold. This policy in all probability substantially improves the measure of cost at minimal loss to the measure of realization. It has been a policy which has been implemented in a number of other cases such as in Seoul, Abidjan and Lusaka (Bahl and Linn: 1992).

Collection and enforcement

Collection of property tax simply relates to the available mechanisms for payment, while enforcement refers to the processes and mechanisms of coercion and punishment.

Staged processes of fiscal cadastral establishment and property valuation and taxation do not continue beyond the collection and enforcement of property taxation. Measurement of performance is restricted to stages 2 and 3 and is not holistic in its approach. The next section looks at the various approaches to this.

3.8. MEASURES OF FISCAL CADASTRAL SYSTEM PERFORMANCE

The goal-based approach (see 2.6.1) appears to be the predominant approach to measurement of performance in property valuation and taxation "best practice" as reflected in literature. Goal-based measurements are highly subjective and lack uniformity and rigour in their application.

Statistical methods (involving ratio studies) of measuring performance are often used, especially when Computer Assisted Mass Appraisal (CAMA) is employed, but are limited in their ability to reveal performance in many areas. There are a number of metrics with specified quantitative statistical goals against which property valuation and taxation performance is measured. Some sources dealing with "best practice" models, such as the International Association of Assessing Officers (IAAO), use the terminology of "Standards" to describe their chosen set of performance measures.

Qualitative goals are less easily measured, and may be highly subjectively assessed, especially when undertaken by the valuation and taxation local authority (eg. transparency, simplicity). McCluskey and Franzsen (2000), advise that a national agency should be established with the functions of technical advice, setting, monitoring and auditing minimum standards, and certification of the overall system. They illustrate New Zealand and Victoria in Australia as examples of where this has proved to be highly efficient as tasks are not duplicated, while expertise is retained and enhanced.

In practice, it is apparent that a common set of measures is not generally in use in order to assess performance. Administrators of a property valuation and taxation system appear to choose whichever methods they are aware of and for which they can easily obtain or generate data. This has a number of drawbacks: it is difficult to compare systems, and indicators of low levels of performance can be ignored.

The following section addresses research objective 1.4.2 b) in summarizing current methods of assessment of performance from reviewed literature in accordance with research activity 1.5.2 c). These methods of performance measurement are structured into a non-goal-based, systems thinking framework containing the following categories: efficiency, efficacy, effectiveness, elegance, empowerment, emancipation, exception and emotion. This framework, called the 7E's framework in this research, is argued for general performance measurement of change management projects in section 6.3.7. It is similar to the 3E's framework for defining core criteria used in SSM, which has in some cases been

extended to the 5E's of efficacy, efficiency, effectiveness, ethicality, and elegance (Checkland, 1999). This 7E's framework has been derived from the SOSM taxonomy of Jackson (see Table 5.2) and is adopted here as it will complement later analyses (Chapters 7 and 9). It is thought to be inclusive of all relevant aspects of performance measurement beyond the specific organizational goals, although such goals can be reflected within these broad classifications. References to these terms below are the author's, and not derived from literature.

3.8.1. Efficiency – minimizing the use of resources and power to deliver

Cost

The World Bank has been involved in a number of fiscal cadastral reform projects in Brazil and the Phillipines (McMaster, 1991) in which the aspects of parcel identification, improvement data, valuation, collection and financial reporting were addressed. From these, McMaster (1991) derived that property valuation and taxation administration can be judged in terms of realization and cost. Cost is a measure of efficiency, while realization is reported in the next section under effectiveness/efficacy.

The cost of the valuation and taxation effort is given as the total amount of resources used in the collection of the tax in relation to their yield. The cost ratio is improved by linking processes, linking taxation to other charges, implementing fewer large taxes as opposed to multiple smaller ones, concentrating physically the administration of the assessment and collection, and automating processes. The cost ratio is thus:

$$\text{Cost ratio} = \frac{T}{C}$$

Where T = property tax revenue (income, or total collected)

C = cost of administration of the fiscal cadastral system

An IAAO yardstick of efficiency is that the property valuation and taxation budget should be less than 1.5% of the property tax collection (Almy *et al*., 1990). This is equivalent to a cost ratio of 66.6 implying that the taxation authority should reap 66 times what it spends

on the property tax effort. Although this understanding of an acceptable cost ratio is dated, a more recent yardstick has not been found.

Property tax effort

Property tax effort is noted by McMaster (1991) to impact on decision making of property owners and is a key criterion for performance measurement. Bahl and Linn (1992) describe the ratio of property tax revenue (T) to personal income (Y) as a traditional measure of property tax effort. This ratio can be disaggregated as shown below:

$$\frac{T}{Y} = \left(\frac{T}{TL}\right)\left(\frac{TL}{AV}\right)\left(\frac{AV}{MV}\right)\left(\frac{MV}{Y}\right)$$

where T = property tax revenue (income – total collected)

Y = personal income

TL = property tax liability (the total billed amount)

AV = total assessed value of the property (value shown on valuation roll at base date)

MV = total market value of the property (actual market value at time of billing)

The second and fourth terms are measures of efficiency:

$\left(\frac{TL}{AV}\right)$ = tax rate effect

$\left(\frac{MV}{Y}\right)$ = base effect - this term is usually beyond the control of the local government.

Because of problems in collecting these data for the individual terms, Bahl and Linn (1992) combined the first two and last two terms to simplify the equation into two terms of effective tax rate and effective base rate:

$$\frac{T}{Y} = \left(\frac{T}{AV}\right)\left(\frac{AV}{Y}\right)$$

If the effective tax rate is low, this can be attributable either to a low tax rate, or inefficient collection. If the effective tax base is low this can be attributable to underassessment. From their analysis of a number of (non-African) developing cities the median tax effort is between 2 and 2.5% (Bahl and Linn, 1992).

Administration

McMaster (1991) notes that administrative capacity - reducing the administrative capacity required to obtain income - is a key performance criterion for judging the performance of local taxation system. Property taxation is costly in terms of administration as it relies on regular assessment which in turn relies on highly qualified and experienced personnel. Collection and enforcement of property taxation is more difficult to achieve than other forms of taxation. Administrative proficiency is linked to effectiveness, as well as to elegance (see 3.8.3) (Bell and Bowman, 2002)

Ammons (1996) includes office space which is used for property valuation and taxation purposes as a key issue in terms of resource allocation. In many cases this variable can be considered as part of the project budget.

3.8.2. Efficacy/effectiveness – delivery

One of the main purposes of a property valuation and taxation system is the generation of income through the property tax. It goes without saying that if all properties are included in the property valuation, and if these are valued correctly, and if all property owners are taxed and all taxes are paid in good time, that the system has achieved its primary goal and efficacy is maximized. However, this ideal is not always realized and in some cases the reform process fails. In the Phillipines, this was in part attributed to the system never attaining fair market value, as well as lack of uniformity in both record keeping and in the valuation (Baraquero, 1991).

Realization/yield

Realization is the amount of tax collected (yield) (T) compared to the potential total tax which is the sum of all tax invoices (TL). Bahl and Linn (1992) termed this *collection*

efficiency. Realization is threatened by evasion and fraud or collusion which can be reduced through automating processes (McMaster, 1991).

$$\text{Maximizing T, through maximizing collection efficiency} = \left(\frac{T}{TL}\right)$$

The effectiveness of collection is determined by the calculation of the collection rate. It is common for this to be as low as 75% (Bahl and Linn, 1992). The contributing factors are reported in Bahl and Linn (1992).

Assessment efficacy

Assessment efficacy of the entire valuation roll is measured by the ratio of the total assessed value (total value shown on valuation roll at base date) and the total actual market value at time of billing. This will highlight changes in overall property value as the time between base date and date of billing increases.

$$\text{Assessment efficiency} = \left(\frac{AV}{MV}\right) \text{ should be} = 1, \text{ usually} < 1$$

McMaster (1991) includes adequacy and elasticity in the essential performance criteria – this is judged by the ability of the income through property taxation to change to meet the changing cost of service delivery. In other words the tax should be sensitive to rising costs, population increase, economic expansion, upgrading of neighbourhood delivery expectations etc. McMaster (1991) points out that property taxes generally score poorly on this measurement and are hampered further by the length of time between successive valuations – they are not immediately responsive, but require a valuation process in order to demonstrate responsiveness.

Coverage ratio

Kelly (2000) also lists the sales ratio, the collection efficiency and the tax yield as critical measures of performance, but also adds the coverage ratio (my formulae):

$$\text{Coverage ratio} = \left(\frac{PTB}{TP}\right)$$

PTB = property tax base at the time of assessment (fiscal cadastre)

TP = total number of properties within the municipal (catchment) area at the time of billing

Sales ratio

Ratio Studies (comparing the ratio of the appraised value to the sales price) give a statistical indication of the efficacy of the appraisal – the quality of the assessment of market values (denoted by AV above). Overappraisals should balance underappraisals so that the overall ratio is close to 100% (Almy *et al*: 1990). Ratio studies are used by equalization agencies, supervisory agencies, assessors, independent appraisers, as well as by tax payers and appeal boards. The International Association of Assessing Officers (IAAO) has established international standards for measuring the performance of property valuation and taxation (IAAO, 1999). These measures are entirely quantitative and the most important of the valuation standards is the sales ratio test. These statistical measures of performance are endorsed by many CAMA analysts including Ward (Ward et. al., 2002a).

$$\text{Sales ratio} = \left(\frac{AV}{SP} \right)$$

Other benchmarks identified by the IAAO in order to ensure a minimum level of performance of the valuation are:

- The sales ratio study should be conducted regularly (not definitive) (Almy *et al*: 1990)
- The re-inspection of properties should occur at least every 6 years (Almy *et al*: 1990)
- The number of appraisers should range from at least 1/1000 parcels in small municipalities to at least 1/3500 parcels in large municipalities (Almy *et al*: 1990)
- Each major class of properties should be appraised to within 5% of the overall level (Gloudemans, 1999).

Office and field reviews

Ratio studies are only good indicators of the quality of determination of assessed market value if the data used is good. Comparison to sales prices which are incorrect shows little. Biased data can yield good statistical results, but poor estimation of market value. Office and field sales reviews will also reveal the correctness of model estimates and provide an independent check. In particular, outliers should be inspected in order to ascertain that the property data is correct and that the resulting market value is realistic. Ward *et al*. (2002a) state that values generated by a CAMA model must be field-tested and also reviewed by a professional appraiser to check for consistency.

Temporal comparisons

It is desirable that properties which have similar sales prices from valuation cycle to valuation cycle should also have similar market value estimates. This is termed stability, and can be tested. It is particularly important when the model specification has changed between valuations.

Objectivity

Bahl and Linn (1992) maintain that it is the quality of the administration of the property valuation and taxation system rather than its structural form which determines its success. The criterion of objectivity in valuation is a desirable principle, but this is difficult to achieve (Bahl and Linn, 1992). Mathematical techniques of sales comparison go some way towards greater objectivity, but are more costly to administer as they require accurate juridical and regulatory cadastres as well as a substantial amount of field data regarding the improvements of each property (Bahl and Linn, 1992). Due to these difficulties the amount of tax realized decreases, horizontal inequalities increase, and the sensitivity of the tax to property value growth is decreased (Bahl and Linn, 1992). The assessment sales ratios can reveal evidence of the first two, whereas the growth rate of the property tax can be compared relative to data on income growth, population growth, and price increases.

Allocative effects of property tax

Allocative effects refer to the places where people choose to allocate their resources, or invest their capital. Economic, land use and price effects of the property tax can be significant and may impact on long-term effectiveness. Changes to the tax on improvements will also lead to reallocation of capital in the long run, and may be counterproductive to improving the tax efficacy (Bahl and Linn, 1992).

3.8.3. Elegance – acceptability to stakeholders

Political acceptance of the tax is a further criterion of McMaster (1991), and its processes of implementation are critical to the success of the process. Property taxes are sensitive due to the fact that they are collected directly from owners (not taken off a salary or directly related to a service) and they are usually increased after a public decision-making process prior to revaluation and in order to determine the tax rate to be charged. Relief from extraordinary tax burdens is essential for acceptance of the property tax and is achieved through uniform and fair levy on accumulated wealth with a provision for relief from an unbearable burden based on current income (Bell and Bowman, 2002).

Public acceptance of the process of property valuation is generally measured in terms of the number of objections to valuations and formal appeals. The percentage of cases that are upheld in the appeal courts is also an indicator and is thought to be more significant Ammons (1996).

In the case of fiscal cadastral system reform in the Philippines, periodic mass revisions have contributed to lack of trust in the system, and this lack of trust is partly blamed for its failure (Baraquero, 1991). An indicator of acceptance of a cadastral system is its use (Barry, 1999), which also relates to its perceived trustworthiness (FIG, 1995). A considerable drop in the collection ratio (property tax/rates boycott) is indicative of the failure of the reform process (Baraquero, 1991).

Explainability

Explainability is the extent to which the process of valuation and taxation can be communicated to, and understood by, the tax-paying public (McCluskey, 1997). CAMA models should be no more complex than necessary in order that they can be understood by those who pay property tax, and not only the valuation profession, or worse - only the CAMA modellers. Model structure and coefficients should be generally consistent with appraisal theory. Ward *et. al*. (2002a) endorse that the coefficients produced by CAMA models should be intuitive and that the model must also be explainable.

Transparency

Bell and Bowman (2002) note that fiscal cadastral processes should include transparent and understandable methods of calculation, as well as transparent methods of objection and dispute resolution. Taxation on market value improves transparency as knowledge of property value is generally known or accessible to property owners (Bell and Bowman, 2002).

Legitimacy

Legitimacy is also noted by Bell and Bowman (2002) as an essential criterion – this is measured by public acceptance and legality. Trust in the system of property valuation and taxation is enhanced by perceived efficiency and technical proficiency (Bell and Bowman, 2002).

3.8.4. Empowerment – contribution by stakeholders to decision-making and action

There appear to be no specified measures of performance which fit into the category of empowerment. Public participation in general at public meetings etc. is an indication. Interim reviews may be facilitated, while formal appeals against the assessments for individual properties are standard practice. The only measure of public participation is a measure of the number of formal appeals compared to the number of assessed properties. Being a formal process this means that the actual numbers are only indicative and are likely to be highly conservative. Time, effort and often financial cost are incurred by formal objectors, and perceptions of the validity and usefulness of the process will also deter

participation. Furthermore, this form of participation is restricted to property owners, and is not accessible to all stakeholders – particularly those who rent for residential or business purposes, and who in the end are affected by increases in property taxation. The real extent to which the general and affected public is able to participate in the process from policy decisions, legislation, through to the nuts and bolts of property valuation and taxation, is untested.

3.8.5. Emancipation – assisting the marginalized/disadvantaged

Equity

McMaster (1991), in work performed in conjunction with the World Bank and the United Nations, includes equity in his five essential criteria. Equity in this context is interpreted such that the burden of payment should fall on those with the ability to pay and is hence directly related to emancipation. This interpretation of equity thus deviates from those of fairness (see Glossary) and equality. Equity is considered good if the property tax is progressive (pro-poor), tolerable if it is proportional, and poor if it is regressive (favouring the rich). An example as to how progressive or regressive valuation, and hence taxation, can occur is if location factors favour wealthy (regressive) or poor (progressive) areas. The same effect is created by differential taxation in which variable tax rates are applied depending on location. The incidence of taxation should be equitable (in this case synonymous with fairness): vertical and horizontal equity (see Glossary) should be achieved, as well as equity across different locations. Service delivery equity/fairness must also be taken into account when discussing taxation equity as an area receiving a greater level of service could pay more than its share of the tax burden, and the situation still be considered equitable.

Ward *et al*. (2002a) also endorses equity, which in their view should be measured by comparison of market values to the sales prices (sales ratios). Furthermore, if the sales ratio statistics are within range of IAAO standards then they conclude that the results can be assumed to be both accurate and fair.

Equity/fairness within groups:

Average ratios for groups of properties are determined. Each ratio within a group is then compared to the average ratio for that group and residuals determined. The magnitude of the residuals can then be compared with those from other groups (a bit like a standard deviation, which can indicate quality differences even when the means are the same for two samples).

Equity/fairness between groups:

Average ratios for each group are compared to reveal inequalities between the appraisals of groups of properties. Both horizontal equity and vertical equity can be tested this way and depends on the choice of groups. Groups chosen in different locations, but with similar characteristics (including location variables) can be compared for horizontal equity. Vertical equity can be tested by comparing the average ratios for a high market value group and a low market value group. The Price Related Differential (PRD) statistic is also a good measure of vertical equity.

Incidence of property tax

The incidence of property tax refers to how the tax burden varies with income and hence speaks to the issue of emancipation. The term "incidence" is also often used to include the spread of the tax burden not only between owners of property, but also between owners of capital, labour, consumers of housing services, and consumers of all goods and services (Bahl and Linn, 1992). This takes place indirectly through the influence of the property tax on the land market and its determinants and is well covered by Bahl and Linn (1992).

3.8.6. Exception – ability to hear and act on suppressed viewpoints/concerns

As mentioned under the section "empowerment", there is no formal measure of the ability of current systems to hear and act on viewpoints or concerns which are not raised by property owners. Even when these are raised by these owners, concerns can only be expressed in relation to the property characteristics, or to the property assessment.

One extreme method of forcing action is to embark on tax boycotts or legal action in the ordinary courts. There are a number of cases in which this has been pursued – the Californian rates dispute of the 1970's (Chapman, 1998), the LOGRA court case in Cape Town (*Lotus River, Ottery, Grassy Park Residents Association and another v South Peninsula Municipality* 1999 (2) SA 817 I; [1999] 4 BCLR 440 I), and the Sandton Rates dispute in Johannesburg, South Africa (Camay and Gordon, 2000).

3.8.7. Emotion – doing what feels right

There is no measure of whether this is achieved by fiscal cadastral system processes, although it is understood to play a significant roll in the model definition and classification stages of the process, which require experience and intuition.

3.8.8. Conclusions relating to performance measurement

The above summary conveys the current methods of evaluation of fiscal cadastral systems and their reform. It is apparent that they are dominated by quantitative statistical measures of performance with a few exceptions which deal with a variety of goals such as public acceptance, trust, explainability and other "soft" issues. The dominant approach for evaluation of CAMA implementation is a technocratic analysis of its statistical outputs, which is in keeping with the skills and knowledge of the primary implementers. An expansion of this narrow focus in order to assess the overall performance of the fiscal cadastral system is expected to provide a better indicator of the success and sustainability of reform, and contribute to the improvement of future change through a deep understanding of the system structures and processes.

3.9. CONCLUSION

Knowledge of international "best practice" in fiscal cadastres and processes of property valuation and taxation, and their reform, provides an essential platform for advancing knowledge in the field. This Chapter partly addresses research objective 1.4.2 b) in accordance with the initial research activities outlined in 1.5.2 c), which deals with detailing fiscal cadastre establishment and property valuation and taxation processes

purported to be "best practice". These "best practices" are subject to critique in Chapter 7, using a methodological framework identified in Chapters 5 and 6. This sets the scene for analysis of the case study of the GV2000 project and to inductively develop an integrated, holistic conceptualization of a fiscal cadastral system, and further to that, a methodological framework for its implementation and reform (Part III, Chapter 9).

Chapter 3 thus complements its partner Chapter 2 in addressing literature relevant to pursuing the research objectives. The remaining task of Part I of this thesis is to identify an appropriate theoretical framework for the research. This is covered in Chapter 4 to follow.

CHAPTER 4. DEVELOPMENT OF THE THEORETICAL FRAMEWORK

4.1. INTRODUCTION

This chapter identifies a theoretical framework to conceptualize the use of information systems to effect change in complex systems as per research objective 1.4.2 a) which is to identify an appropriate philosophical theoretical framework for studying fiscal cadastral systems reform using information technology. This framework is required in order to explore the substantive issues in the processes of fiscal cadastral reform in which the implementation of new information systems technology forms a major component of the reform process. To recap, the context of this analysis is the creation of a new property valuation roll for metropolitan Cape Town in which computer assisted mass appraisal (CAMA) was a primary driver.

A comprehensive body of knowledge of philosophical approaches to cadastral or fiscal cadastral research is lacking as shown in Chapter 3, and so cannot be used to inform the development of the theoretical framework for this research. However, approaches to IT/IS research and practice are well developed as demonstrated in Chapter 2 and this chapter begins by providing a critique of these. IT/IS is relevant to the fiscal cadastre and its reform as IT/IS is an integral component of the system (see section 2.2). Critical realism is then identified as the most useful paradigm from which to approach this research. A holistic approach to knowledge creation in real world problems is identified, and general systems theory, as approached from a critical realist perspective (rather than an interpretivist perspective as in Checkland (1999)), is argued as a useful way to view complex case studies.

4.2. APPROACHES TO INFORMATION SYSTEMS RESEARCH AND PRACTICE

As a preliminary step prior to identifying a suitable theoretical framework for this research, it is necessary to explore the predominant underlying theoretical approaches to information

technology and information systems. The main aspects of each of these approaches is highlighted, and thereafter its suitability discussed.

4.2.1. The instrumental approach

In the instrumental approach, technology is seen as a means to solve a particular problem and is morally neutral, and correlated with progress (Vig, 1988). It presumes that the eventual purposes of technology implementation are known upfront and predictable.

In my analysis, the instrumentalist approach is considered too simplified in the implementation of technology in the midst of complex change (see Section 2.4.2) due to its exclusion of the environmental, human, organizational, legislative, economic and political inputs to the process of complex change. The idea that a technology can, on its own, change the course of events and become a sole change management tool is considered naïve. The moral neutrality of technology can only be argued if the technology is viewed as a tool, which has no influence on the way society is structured, and in itself is not influenced by other elements of the environment. This approach ignores the social origins of technology and the social environment of its application (Vig, 1988).

4.2.2. Social determinist / contextual approach

In this approach technology is "not a neutral instrument for problem solving, but an expression of social, political, and cultural values" (Vig, 1988, 14). I would include economic values in this group. It takes cognisance of the human context of technology and therefore culture plays an important and definitive role in technological innovation. Moral issues are linked to social structures and values rather than to the technology itself (Vig, 1988).

This approach is criticised for its favour of the influence of society (MacKenzie and Wajcman, 1999). It has been used by Tettey (2002) as the theoretical framework for looking at information and communication technologies (ICT), local government capacity

building and civic engagement in Ghana. The approach was adopted in order to explain the adoption and adaption of ICT's in terms of social systems.

The social determinist approach is too one-sided to be of much use in addressing the research objectives here. Its focus on the nature of technology as a product of society excludes the influence of technology on society and oversimplifies a complex relationship. Its usefulness lies in acknowledgement of the place of technology within a larger social system.

4.2.3. The technological determinist/autonomous approach

The technological determinist/autonomous technology approach sees technology as shaping human development and society rather than serving human ends – a one-sided influence (Vig, 1988). Incremental changes in social organization and living patterns are taken to result from technological interventions. It is linked causatively to progress and assumes that innovation is driven by an autonomous, non-social, internal dynamic which undermines the stability of life, follows its own, natural, logical and linear trajectory, and results in technological drift and the adoption of the best/most efficient technologies. The input of human subjectivity and interests is minimal (Vig, 1988, MacKenzie, 1996).

There are various arguments against technological determinism. The concept of a "best solution" begs the question as to who it is best for, and takes no account of competing goals (MacKenzie and Wajcman, 1999, see sections 2.6.1, 3.5 and 6.3.5). Technologies can be adopted for many reasons other than that they are the best e.g. historical commitments (MacKenzie and Wajcman, 1999). These ideas have led to the notion of soft-technological determinism in which technologies either "condition" or "encourage" political and/or social structural change (Vig, 1988, 18, MacKenzie and Wajcman, 1999). Technological determinism also ignores diversity in the nature and impact of technology in different environments, particularly ignoring the socio-political context of implementation, and complex situations in which predictable orderly outcomes are unlikely (MacKenzie and Wajcman, 1999).

Heffron (1989) addresses technological determinism in the public sector, which is the context of the case study in Part III. In the public sector, structure is often determined by political influences and socio-cultural expectations and structural determinism is more relevant than technological determinism. The correlation between type of organizational structure and type of technology is strong. In a machine bureaucracy such as public sector organizations, it would be difficult to employ non-routine technology. Heffron (1989) proposes that to solve new problems in the public sector outsourcing of functions which are incompatible with the organizational structure and culture should be undertaken.

Technological determinism suffers a mirror problem to social determinism as it considers the opposite relationship. Soft technological determinism appears to be an approach well-matched to the goal of using technology to effect change. This approach offers a similar benefit to social determinism in highlighting this relationship, but cannot be considered to be sufficiently holistic.

4.2.4. Social constructivist approach

Constructivism views the process of IT development as a product of human culture and community (social construct) while changes in organizations are also brought about by IT development (Westrup, 1996). In other words IT interventions and organizational change are inextricably inter-related (Westrup, 1996). The social constructivist attempts to analyse a technological system in order to understand it from a social, technical and organizational perspective. The approach is interpretive, and emphasises contingency and choice (Winner, 1993) and is largely managed through a project plan (Westrup, 1996). However, roles are not treated as pre-given, but rather as emergent (Westrup, 1996). Winner (1993) is critical of this approach in that it disregards social consequences of technical choice.

In some respects the social constructivist approach is more holistic than approaches mentioned previously in that it includes some conceptual systems found in systems theory (see section 4.2.6) such as the technical and organizational systems. The social analysis

does not consider power, oppression etc. resulting in bias. These shortcomings can be significant in analysis of IT and change in a government structure in which politics and power are dominant influences.

4.2.5. Structuration approach

Structuration theory of Giddens (1986) has been adapted by Orlikowski and Robey (1991) and others, but this has been widely criticised by social theorists. Structure is seen as a property of technology. It permits the investigation into ongoing relationships between human actions, social processes, contexts of use, and social structures by integrating the separate theories of voluntarism (how social systems are produced by human action) and determinism (how human action is shaped by social structures). Structure is seen as both part of the real world and part of human construct, in other words, it acknowledges subjectivity and objectivity (Orlikowski and Robey, 1991, Poole and DeSanctis, 2004). Structuration theory is thus concerned with the human-computer relationship which is dynamic and evolutionary.

Structuration theory is appealing to information systems (IS) researchers in their quest to explain the human element in the implementation of technological systems. It is able to cope with the unpredictability of IS in groups and organizations (Poole and DeSanctis: 2004). The theory is action-oriented, and focuses on social dimensions – humans are seen as agents in the system. Orlikowski and Robey (1991) address the role of information technology in change. They combine theory of organizational structure and change with philosophy of information and social systems and specifically address the impact of information systems as a catalyst for change. The benefit of a meta-theory is that it can be used across various levels of the system: individual, group and organizational levels. It does not restrict itself to determinism (change is caused by the environment) but rather identifies the causal agency as emergent (it develops over time and is part of a cyclic process of influence and reaction).

Although the social science focus of structuration precludes exclusive adoption of this approach (the principal researcher is not a social scientist), knowledge derived from structuration is of relevance. The theory of structuration allows a blurring of the quantitative and qualitative methodologies in research of systems. Its applicability in approaches to fiscal cadastral systems reform is evident, and it is compatible with a *critical realist perspective*.

4.2.6. Social systems approach

The social systems approach integrates technical, social (organizational, cultural, personal, etc.), economic, and political aspects in a holistic sense taking into account the various elements of the physical artefacts, institutions and their environment (Bijker *et al*, 1994). Technological innovations are seen as part of an integrated whole – part of a system – and are indivisible from their social context. They are mutually constitutive. This can take cognisance of the impact of individuals and society on technology, and visa versa, and the impact on the way in which society is shaped through technological innovations (including organizations). Integration of the elements of the system and their interdependence are understood. Elements, structures and relationships are investigated, and aspects of the problem identified and modelled. The social systems approach thus appears to offer many advantages in addressing the research objectives and is dealt with in more detail in section 4.4.

4.3. CRITICAL REALISM AS A PHILOSOPHICAL BASIS FOR RESEARCH IN INFORMATION SYSTEMS AND CHANGE

The task of this section is to set the scene in terms of the worldview (ontology) adopted for this research and understanding of the real world and how to gain knowledge about it (epistemology) The researcher's background and interpretive community play a role in these, while the context of the research should be considered. The fiscal cadastral system is a subset of the multipurpose cadastral system generally, and in this case study, employs CAMA IT as the primary mechanism to effect reform. The fiscal cadastral system involves

more than information technology (see section 2.3.1) and is better described as an information system with critical social, economic, political and legislative elements necessary for implementation within an organizational context.

4.3.1. Alternative ways of viewing and forming knowledge about the world

Positivism

Positivism is based on an ontology of naïve realism – presuming that reality exists and is accessible to the observer. It is reductionist (a whole can be reduced and explained in terms of its parts) and deterministic (natural and social phenomena are causally determined by preceding events or natural laws). The epistemology of positivism is dualist and objectivist – the observer and the observed are considered to be independent, values and biases are controlled, and replication is possible. This generally lends itself to an experimental and manipulative methodology in which propositions are stated then tested to prove theory. In this approach the context is stripped in order to control other variables – as in a laboratory. This leads to the reduced ability to generalize the findings, which can only be applied to similarly stripped problems. Positivism relies heavily on quantification of relationships through data and formulae. This is like the inquirer standing on the other side (from the inquired) of one-way glass. The positive view is sometimes called the "received view", and is generally no longer acceptable on its own in the social sciences (Denzin and Lincoln, 1998a).

The main drawbacks of positivism are that it cannot deal with local (emic/insider), case-based (idiographic/specific) meanings (Denzin and Lincoln, 1998a) which are an integral part of real world organizational change processes such fiscal cadastral systems reform. External validity competes with theory and value-laden and interactive nature of enquiry, and the understanding that the same facts can support more than one theory (Denzin and Lincoln, 1998a). Pure positivism looks at the verification of theory (not its falsification). In other words, the theory is assumed to be correct, and hence all additional data should confirm the hypothesis/proposition, else it is discarded (Figure 4.1). A process of falsification aims to prove theory incorrect (Figure 4.2).

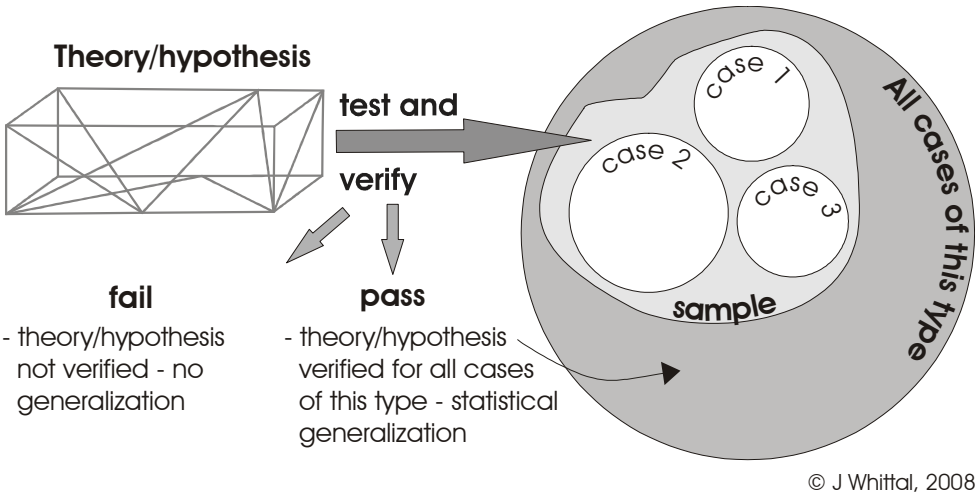


Figure 4.1 Process of verification with statistical generalization

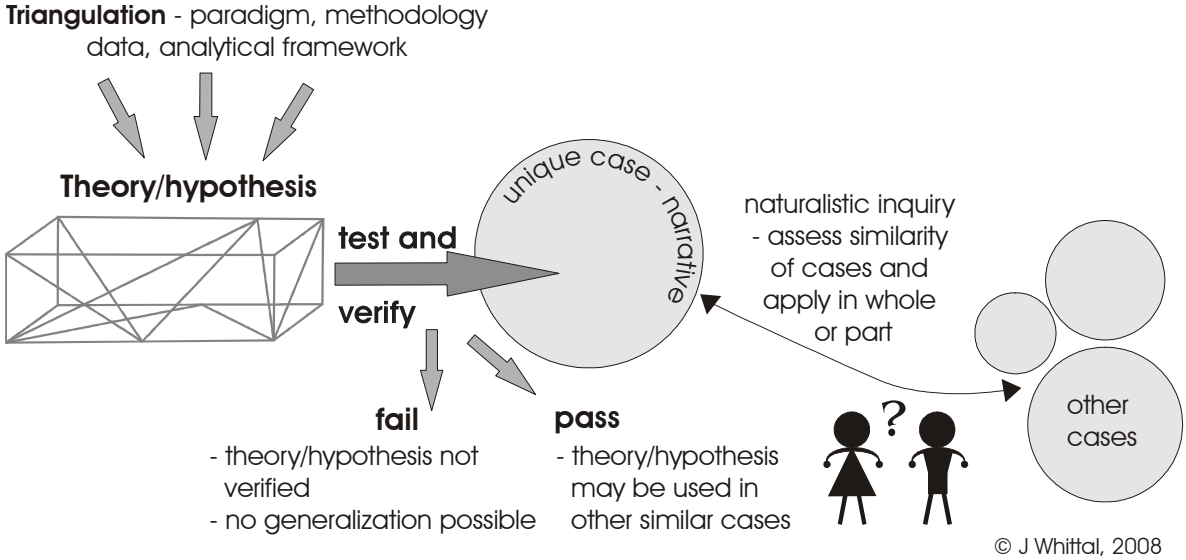


Figure 4.2 Process of falsification with naturalistic generalization

Another key element is that the theory must be as explanatory, or predictive, as any competing theory (Lee, 1989). Epistemologically, a positivist approach assumes a priori and fixed causal relationships which can "be identified and tested via hypothetico-deductive logic and analysis." (Dube and Paré, 2003, 604). Creation of knowledge in integrated natural and social real world systems is thus limited by a positivist stance. It is thus not an appropriate method to be used exclusively in either the analysis of the case

study of the GV2000 Project, or for the extension of knowledge of fiscal cadastral systems in a holistic manner.

Interpretivism/constructivism

In contrast, an interpretive theoretical paradigm employs a pluralist and relativist ontology. It depends on what the observer sees and how he/she ascribes meaning to it. It acknowledges multiple realities and "realities are apprehendable in the form of multiple, intangible mental constructions, socially and experimentally based, local and specific in nature, (although elements are often shared among many individuals and across cultures), and dependent in their form and content on the individual persons or groups holding the constructions" (Denzin and Lincoln, 1998a, 206). "Reality" is seen as a product of human intellect (Denzin and Lincoln, 1998a). The manner in which knowledge is gained (epistemology) is transactional and subjectivist. Generally knowledge is taken to be hermeneutic (prior understandings and prejudices shape the interpretive process) and dialectical (the interactive nature of investigator and subject means that this interaction must take place in the formation of the individual construction) (Denzin and Lincoln, 1998a). Language and history are both the condition and limit of understanding which is what makes the process hermeneutical (Denzin and Lincoln, 1998a). Interpretations/constructions "are not more or less 'true', …, but simply more or less informed and/or sophisticated" rendering them weaker or stronger (Denzin and Lincoln, 1998a, 206).

The value of pure interpretivism/constructivism in extending knowledge in fiscal cadastral systems has the potential to ignore aspects which are more tangible – material/technical aspects, or to ascribe too much importance to bias in the process of modelling real entities and relationships. An alternative to pure positivism or interpretivism is thus required.

4.3.2. The ontology of critical realism

Critical theory is a blanket term for several alternative paradigms to that of positivism including neo-Marxism, feminism, materialism, participatory inquiry. These all include

value-determined nature of reality. There are two main branches – post-structuralism and postmodernism (Denzin and Lincoln, 1998a).

It is a pluralist approach and an alternative to the traditional dualism of positivism versus interpretivism. It relies on a realistic approach to problems, an acknowledgement that positivism and interpretivism both contribute to an understanding of reality, and that neither *hard* nor *soft systems thinking* (see sections 4.4, 5.3.1 and 5.3.2) should be favoured but should be combined. Critical realism moves away from an ontology of naïve realism and sees reality as historically real - "A reality is assumed to be apprehendable that once was plastic, but that was, over time, shaped by congeries of social, political, cultural, economic, ethnic, and gender factors, and then crystallized (reified) into a series of structures that are now (inappropriately) taken as "real", that is natural and immutable. For all practical purposes the structures *are* "real", a virtual or historical reality." (Denzin and Lincoln, 1998a, p 205).

Thus critical realism maintains the reality of the world, while accepting that knowledge of it is socially and historically influenced. It presumes that the real world contains objects and structures which are causally active and may (not always) give rise to events/perturbations which can be measured/perceived in the human realm. However, knowledge of these real objects and structures cannot be fully accessed due to flawed human intellectual mechanisms and our abilities to perceive these phenomena. Claims must be subject to wide criticism in order to ensure that the truth is approximated as best as it possibly can be. Critical realism eschews the notion of the complete independence of the observer, but is able to take into account context, meaning and purpose which are essential in the understanding of psychological and social dimensions to problems. The ontology of the critical realist is therefore mostly functionalist (as opposed to interpretive, emancipatory, or postmodern). In other words, it is geared to improve real world problem situations, and understands the real world to be systemic (Jackson, 2003). However, it is argued by Mingers (2006) and counter-argued by Jackson (2006) in reference to his earlier work, that the critical realist perspective is a multi-paradigm approach, incorporating elements of

functionalist, interpretive, emancipatory and postmodern paradigms where appropriate. It can thus be suitably applied when a researcher desires to use more than one approach in the course of an analysis.

As this document progresses, a predominantly functionalist approach is used in the exploration of current methodological and theoretical frameworks in Part II, whereas Part III, dealing with the case study, relies on both positivist and interpretivist analytical tools, as well as on induction in order to extend current knowledge of the fiscal cadastre and property valuation and taxation as a system. Critical realism allows for this flexibility in approach, while avoiding conflict at the ontological and epistemological levels.

4.3.3. The epistemology critical realism

Critical realism conceptualizes the world as consisting of two structurally coupled, but separate domains, the intransitive domain consisting of real world objects, structures, information (data) and events, and the transitive domain consisting of observers, perception, meaning, conception, and modelling (illustrated by the background colours of Figure 4.3).

Observers in the transitive domain have no access to the real world of the intransitive domain, and may only postulate its existence through observation of perturbations, and understandings of causal processes. The epistemology of critical realism is thus a modified form of dualism/objectivism in that the observer and observed are not considered fully independent (Mingers, 2006); there is an element of subjectivity and the values of the inquirer influence the inquiry thus findings are 'value mediated'. A critical realist is transactional in his/her acquisition of knowledge in the sense that the relationship between a particular investigator and a particular object/problem has a bearing on what can be known – the boundary between ontology and epistemology is weak or permeable.

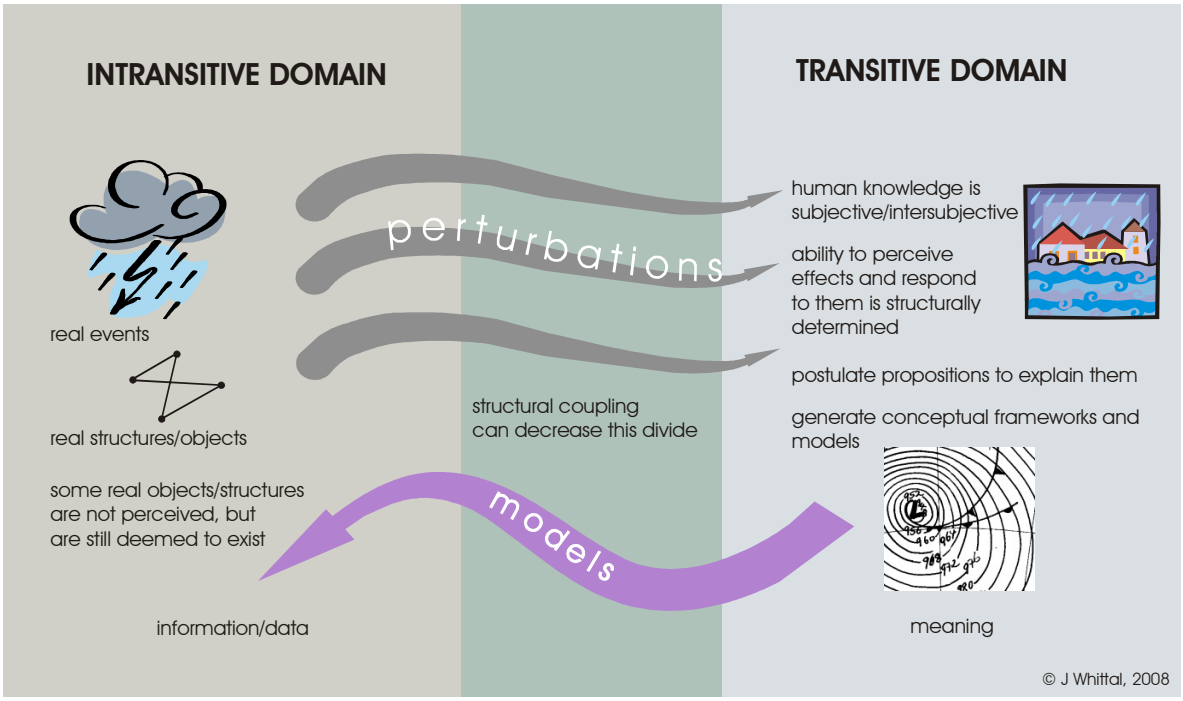


Figure 4.3 Conceptualization of critical realism

Reality is explored through its causal effects – if an effect (a storm in) can be observed (not independently of the observer), then the observer can postulate the underlying mechanisms that could have generated this phenomenon. Causal processes are conceptualized in the form of models (frontal system in), which can be subjected to processes of falsification in their testing (Figure 4.2). Critical realism differs from a purely empiricist epistemology (reliance on empirical evidence in forming knowledge) in that even if a causal effect cannot be perceived, the existence of an underlying real cause is not denied (Mingers, 2006).

4.3.4. Challenges of social science research

The process of observing and explaining natural phenomena through experimentation is generally well understood, however, observing and understanding social phenomena can be far more complex. In this research, both the natural and the social aspects form essential components and both must be accommodated in the design of the theoretical framework. Social structures and social actions (reality and the measurable effects of that reality) are not considered as independent as natural structures and actions. Also, conceptions of social

structures also influence the structures themselves. Social systems are open and interact with their environment in a manner which mostly cannot be controlled through experimentation (as natural systems would be). This implies that social systems theories are focused on interpretation rather than prediction, as their predictive ability is influenced by factors which cannot generally be controlled and are themselves often unpredictable and unbounded (Mingers, 2006). Empirical measurement is problematic, if not impossible given the understanding that phenomena are meaningful and not simply factual – they are best "understood and described" (Mingers, 2006, 25) rather than measured. Statistical analysis is thus of limited use in these situations (Mingers, 2006).

4.3.5. Suitability of critical realism for mixed natural and social science research

Critical realism is able to accommodate natural as well as social systems research. It uses retroductive methodological approaches to understanding social systems which endorse a pluralist approach or multimethodology. This approach begins with observations between phenomena in order to understand why these relationships occur. The real causative structures and mechanisms behind these relationships are then postulated (in the form of models), and then generalized. Methodologies are dialogic (a dialogue between the investigator and the subjects is required) and dialectic (testing the truth through discussion/logic) (Denzin and Lincoln, 1998a).

4.3.6. Generalization in critical realism

Objectivity is an ideal which is guarded by critical traditions (do the findings make sense in the light of pre-existing knowledge) and engagement with the critical community (editors, referees, professional peers). Findings are probably true, and replication is probable. Knowledge gained from a critical realist perspective is tested via the principle of falsification rather than verification (pure positivist) (Figure 4.2 and Figure 4.1). All theory is subjected to rigorous and critical analysis and counter argument. Further, the principle of critical multiplism, or triangulation – arriving at a position through employing multiple instruments – is endorsed. This is explained further in the chapter on case study research methodology (Chapter 6).

4.3.7. Suitability of critical realism

Within the philosophical framework of critical realism, social as well as natural systems can be afforded a place in "reality", and most importantly, it avoids the naivety of purely positivist or purely social constructivist positions. Both the existence of an underlying reality (both natural and social) whose effects can be observed, as well as the contribution of the observer in conceptualizing that reality through theory, and conceptualizing the real world through systems, are facilitated through critical (as opposed to naïve) realism.

Critical realism is a holistic worldview rather than a specific approach. As such, it is a useful platform for investigating various approaches to technology mentioned in section 4.2, but does not advocate or prescribe appropriate approaches.

4.3.8. Critiques of paradigmatic pluralism and critical realism

Various forms of pluralism have been advocated (Mingers, 2006): coherent (Jackson, 1999 and 2000, referenced in Mingers, 2006), discordant (Gregory, 2006), pragmatic (White and Taket, 1997), theoretical (Midgley, 2000), and critical (Mingers, 1997). In the latter theoretical and paradigm origins of methodologies are acknowledged as well as their limitations. This exhibits the underlying philosophy of critical thinking in which reflective scepticism of rhetoric, tradition, authority and objectivity is applied (Mingers, 2006).

There has been heated debate about the ability of critical realism to offer a pluralist approach to paradigms. In fact, Mingers (2006) has been criticised as being a "critical realist imperialist" by Jackson (2006) who contends that paradigms cannot submit to an overarching meta-paradigm. He endorses Critical Systems Theory, which is similar in its paradigmatic concerns, but deals with these by managing what are considered incompatible paradigms – it does not revert to pragmatism (ignoring paradigms) or to meta-paradigms.

However, Mingers (2006) does not claim that critical realism is a meta-paradigm, but rather that it stands alongside positivism and interpretivism as a third alternative. He claims that it

is impossible to use methodologies from more than one paradigm since paradigms by their very nature are incompatible – hence the need for an alternative.

A large bureaucratic government organization is the context of the GV2000 Project of the City of Cape Town, and of fiscal cadastral system reform projects in general. Operational research (OR) is an established field of inquiry strongly linked to practice, and such projects can benefit from OR theory and methods. At different stages of a project, different paradigms and hence different methodologies (which are developed from within a certain paradigm, even if unknowingly) can be used. This is common practice amongst OR practitioners (Ormerod, 2006) and tacitly endorses a critical realist approach. However, Chiasson *et al* (2006) contend that critical realism is not superior to OR and that intelligent thinking is far more important.

The identification of critical realism (and a multimethodological approach) as a suitable theoretical basis for investigating cases of fiscal cadastral system reform, in part addresses research sub-objective 1.5.3 a). This leads on to a discussion of systemic approaches, which have been advocated by researchers and practitioners in fiscal cadastral systems, and are implied in holistic critical realist research in which natural as well as social systems are explored.

4.4. SYSTEMIC APPROACHES

4.4.1. Introduction

Having already mentioned systems many times, it is important to explain what is understood by this in the context of this research. Systems theory is not new, and has benefited from investigation and refinement over about 50 years. At its simplest, general systems theory is described as the study of a system of interrelated elements, as a whole, working towards a common purpose (after concepts from Checkland, 1999). Katz and Kahn (1966, 18) state that "System Theory is basically concerned with problems of relationships, of structures, and of interdependence, rather than with the constant attributes of objects."

4.4.2. Relevance of a social systems approach

A systemic approach is useful when the output of the system is not only dependent on the outputs of each of its components, but importantly also from the interrelationship between the system components. In information systems research, Lee (2004) has identified a combined approach including philosophy, social theory and information systems as being able to contribute greatly to knowledge and practice in the field. He advocates a social systems perspective since IS have fundamentally technical and social aspects which are highly interactive.

4.4.3. Interpretation of systems theory in this research

A system is defined as such when its features as a whole unit are different (not necessarily more) than the sum of its parts. This is in opposition to reductionist thinking which understands that wholes are no more than the sum of their parts and can be devolved to them (without loss). Systems include structure as well as process (Checkland, 1999, Jackson, 2003). When defining a system one is therefore choosing to group certain characteristics and/or behaviours together as features of a conglomerate of elements which are not to be found outside of that whole – in other words, those characteristics and behaviours are not attributable to the system's parts. The parts of the system and their interrelationship are required to generate the characteristics/behaviours of the system (Mingers, 2006). The parts of a system may also be parts of other systems forming overlapping systems, and systems may also be hierarchically nested within each other.

One of the foremost writers in systems theory is Checkland, who approaches systems from an epistemologically interpretivist/constructivist position. This means that the system and its components are not necessarily real or models of reality, but are purely a conception of the observer. Hence systems theory according to Checkland (1999) is sometimes referred to as "systems thinking". It refers to the particular view of the observer and his/her conscious decision in the way of thinking about the problem. The contribution by Beer (1984) and Senge (1990, 2006) to systems thinking has been along the structuralist lines of systems dynamics with Senge more recently favouring the concept of learning organizations (see

section 5.3.1). In these approaches, structures and processes need not necessarily be a real system, but can be viewed or described as a system.

Others have adopted a different approach to understanding systems more along the lines of critical realism in that they interpret a conceptual system as an abstraction of a system in reality and attempt to approximate reality as closely as possible in its definition (Zevenbergen, 2002, Mingers, 2006). In this manner the system can be seen as a type of model, which is a conceptualization of a system in reality. It is this critical realist interpretation of systems theory that will be used in this research.

4.4.4. System organization, structure/attributes and the nature of change

Mingers (2006) provides a useful exploration of the difference between organization and structure, which I will use in this research. He defines a composite unity (a whole) as having components which are related in such manner which defines the unity as that type of organization. His useful analogy is that of the square whose sides are arranged in a manner that defines the figure as a square. If any aspect of organization is changed, the unity changes its identity. This is analogous to the square losing a side and hence becoming a triangle. Hence it is the relationship between the elements of the unity which are critical to its identity. Structure on the other hand refers to the actual components of a real organization (already defined as a square) such as size, colour etc. – these are normally referred to as attributes. In literature and practice, "organizational change" therefore generally refers to structurally determined change, as organizational change, by this definition of an organization, is theoretically impossible – the organization would cease to "be" if such change took place as its identity would be fundamentally new. Further discussion about structurally determined change and external influences will follow the next subsection.

4.4.5. System boundaries – what is in the system?

At the heart of system identification is thus the definition of the boundaries of a system, and subsystems. A boundary is an interface between the whole and its environment. Boundaries

are primarily informed by the features of the whole (rather than the features of its parts) in comparison to the features of the environment. They generally delimit scope, the time horizon, or the limits of change (Jackson, 2003). Mingers (2006) categorizes the effects of boundaries into those that separate or demarcate different substances, elements or spaces, those that contain or include/excluded substances, elements or spaces, and those that have the effect of self-production (autopoiesis) and functionality, for example permeability. The decision as to where a boundary lies takes into consideration the research objectives, as well as knowledge of the elements and their inter-relationships (what constitutes the organization [or identity] of the system). This perspective of defining a system endorses the dualist interpretation of systems in critical realism (both real and constructed) which is discussed further below.

An important contribution of Mingers (2006) is a discussion of boundaries from a theoretical perspective. Of relevance at this stage is the understanding that in order to perceive boundaries, there needs to be an underlying mechanism (Mingers, 2006), or system, which creates these in the real world (in the intransitive domain as opposed to in the transitive domain). This is further not restricted to only physical boundaries (as in the natural world) but also to conceptual, psychological, and social boundaries (as in the social world). In other words, in critical realism systems and their boundaries are taken to be real, while their modelling may be flawed due to incorrect perception of the human observer - observers have a particular perspective derived from their training, involvement with the system observed (agent, actor, outside observer) etc. This position moves beyond the constructivist and subjective conceptions of Checkland (1999) and Maturana (as multiple-referenced in Mingers (2006)).

Boundaries are thus conceived inductively. Effects are perceived / measured in the world of the researcher, these are then identified as relating to certain underlying systems and boundaries in the real world. This leads to the conceptualization of a model of the system and its boundaries, which is then tested through a process of falsification (which aims to prove theory incorrect (Figure 4.2), as opposed to verification (Figure 4.1), which uses

further data to confirm theory). The structural coupling between the model and the real world system becomes stronger as the model approaches a true mapping of reality. Accepting that boundaries are part of the real world allows an analysis as to better and worse boundaries and hence better and worse conceptual systems. Otherwise this is not possible as there is no method of judgment and all systems conceptions must be considered equally valid (Mingers 2006).

For the purposes of research and practice, it is not necessary for systems modelling to approach the complexities of the real world, and it is ontologically impossible for this to happen. From a critical realist perspective observers are always in the transitive domain and not the intransitive domain of the real world.

However, systems definitions and their boundaries need only be good enough for the purposes to which they are to be put (Mingers 2006). There therefore remains an epistemological pluralism in the application of systems theory from a critical realist perspective – systems and their boundaries are taken both to be part of the real world, while models of this real world are taken to be a construction of the researcher/practitioner in that the particular choice of scale, attributes, relationships etc. are chosen by the observer for his/her purposes.

This is different from the conceptual models of Checkland in that his systems are not necessarily a reflection (or model) of what is understood to be real. Rather, Checkland is comfortable with systems being constructed purely to serve the purposes of analysis, and not representation of real word structures and relationships (Checkland, 1999).

4.4.6. The environment - that outside the system boundaries

Having discussed the system and its boundaries, it is important to pay some attention to what is excluded from the system – that which constitutes the environment. The environment is in essence infinitely large, and inclusive of all except that contained within

the defined system. It is obviously only practical to consider those elements and features of the external environment which are of relevance to the system in systems analysis.

The evidence of a boundary does not imply that there is no interaction with the environment outside of that boundary. Permeability is an important feature of boundaries, and the extent of this permeability dictates the relationship of the system to its environment. Literature on the subject (e.g. Mingers, 2006) often refers to hard and soft boundaries as an indication of their relative permeability and the relative difficulty or ease in defining them.

A system which has a great deal of interaction with the environment and consists of inputs and outputs (Flood and Jackson, 1991) and possibly structural change stimulated by the environment, is termed an open system. Open systems in management science fall within a subset of General Systems Theory called organization theory whose development was initially influenced by Von Bertalanffy (1950) and developed by others including Katz and Kahn (1966). Open systems are a subset of cybernetics ("science of control and communication in mechanisms, organisms and society" [Weiner, 1948, 3]) and reject reductionism (testing of hypotheses under controlled experimentation). The system can also be open internally i.e. the elements of the system could affect the system as a whole (Williamson, 2001). However, one must be careful to conceptualize this within the framework of organizations and structures adopted earlier in this chapter. Such "affection" is understood to lead to change in the structure of the system only, and not to the organization of the system (else it becomes something completely different analogous to a caterpillar changing to a butterfly). Knowledge of open systems and their characteristics is important for the later analysis of the GV2000 Project, and also for the extension of the fiscal cadastre and property valuation and taxation "best practice" model (see Chapter 7) into a fiscal cadastral systems model (Chapter 9).

The opposite of an open system is a closed system, which is closed to inputs in the form of matter/energy, information, and/or organization. Output from a closed system must be possible else there would be no knowledge of such a system as they can only be perceived

by their effects; a system without inputs and outputs would be termed isolated. Mingers (2006) categorizes autopoietic systems (which are organizationally closed) into the following: self-referring, self-influencing, self-regulating, self-sustaining, self-producing, self-recognizing, self-replicating, self-cognizing, and self-conscious systems. Categories of autopoiesis which may be usefully applied to this research are those of the self-sustaining, self-regulating and self-conscious categories. A self-sustaining organization maintains its network of processes through the components and interaction that produce these processes – the product of the organization is the organization itself (as in the worst form of bureaucracy!). A self-regulating closed system is one in which a particular variable is maintained by the system at a particular level. Applications of this kind of systems conception in MIS/OR are in the measurement and maintenance of performance levels within an organization. The self-conscious conception of a system allows the exploration of the ability of the organization to act reflectively (called feedback in the MIS literature). As will be seen later, feedback is an essential component of the proposed framework.

4.4.7. Change and the environment

Within a critical realist perspective, the consideration of the dynamics of change and what causes change is important. In particular, the role of the environment in change needs to be discussed from this perspective and follows on from the previous discussions of the meaning of organization, structure, and systems. From this perspective, the response of an entity to an environmental stress (change) is structurally determined – i.e. internally decided. If it ceases to respond appropriately (or not respond as appropriate), then the ability of the entity to maintain itself as an organization is threatened and it may cease to exist or transform into a different type of organization. The main principle here is that the environment cannot cause change – it is the systems structure that determines what its response to an external stimulus should be, if any (Mingers, 2006). In short, change is structurally determined. It is important to remember that from a systems perspective, this structure could consist of the physical, psychological or social, or combinations of these. The critical realist observer perceives effects of the real world, conceptualizes systems and their environment, perceives changes in the environment and the systems conceptualized

(which are models of what is considered to be real world organization and structure), and thence postulates the causality between real world stimuli and their system components.

4.5. CONCLUSION

This chapter has initially assessed various approaches to information systems research and practice. Thereafter the theoretical framework for this research project is developed, with its philosophical foundations in critical realism. The chapter shows that a paradigmatically pluralist approach has advantages in analyzing natural and social systems in combination. This approach acknowledges a real world independent of observers with real organizations, structures, relationships, processes etc. This real world is intransitive, and within it physical/technical/material, as well as psychological/personal/cognitive, and social systems/relationships generate real events which can be perceived in the intransitive domain of the observer, and are thus historical and locally relative.

Systems theory is introduced and theoretical issues in identifying systems boundaries, organization and structure, and the effects of the environment are discussed from a critical realist perspective. In line with a holistic approach, the social systems approach is identified as a suitable meta-approach for this research, while other approaches may be used to describe and analyze various aspects of the system and its sub-systems.

PART 1 CONCLUSION

At the conclusion of each Part of this thesis, the figure illustrating the generic research logic which appears in Chapter 1 (see Figure 1.1) is augmented with information specific to this research project from thesis Parts which have been concluded. Parts still to be investigated are shown in muted tones in the figure (Figure 4.4).

The first three chapters of this thesis do not appear explicitly in the illustration (Figure 4.4). Chapter 1 is an introduction and its main outcome is the formulation of the research objectives (section 1.4). Chapters 2 and 3 form the basis of the literature review, and information contained therein informs all aspects of the research. Chapter 4 in Part I lays the theoretical foundations of critical realism and social systems theory, which provides a platform for the next stage (Figure 4.4), which is the development of the methodological framework in Part II of the thesis.

Research activities 1.5.1a) and b) have been undertaken in Part I. These activities address the first of two secondary objectives – that of identifying an appropriate philosophical theoretical framework for studying fiscal cadastral systems reform using information technology.

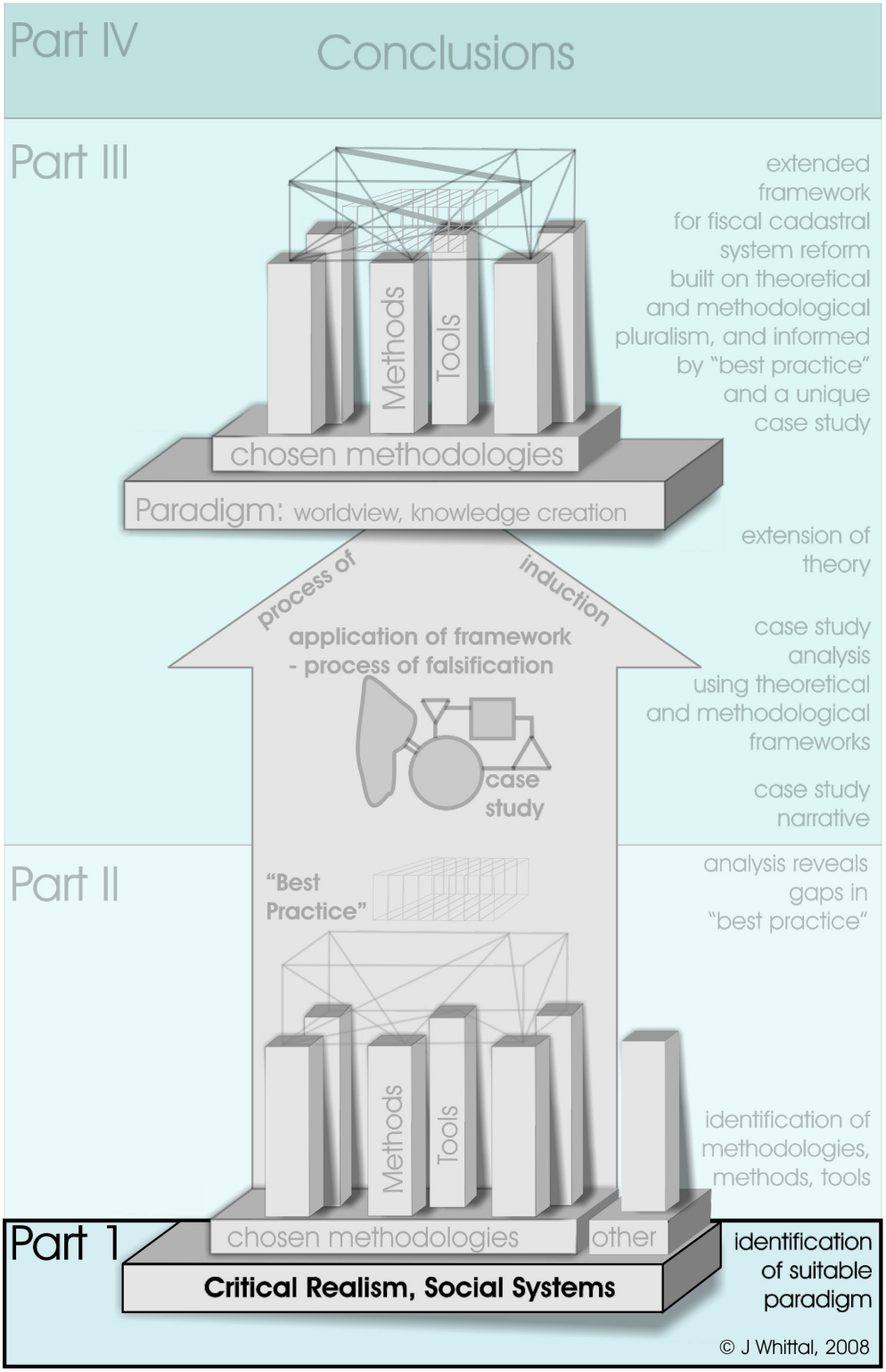


Figure 4.4 Progression of research logic – Part I

Part II: Methodological and Conceptual Frameworks

The aim of Part II is to link the underlying philosophical assumptions of critical realism to appropriate methodologies which can be combined to good effect in a pluralist approach to Fiscal Cadastral Systems reform. Chapter 5 investigates systems methodologies and identifies a multimethodological approach as appropriate for this research. Chapter 6 introduces the case study and change management tools for observation and analysis of reform projects and identifies these as most appropriate for research in fiscal cadastral reform grounded through longitudinal observation of a real-world case. A conceptual model of the "best practice" framework for fiscal cadastral systems is developed in Chapter 7. This highlights areas in the "best practice" model which require extension based on the case study to follow in Part III.

CHAPTER 5. METHODOLOGICAL APPROACH

5.1. INTRODUCTION

Having adopted a combination of critical realism and social systems as the predominant theoretical approach in Part I, this chapter begins to explore a suitable methodological approach(es). It begins with an exploration of worldviews from which emerges a pluralist approach to methodologies. If a pluralist approach is advocated, an informed choice of appropriate methodologies should be followed. The predominant systems methodologies are described and critiqued. This is followed by an analysis of methods of identification of suitable techniques, and a proposal as to social systems techniques which are suitable to pursue the research objectives.

5.2. MULTIPLE PERSPECTIVES

A holistic approach (see 2.3.5 and 3.3.2) to problem solving implies consideration of the multidimensional nature of the complex real world, the TOP model (Linstone, (1984 and 1985), the Three Worlds model of Mingers (2006) after Habermas, and the WSR model of Zhu (1999, 2000a). These focus on objective, subjective and inter-subjective knowledge creation.

5.2.1. The TOP Model

The TOP model was developed in the West in the mid 1980's and was intended to be an inquiring system – or a system to represent perspectives of knowing about systems (see 2.3.4). Its three dimensions of technical, organizational, and personal illustrate a Western view of the organization as a collective and the person as individual. Also, the influence of technology as a dominant material element ensures that it takes centre stage in any exploration of material knowledge. The TOP model has limitations, but is possibly adequate in some contexts.

5.2.2. The Three Worlds Model

The Three Worlds Model of Mingers (2006), was developed from work by Habermas (1984 and 1987 as referenced in Mingers, 2006), shows interactions with material, social and personal aspects. This model is also largely influenced by Western ways of thinking. This is illustrated in Figure 5.1.

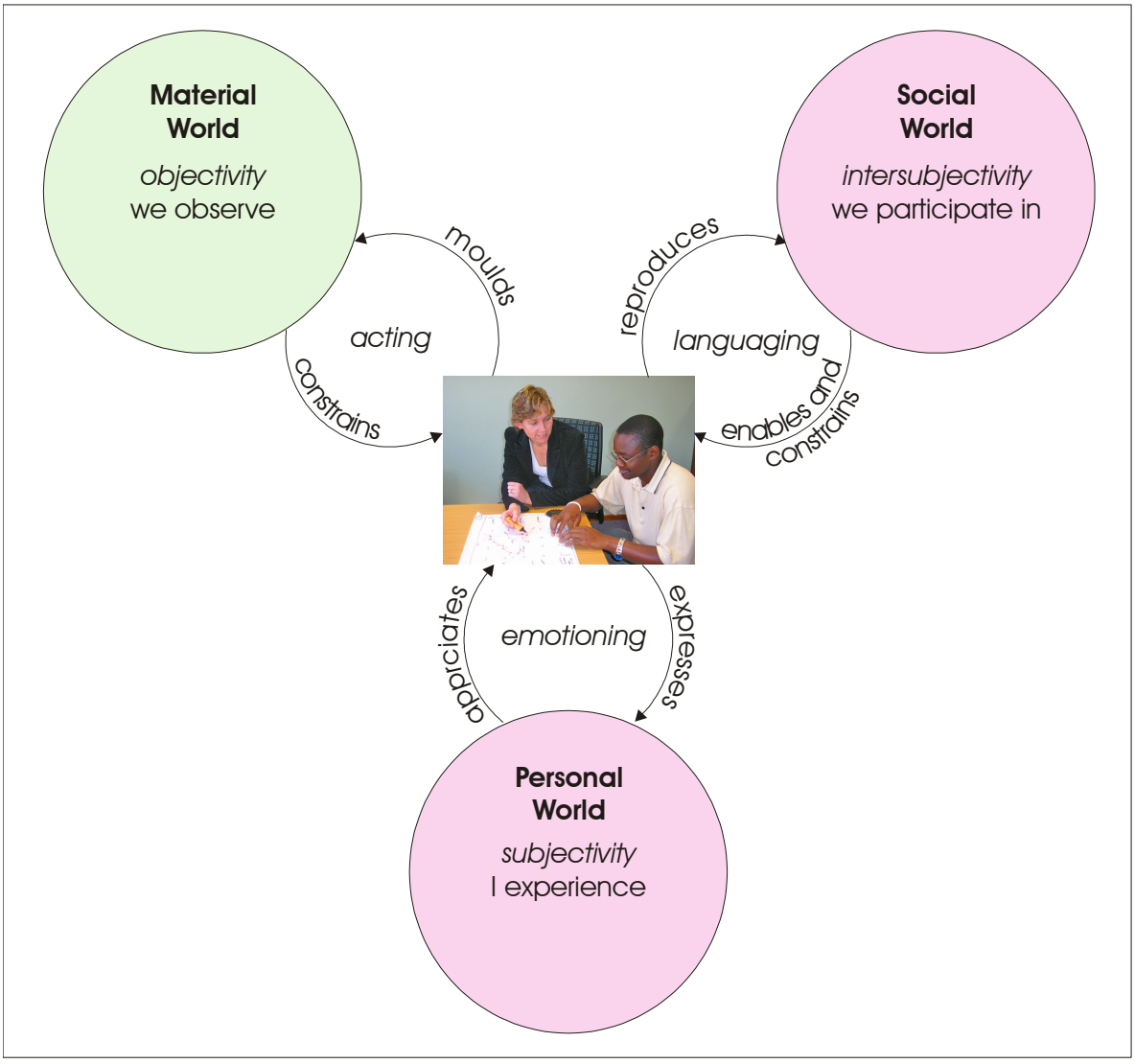


Figure 5.1. Habermas's Three Worlds Model as per Mingers (2006)

5.2.3. The Wuli, Shili, Renli (WSR) model of Oriental perspectives

The *Wuli, Shili, Renli* (WSR) approach of Zhu (2000a, 2000b, 2001, 2002) is an Oriental systems approach, and has emerged from a joint venture in research in cross-cultural systems and integration run by researchers in China, Japan and the UK since 1995 (see 2.3.4.) One of the main outcomes of their research was the exploration of systems methodologies that integrate with indigenous socio-cultural traditions (Gu, Nakamori, and Zhu, 2002). The applicability of a framework developed from combining Western and Oriental thinking may not be applicable in the African context. On the other hand, the TOP multiperspective approach of Linstone (1984 and 1985) was developed in the West independently from the WSR approach (Zhu, 2002) developed in the East. These have been compared in Linstone and Zhu (2000) (see 2.3.4) and the similarity of these approaches points to the possibility that the models can transcend cultural context.

Each of the WSR elements ends in the Chinese suffix, *li. Li* in essence covers knowledge about "things, behaviours and mental constructs". It can be considered a perspective. These *li's* are inseparable and interdependent – a "differentiated whole" (Linstone and Zhu, 2000). The three *Li's* in WSR are the dimensions of *Wuli* (material/technical), *Shili* (psycho-cognitive) and *Renli* (socio-political).

Wuli is the objective existence and deals with relations with the world. It includes material things as well as patterns of interconnectedness and formal structures. *Wuli* is compatible with critical thinking in that it includes challenge of the *status quo* – it aims to improve the current real world situation. Its compatibility with critical realism extends to understanding objective reality as historically and locally situated. *Shili* is subjective modelling and deals with relations with the mind – it reflects on individual and communal perspectives and models of viewing the world, or meaning (2.3.1). *Renli* is intersubjective and deals with relations with others (Zhu, 2000b). *Renli* is more than personal and bounds on the interpersonal – it deals with individual and communal value systems, motives, desires, but also norms of human relations. According to ancient Oriental thinking, intersubjective relational goals are directed towards social harmony rather than discord (Zhu, 2000b), and

this is advocated as a useful underlying principle in change management processes. Rather than describing the underlying philosophy behind WSR in detail, readers are referred to Zhu (1999, 2000a, 2000b and 2001).

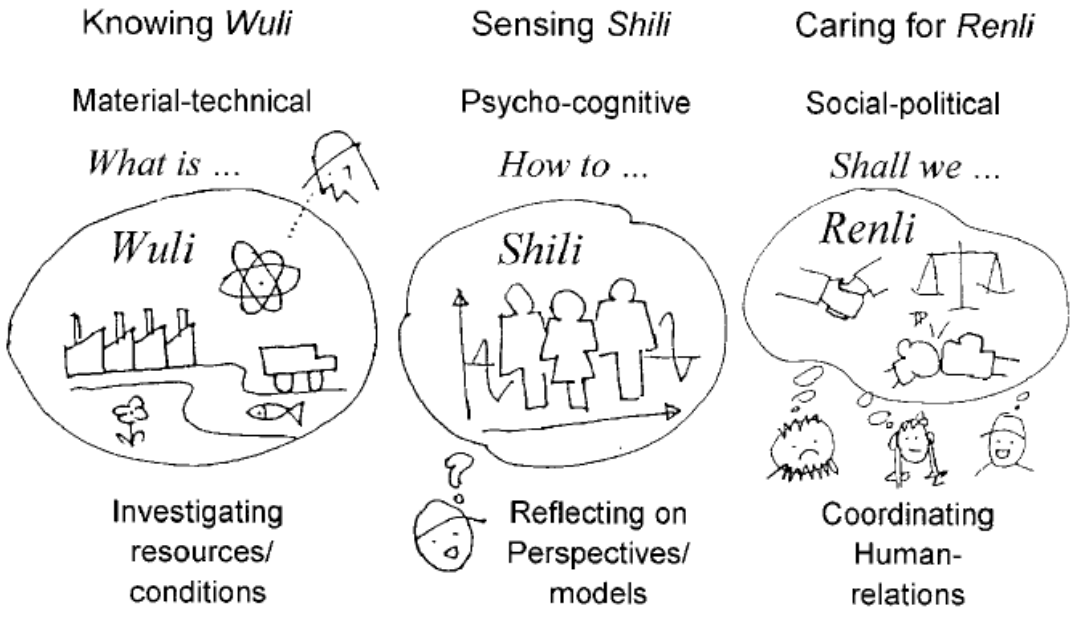


Figure 5.2 The WSR worldview (Zhu, 1999, 306)

Various important principles underlie WSR (Gu and Zhu, 2000):

- Differentiation: the nature of the problem is diverse, rich and complex – it should not be reduced into a one dimensional *li.*
- Openness: an open mind to various perspectives, models, approaches etc.
- Reflection: reflection allows us to be truly systemic.
- Completeness: requires inclusivity of many disciplines, relies on mutual learning – do things right, and avoiding "empty talk".
- Complementarity: pluralist rationality can lead to chaos – harmony should be sought in the choice of approaches, methods etc.
- Flexibility: the model should be flexible and freely adapted to the situation.

A key feature of the WSR approach is that one aspect of a model presupposes the other aspects of the model (in line with the philosophy of the inseparability and co-dependence of

yin and *yang)*. WSR identifies a holistic, non-hierarchical and inclusive approach to these concepts (what is otherwise known as a multiparadigm approach).

5.2.4. A comparative discussion of the epistemologies represented by the TOP, WSR, and Three Worlds Models

Some key similarities emerge between the three models discussed. The Three Worlds material dimension and the WSR *Wuli* are more inclusive than the technical (T) in the TOP approach, and are thus favoured by the author. Material things are included as well as patterns of interconnectedness and formal structures in the Three Worlds and WSR models.

The social aspect of the Three Worlds model is more inclusive than the organizational aspect contained in the TOP model – an organization being but one expression of the social. Social aspects are thus a preferred expression to organizational aspects. In the WSR *Shili*, meaning can be conveyed by models and representations, and therefore includes personal and organizational culture. Aspects of *Shili* therefore relate to both social aspects and to the personal aspects (TOP and Three Worlds).

Personal aspects are individual and introspective in the TOP and Three Worlds models, relating to the personal bias, assumptions, history and culture of individuals. The personal element of *Shili* in WSR is a communal/societal notion of self, when applied to individuals and group consciousness, which is argued to be a more accurate reflection of reality in Eastern contexts. Linstone and Zhu (2000) posit that in Western culture fundamental values are held at the individual level and individual rights are given greater weight than the rights of the collective, whereas in Oriental culture, individuals have no meaning apart from social relationships (Linstone and Zhu, 2000). This approach to self is possibly more in line with traditional African (and probably many other aboriginal/indigenous groups around the world) approaches to self in which individual's role in society (responsibilities, place) is understood to be given greater weight than the expression of individual rights (Eaton and Louw, 2000). "Self" is seen in socio-organizational terms in WSR *Shili*. This is practical from the point of view of managing change as it focuses on common group culture rather

than individual idiosyncratic views of self. These are very difficult to determine, and possibly of lesser importance than societal notions of self in the context of change management, unless an individual has notions of self that can play a critical role in the change management process. Aspects which this notion of self may be very useful in exposing are those that would normally be referred to as subcultures, in which case *Shili* would shed light on the introspective aspects of these.

Renli in WSR refers to relationships with others and, similarly to *Shili*, overlaps with the personal and social aspects of the Three Worlds models.

The central section of the Three Worlds model is an aspect not included in the other two and represents "our relationship with" the three worlds – this implies that not only do we have a relationship with the material world and society, but we have a relationship with ourselves (the personal aspect), which is rather circular, but attempts to address the views of self that individuals hold, as well as the necessity to identify bias, paradigm, culture and other personal and subjective factors which impact on research. This addition allows for the relational nature of the Three Worlds Model (which is connected with relational arrows). The WSR (Zhu, 2000b) model refers to our "knowledge about" the three realms of *Wuli*, *Renli* and *Shili*, which interrelate and form an indivisible whole, but appears to be less introvert than the TOP and Three Worlds models on the whole. The TOP model appears to follow a more reductionist line of thinking than the other two models. A detailed comparison between the TOP and WSR perspectives can be found in Linstone and Zhu (2000).

The Three Worlds Model of Mingers (2006) is adopted as the primary perspective for this research, although the three methods display high degrees of synergy. The TOP approach of Linstone is not as broad as the Three Worlds Model, while the WSR approach of Zhu has been criticized as operationally weak (Zhu, 2002). It is not user-friendly enough, which can probably be explained by its nature – it is rather "an art than a technique, more a mindset than a procedure" (Zhu, 2002, 146). This approach suggests that the WSR

approach has value and should be considered when using the Three Worlds Model, illustrated in Figure 7.2 and in Figure 9.18.

All three methods embrace uncertainty and dynamic operational environments, and put to rest the debate of hard- versus soft-systems and functionalism versus interpretivism. Overall, it can be concluded that there are more similarities than differences in these models of viewing the world and creating knowledge, but that the perspectives are subtly different and it is useful to have an awareness of alternative views, particularly when dealing with trans- or inter- cultural contexts.

5.3. A CRITIQUE OF SOCIAL SYSTEMS APPROACHES

Having adopted a social systems approach (see section 4.4) and a pluralist approach to methodologies, the options of which social systems methodologies may be applicable, and their advantages and disadvantages, is required in order to make an informed choice. The systems approaches framework of Jackson (2003) which is based on the System of Systems Methodologies (SOSM) framework of Jackson and Keys (1984) provides a structure to this exploration and discussion. A detailed explanation of each methodology can be found in Jackson (2003).

<table>
<tr><th colspan="4">PARTICIPANTS</th></tr>
<tr><th rowspan="3">SYSTEMS</th><th></th><th>UNITARY</th><th>PLURALIST</th><th>COERCIVE</th></tr>
<tr><th>SIMPLE</th><td>Hard Systems Thinking</td><td rowspan="2">Soft Systems Approaches: Strategic Assumption Surfacing and Testing, Interactive Planning, Soft Systems Methodology</td><td>Emancipatory Systems Thinking: Critical Systems Heuristics, Team Syntegrity</td></tr>
<tr><th>COMPLEX</th><td>System Dynamics, Organizational Cybernetics, Complexity Theory</td><td>Postmodern Systems Thinking</td></tr>
</table>

Table 5.1 Systems approaches related to problem contexts in the System of Systems Methodologies (SOSM) (Jackson, 2003).

<table>
<tr><th colspan="4">PARTICIPANTS</th></tr>
<tr><th rowspan="3">SYSTEMS</th><th></th><th>UNITARY</th><th>PLURALIST</th><th>COERCIVE</th></tr>
<tr><td>SIMPLE</td><td rowspan="2">Type A - functionalist: goal seeking and viability analysis improves measures of efficiency and efficacy. Assumes unitary interests, beliefs, values. Machine, organism, brain, flux and transformation metaphors.</td><td rowspan="2">Type B – interpretivist: exploring purposes improves measures of effectiveness and elegance of solution. Plurality of beliefs and values, common interests. Culture and political systems metaphors.</td><td>Type C – emancipatory: empowerment and emancipation improve fairness. Democratic and inclusive approaches. Psychic prison and instruments of domination metaphors.</td></tr>
<tr><td>COMPLEX</td><td>Type D - postmodern: critical and embraces diversity. Measured through exception and emotion. Solutions local and temporal. Carnival metaphor.</td></tr>
</table>

Table 5.2 Four types of purpose in systems approaches (Jackson, 2003) related (by me) to the framework in Table 5.1.

This framework (bold 7E's) has already been used in the structure of analysing performance measures in section 3.10. This is discussed further in section 5.3.2. under soft systems methodology (SSM).

5.3.1. Functionalist social systems

Hard systems thinking

Hard systems thinking is based primarily on a positivist epistemology. It presumes predefined goals and does not deal well with complex systems while aspects of politics and power are ignored. It is the traditional approach underlying experimental methods in which variables can be controlled or modelled, largely ignoring human aspects (Jackson, 2003). Hard systems thinking is useful in certain aspects of design, and should not be discarded because of its limitations, rather combined with other methods. Its particular strengths lie in the observation and analysis of material and technical aspects of systems.

System dynamics

System Dynamics incorporates feedback loops of causality between structures. It generally relies on mathematical models and simulations and follows a structuralist epistemology (see 4.2.5). System dynamics is now the backbone of what is termed the "fifth discipline" (Senge, 1990, 2006) which is that of systems thinking. Systems thinking is a conceptual framework and provides tools to see interrelationships rather than linear cause-effect chains and to see processes and patterns of change. It is also aligned with the popular concept of the "learning organization" which has been criticized by a number of researchers (Burnes *et al*, Argyris and Jackson) as too abstract, based on research which has poor rigour and relies on generalization across contexts (Hughes, 2006).

As a tool for analysis of some cases of fiscal cadastral reform, system dynamics may be appropriate, but its focus on relationships at the expense of processes is considered a weakness, while its strengths are matched by alternative methodologies. Systems thinking is also strongly aligned with interpretivism, while critical realism is preferred for this research (Chapter 4).

Organizational cybernetics

Organizational cybernetics is based on a structural epistemology in that relationships at a deep structural level are thought to cause systemic behaviour at a surface level, where they can be measured. This branch of social systems is indebted to Beer (1984) who developed the Viable Systems Modelling (VSM) tool for organizational cybernetics. VSM offers a holistic framework for modelling organizational structure, processes and relationships which are often more significant than shared goals (Espejo, 2003). The modelled system is purposive and embraces social elements. It accommodates organic growth, varying levels of complexity, risk assessment and adaption/response, and structural recursion. Sub-systems are self-regulatory and self-organizing (Beer, 1995). The modelling process of VSM analyses functional, management, communication, and regulation aspects as well as the controls on variety, and the inter-relationships between the organization and the environment. There are a number of stages used in the process of VSM, each of which

leads to one of the four graphical models given in Beer (1995). VSM offers a useful understanding of complexity which is measured as increased interaction between the environment and the system, especially when this is unpredictable and/or increases risk to the system. Obviously the complexity of the environment is generally far greater than the variety of responses of the system, however the system need only respond to those environmental factors that impact on it, while ignoring the majority.

VSM has been criticized (Jackson, 2003) in that it does not model adequately the social nature of organizations – the attribution of meaning and subjectivity. Individual and collective motivation, democracy, culture, participation and power relationships are not adequately accommodated, while non-functional aspects are not assessed. Its strengths in identifying the nature of the organization, relationships as well as structural complexity; autonomy of subsystems and control makes it a highly useful tool for design and diagnosis of organizations and for decision-making and control at all levels of the organization (Jackson, 2003). It is noted (Jackson, 2003) that the VSM is a model and not a methodology, and so its use should not be restricted to Type A social systems as classified in Table 5.2.

In a government bureaucracy, such as that of the City of Cape Town in the case study, with its expected insensitivity and slow responses and its protectionist legislative environment, the applicability of modelling viability may be questioned. Inclusion of these aspects in the models of VSM is, however, possible. VSM can also be combined with other tools which exhibit complementary strengths. Despite its weaknesses, VSM is thought to be a highly useful tool.

Complexity theory

Complexity theory was introduced in Chapter 3 when developing thinking in relation to complex systems. However, it is dealt with here as a methodology related to social systems (including organizations) which are sensitive to small changes in initial conditions, and hence occupy a narrow area between order (stagnation) and chaos (destruction) which is

termed the "edge of chaos". These social systems are able to reorganise themselves and are thus powerhouses of creativity, being highly responsive to changing conditions.

In general, a government bureaucracy is most unlikely to exhibit such features. The environment of change at the outset of the GV2000 Project case study could be described as chaotic in many respects with a high rate of change and associated high levels of risk. However, the social system of the Cape Town City Council organization could not easily be described by complexity theory. This, combined with the fact that culture and politics, which are important in government organizations, are not well included in the model (Jackson, 2003), leads to the abandonment of this approach for the purposes of this research.

5.3.2. Interpretivist social systems

Strategic Assumption Surface Testing (SAST)

SAST relies on the ability to see the world through the eyes of another and hence embraces subjectivity. It is designed to cope with "wicked problems" which are characterized by interconnected purposes, lack of clarity about purpose or purposes change rapidly, conflict (especially over goals), and uncertainty about the environmental and social constraints (Jackson, 2003). The SAST methodology is participative and seeks to include all stakeholders allowing for more than one internal view of the situation (as opposed to relying too heavily on outside consultants), although power relationships can play a negative role in this to the point at which it could be described as adversarial in that power and coercion rather than consensus can prevail. The method can deal adequately with moderate levels of culture and politics. SAST should ideally be used as a tool of intervention/action, but its use as a tool of observation and reflective analysis is limited, and hence also its suitability for the purposes of this research.

Interactive planning

Interactive Planning was developed by Ackoff (1974) and relies on objectivity in social systems science resulting from the participation and engagement of different groups with

divergent values. Objectivity is improved as subjectivity is increased! He maintained that even objectivity itself is value-laden and is not purely the domain of the real world.

Interactive planning is compatible with a purposive social systems model, and is oriented towards consensus rather than conflict (in synergy with the Oriental perspective of social harmony in *Shili* of WSR see 5.2.3). Free and open engagement with no conflict of interest, equal power structures, and equally resourced participants is assumed. For those with any experience in participation at community level, this is evidently an ideal environment that is seldom if ever achievable in practice. Although Ackoff (1974) maintains that dispute resolution will lead to its successful application, high levels of conflict are likely to cause its failure (Jackson, 2003). Participative methods are also problematic in that they tend to be protracted. Stakeholder participation should be a multi-staged and multi-level process and can frustrate project progression. Synergy with SAST is evident and SAST techniques can be used within an interactive planning framework.

Interactive planning is predominantly an action research or intervention tool, and is hence not well matched to the objectives of this research.

Soft Systems Methodology (SSM)

Soft Systems Methodology (SSM) has become well known and used through the writing of Checkland (1981, 1999). It is designed to deal with ill-structured problems in which relationships are given at least as much weighting as goal-seeking within organizations. It focuses on what should be done rather than how it should be done (Jackson, 2003) and is designed for intervention rather than a reflective application. The strategy of SSM is to firstly identify a real world problem, then to declare the framework of ideas to think about that problem, then to act in the situation and to reflect on the former and draw conclusions on the entire process.

SSM uses a number of tools, most importantly the “rich picture”. This is a method of illustrating the problem and its many units and relationships in a creative drawing from a

particular perspective. It is a form of cognitive/mind mapping (or journeymaking [Mingers, 2006]) which is based on the subjective beliefs of an individual. If a number of such maps are prepared from multiple perspectives, and the information they contain collated into a common map, this would be understood to be less subjective and more relevant to reality and real-world research (Mingers, 2006). From the rich picture, a number of systems models can emerge based on a variety of world views (termed "root definitions"). Systems are entirely interpretive mental constructs of the observers. Furthermore, the definition of an organization is highly subjective and includes its norms, values, purpose etc. (Jackson, 2003). In SSM the systems models are called conceptual models and are purposeful human activity systems; they illustrate what needs to be done to achieve a purpose. These are (epistemological) devices to learn about the real world (or what changes are desirable and feasible), and are not designed to model the real world itself (Checkland, 1999).

The methodology has evolved from the Seven Stage Learning Cycle model to the Two Streams version of SSM (Checkland and Scholes, 1990). This latest version (Jackson, 2003) includes a cultural analysis stream as well as a logic based stream of analysis (Figure 5.3).

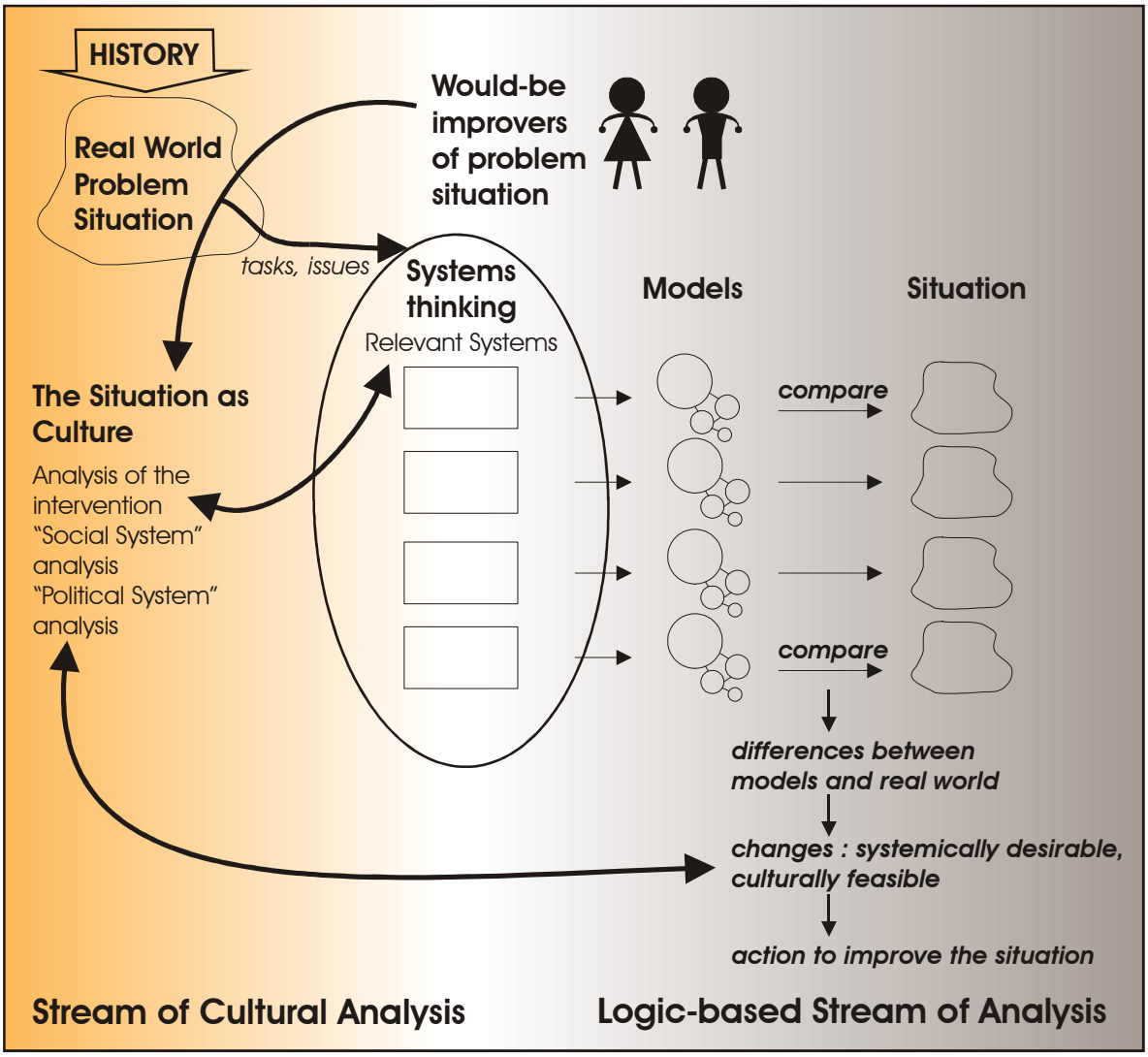


Figure 5.3 The Two Streams Model of SSM (Jackson, 2003)

SSM is flexible, and not all tools of SSM need to be used for all problem situations. As a fully participatory process designed at intervention, only aspects of this method can be proposed as useful for non-action research, reflective analysis. Whether it is the best method to employ in situations of coercion and conflict is debatable (Jackson, 2003). In terms of optimization it fares poorly as it is poor in exploring and achieving goals (Jackson, 2003). Cybernetic laws are not well represented and the participatory approach does not necessarily lead to a fully emancipatory approach due to power relationships and poor establishment of the root definitions. SSM is rather too interpretive (Jackson, 2003), only

dealing with ideas (root definitions) and concepts (conceptual models), whereas modelling real objects, structures and relationships should be included in organizational analysis from a critical realist perspective.

SSM and performance measurement

It has been noted by Silva and Stubkjær (2002) that methodologies of evaluation of reform in cadastral systems in general have not been developed beyond benchmarking approaches (see section 2.6.1). Performance measurement and feedback are not emphasised in SSM, as its approach is mainly action oriented and not predominantly reflective. A 3E's (efficacy, efficiency, effectiveness) and 5E's (efficacy, efficiency, effectiveness, ethicality, and elegance) framework for performance measurement has been proposed by Checkland. However, these are subsets of the 7E's framework which has been identified from the social systems framework of Jackson (2003) in Table 5.2. and consists of efficiency, effectiveness/efficacy, elegance, empowerment, emancipation, exception, and emotion. The 7E's framework is therefore more inclusive of all aspects of the adopted worldview (Three Worlds model see
Figure 5.1).

5.3.3. Emancipatory social systems

Critical Systems Heuristics (CSH)

This methodology, like the SSM, identifies purposeful systems (includes the human element), but adds to these the space and time dimensions of the problem and its solution. CSH hinges on boundary definitions – is sees boundary judgments as subjective. These are determined through 12 boundary questions which reveal the normative context of the problem. Boundaries are critically examined in the spirit of emancipation (including marginalized people/groups) as they are influenced by, amongst other things, ethics (Jackson, 2003).

CSH has the potential to be quite unwieldy as it necessarily needs to include not only those involved in the system, but all affected people. It has been criticized as not having reached a mature stage of development (Jackson, 2003) and so is not recommended.

Team syntegrity

Team Syntegrity is a highly structured methodology designed to be complementary to VSM. It involves democratic decision making (especially on communication and protocols), eschewing hierarchical structures in favour of an open approach which is self organizing. Team Syntegrity is based on a team structure within which is built a system of external criticism through intra-team appointed critics.

Team Syntegrity is lauded for its participatory and democratic approach. The structure has an artificial rather than natural structure, and may not be emancipatory if marginalized groups/individuals do not have their concerns taken seriously at the outset. The techniques involve a great deal of dialogue, which relies on skills and can be influenced by culture – this technique can therefore impede equity and fairness. Further, the use of language as a primary means to ensure consensus can be challenged. On the whole, this methodology falls short when not paired with VSM (Jackson, 2003). Together, however, they could have a lot to offer, but are designed for application in an action research environment, and so are not considered further here.

5.3.4. Postmodern social systems

Postmodern systems thinking

This form of social systems thinking has swung to the far left of the conservative and pragmatic positivist tradition. It embraces dissention, instability, and unpredictability. The notion of a progression of knowledge through time is rejected in favour of a situational understanding of knowledge, which is deemed to be heavily influenced by discourses at that time in history (or the present). Power is given to influence discourse, and hence power is connected to knowledge. Cultural elitism and notions of expertise are discarded in favour

of local experience and knowledge (Jackson, 2003). Resistance is encouraged, and indeterminacy of process is revealed – it is thus hailed as emancipatory. Emancipatory processes are those which promote assistance to the marginalized and disadvantaged (Jackson, 2003). In the context of postmodern systems thinking, emancipatory processes are those which accommodate all views and in which prejudice is eschewed. All in all everything is temporal and relative, there are no universal laws and nothing can be judged better or worse (Jackson, 2003).

Postmodern systems thinking can accommodate new forms of organization and accommodates plurality of methods. However, for all its positive attributes, postmodern systems thinking is thought to be irrationalism, and it promotes diversity and conflict above all else without being particularly well suited to emancipation. It also does not fit in with existing paradigms (positivism, interpretivism, critical realism) very well – it still requires a paradigmatic home, if it is to be used (Jackson, 2003). For addressing the objectives of this research, postmodern systems thinking is not sufficiently grounded in theory to be adopted, and is primarily suited to action research.

5.4. PLURALISM, CREATIVE HOLISM / CRITICAL SYSTEMS THINKING / MULTIMETHODOLOGY

The paradigmatically pluralist approach of critical realism endorses a multimethodological approach to research and practice (see Chapter 4). Before proceeding to examine and critique meta- and multi-methodological approaches, a few working definitions are useful.

5.4.1. Working definitions

These terms are often used interchangeably, and there is not a clear-cut common understanding of their use. Working definitions are thus specified for this research as:

Tools: these range from tangible hardware/software, conceptual models, comparative frameworks etc.

Method: deals with how to do something – it may not be generally accepted, and can be project specific, rather than generally applied. An example is the data acquisition method of interviewing. "Technique" thus has a similar meaning to method for the purposes of this research. Methods are taken to be unrelated to particular philosophy/theory underpinning research and practice.

Methodology: refers to a group of methods/procedures which are generally accepted and executed in accordance with logical principles derived from underlying philosophy/theory – methodology cannot be divorced from this.

5.4.2. Meta-methodology

Total Systems Intervention (TSI)

Total Systems Intervention (TSI) was the first formal meta-methodology to be proposed (Jackson, 2003), and was authored by Flood and Jackson (1991). It is similar to the TOP multiperspective model which was published in the same year as the SOSM and both highlighted the move towards pluralist approaches to methodologies in systems practice. TSI addresses the issue of different methodologies having been developed from incompatible paradigms by adopting a transparadigm approach. TSI is hailed as a non-isolationist and non-imperialist approach to both paradigms and methodologies – it has not developed anything new in this regard, the newness lies in the combination of existing paradigms and methodologies. It has the disadvantage that users must have a broad range of competencies in order to apply the method well.

TSI uses a process of identification of a complicated situation or problem, investigating this from a number of perspectives, choosing systems methodologies to guide an intervention in a complementary way by matching strengths and weakness of the methods and methodologies to the problem, and then embarking on the TSI cycle of enquiry with facilitators and participants actively engaged throughout the process. In other words, TSI is participatory and interventionist. It is therefore not appropriate for a reflective analysis such as is undertaken in this research.

Critical Systems Practice (CSP)

Critical Systems Practice is another meta-methodology. The main difference with TSI is its ability to use parts of methodologies, and also allowing the use of methodologies developed from one paradigm to be used in another. Also, a predominant paradigm and methodology may be identified, and others may be used to play a supportive role where/when required. CSP categorizes systems methodologies into four main types with four underlying paradigms – functionalist (positivist), interpretivist, emancipatory, and postmodern (Jackson, 2003) (see Table 5.2). Like TSI, CSP uses the SOSM taxonomy for deciding on methodologies to be employed. It is an action research approach, and may thus not be appropriate for non-action research projects such as this.

Both TSI and CSP claim to be meta-methods rather than multi-methods, which is an approach argued in the next section.

5.4.3. Multimethodology – what is it?

The terms Creative Holism, Critical Systems Thinking (CST), and Multimethodology overlap in meaning and individual researchers have their favourite terms. Multimethodology is the term favoured in this research as it requires little explanation. It is a use of combinations of methodologies, but also accommodates use of only parts of these, and even individual methods/techniques. This is useful in the analysis of complex organizations with personal and social dimensions, as well as in changing systems in which different methodologies are appropriate at various stages (Mingers, 2006) and environments which are "complex, turbulent and diverse" (Jackson, 2003, 275). Multimethodology as envisaged by Mingers (2006) and used in this research is not a meta-method as proposed in TSI and CSP. As is suggested by the phrase "creative holism", the best of each method/methodology is used creatively in combination maintaining a holistic approach to problem solving.

5.4.4. Barriers to the use of multimethodology

With multimethodology it is possible to adopt a plurality of paradigms freeing the observer from being bound to positivism or interpretivism. Critical realism is arguably (supported by Mingers, 2006, countered by Jackson, 2006) another paradigm, and advocates plurality on many levels: the philosophical, social and methodological levels. It is not a meta-paradigm as it does not "contain" the other two. This position is not universally accepted, and would thus be a barrier to those who oppose it – it is critical of the hard division between pure positivist and interpretivist positions. Furthermore, a researcher's lack of knowledge of alternative paradigms, and paradigmatic subcultures, can also be a barrier to employment of multimethodology, not to mention the divide between the hard and soft sciences which this approach seeks to overcome. The experience of the observer/researcher is essential in transcending this divide, which is not an easy process.

5.4.5. Strengths of multimethodology

Probably one of the strengths of the multiperspective (multiparadigm and multimethodology) movement is the integration of ontology, epistemology, methodology, theoretical constructs, real world actions, IT expertise and IS experience (Zhu, 2001). Mingers (2006) and Zhu (2001) are in harmony with their adoption of multimethods in which a variety of approaches at different stages and levels is encouraged in order to come up with a unique methodology which suits each situation. Zhu (2001) gives a detailed argument for the trans-paradigm nature of the WSR approach in these aspects. He does, however, mention that integration may only be necessary in the mind of the Western researcher (Zhu, 2001) as the various aspects, according to the Eastern WSR approach, are already integrated. Some other important synergies between the methodologies of Mingers (2006) and Zhu (1999, 2000a) are the non-hierarchical, non-linear, pluralist, and flexible nature of their approaches, which are both able to accommodate diversity and complexity of the problem and its context.

5.4.6. The use of frameworks in the choice of methods

The two most common tools for choosing methods are the SOSM taxonomy which is used in TSI and CSP (Jackson, 2003), and the framework of Mingers (2006). Both of these tools attempt to evaluate the strengths and weaknesses of methods. The model of Mingers (2006) reflects the Three Worlds Model of worldview. The WSR model of worldview has not been developed to the same extent in terms of identifying methodologies, but its usefulness is discussed in the following section (5.4.7).

SOSM classifies the problem contexts – specifically the relationships between participants of the system and system complexity (in a two dimensional grid – see Table 5.1). There is considerable published debate between Jackson and Mingers, as well as valuable commentaries on this debate by other academics, since the time of the introduction of the SOSM (see the viewpoints of Schechter (1993) and replies by Mingers (1993) and Jackson (1993) as well as subsequent debates). Mingers' main problem with the SOSM taxonomy is the limitation of its two dimensions. He also claims that it is driven by an emancipatory intent, whereas the critical intent of Mingers' approach can include emancipatory as well as other interests – the key is to be critical (Mingers, 1993). Jackson (1993) stands firm in his assertion that the two dimensions of the taxonomy are well founded and useful. This debate continues in the Viewpoints section of the Journal of the Operational Research Society (Jackson, 1993, Mingers, 1993, Ormerod, 2006, Schecter, 1993, Chiasson *et al*, 2006).

However, having adopted a critical realist approach as per Mingers (2006), and agreeing also with the contention from this standpoint that a problem context cannot necessarily be objectively defined (as presumed by the SOSM taxonomy), the more recent tools (Table 5.3 - Table 5.5) developed by Mingers (2006) will be employed. In assessing the usefulness of each methodology, Mingers (2006) has drawn up a framework for comparison of the methodologies on the basis of their underlying philosophical assumptions (Table 5.3).

		Ontology	Epistemology			Axiology	
Methodology/ technique	**What it does**	**What it assumes to exist**	**Representation by modelling**	**Necessary information**	**Source of information**	**Users**	**Purpose**
SSM	Explore worldviews w.r.t. real world situation, contrast these in a public debate	Real world problem situation; conceptual human activity systems (holons); worldviews (W)	Systems concepts; rich pictures, analysis 1,2,3; RD/CMs, logical relationships	Hard and soft info concerning structure, process, climate and relevant worldviews	Concepts, language, logic and participation by concerned actors	Analyst, researcher, facilitator, participant	Learn about and improve a problematic situation by gaining agreement on feasible and desirable changes
VSM	Use cybernetic principles of viable existence in the diagnosis and design of an organization	Principles of cybernetic viability that are applicable to organizations	Organizations in terms of VSM structure of 5 interrelated subsystems and their communication links	Purpose, structure, environment and communications of an organization	Cybernetic principles and research into an organization	Analyst	Diagnose and improve organizational structure and functioning

Table 5.3. A framework for characterizing the philosophical assumptions underlying OR/MS methodologies and techniques (a subset of that found in Mingers, 2006, 224-226). (Axiology refers to what is deemed good, or valued)

Such summaries (as in Table 5.3) in an easily accessible tabular format greatly facilitate the identification of a suitable combination of methods given the problem situation, the research questions, and the abilities of the researcher/analyst.

In order to choose appropriate methods, requires further analysis. Mingers (2006) has proposed a framework in the form of a table which can be used to choose appropriate methods (e.g. for SSM and VSM in Table 5.4 and Table 5.5). This table considers the dimensions of the social, personal and material (remembering the three world models) on one axis, and the ways in which methods are generally used in appreciation, analysis, and assessment of the situation, and lastly in deciding on action to be taken. The degree of strength of a variety of methodologies can be assessed in this manner. These are shown as increasing degrees of shading of the cells (as in Table 5.4)– a white cell indicates an aspect which is not covered (or very weakly covered) by the methodology; a dark cell indicates that the methodology is strong in assessing and representing the aspects in that cell. The strengths and weaknesses of a range of methodologies are thus visually expressed in a holistic framework. A combination of methodologies can thus be identified which complement each other and cover the main aspects of the project adequately. This framework is used to choose applicable methodologies for the case study presented and analyzed in Part III of this document.

SSM	Appreciation of	Analysis of	Assessment of	Action to
Social	Social practices, power relations	Distortions, conflicts, interests	Ways of altering existing structures	Generate empowerment and enlightenment
Personal	Individual beliefs, meanings, emotions	Differing perceptions, personal rationality	Alternative conceptualizations and constructions	Generate accommodation and consensus
Material	Physical circumstances	Underlying causal structure	Alternative physical and structural arrangements	Select and implant best alternatives

Table 5.4. Mapping of Soft Systems Methodology as per Mingers (2006, 229)

VSM	Appreciation of	Analysis of	Assessment of	Action to
Social	Social practices, power relations	Distortions, conflicts, interests	Ways of altering existing structures	Generate empowerment and enlightenment
Personal	Individual beliefs, meanings, emotions	Differing perceptions, personal rationality	Alternative conceptualizations and constructions	Generate accommodation and consensus
Material	Physical circumstances	Underlying causal structure	Alternative physical and structural arrangements	Select and implant best alternatives

Table 5.5. Mapping of Viable Systems Method as per Mingers (2006, 230)

A researcher deciding on an appropriate combination of methods/methodologies should first identify which aspects (cells in the table) are most relevant to address the research objectives, and identify a combination of methods/methodologies which together are strong in these aspects. Broad methodologies are identified, but not parts of methodologies which may be used effectively in conjunction. Use of the same tabular format facilitates the identification of applicable tools from the methodologies chosen. It is important to remember that the tools associated with one methodology and underlying philosophy may be used in another, with the caveat that the research should be critically mindful of these aspects.

5.4.7. The use of intuition in the choice of methods

The WSR approach is less formalized than other methods in its choice of appropriate methodologies/methods/tools. Methods and methodologies which should be employed are more related to the WSR elements than they are to the stage of the project, and the approach seems not to have been developed to the stage of providing more structured methods of choice. However, it is apparent that intuition and experience are relied on heavily in the design stages, and decisions as to appropriate methodologies/methods/tools relate mainly to the WSR elements rather than the stage of the project. A two dimensional structured approach is not attempted. For investigating the *Wuli*, "goal seeking, outcome

oriented and analytical approaches" are likely to be chosen (Zhu, 1999, 310). These will reveal elements relating to objective existence. For the Shili, "cognitive-evaluative learning process" methods are likely to be useful in order to reveal the "subjective attitude structure" between groups in the project (Zhu, 1999, 310). For Renli, "symbolic action, meaning-establishing and relationship-maintenance" methods will help to explore the "intersubjective social norms/interactions" (Zhu, 1999, 310).

In the decision as to what methodologies/methods/tools to employ, cognisance should be taken of the cultural environment. Zhu (2000a) reports that some methods such as SAST are incompatible with Oriental cultural ways of communicating and can be counterproductive. In that culture, long-standing relationships and trust are of great importance and conflict resolution strategies employed in the short term are unlikely to be useful. Of greater importance is the "developer's interpersonal and political skills as well as the authority's commitment and dedication." (Zhu, 2000a, p 195)

Although the rationale for choosing methodologies proposed by Mingers (2006) and Zhu (1999) are different, they are complementary and perhaps both could be used in conjunction. Initially, choice of methodologies could be informed by Mingers framework in conjunction with the stages of the process (see Chapter 6), and as the project progresses, these could in an *ad hoc* manner be complemented or supplanted as aspects relating to *Wuli*, *Renli* or *Shili* are revealed.

5.5. CHOICE OF SOCIAL SYSTEMS METHODOLOGIES FOR THIS RESEARCH

The objectives of this research require methodologies to suit two main purposes: (1) analysis of what are understood internationally to be "best practices" in property valuation and taxation (presented in Chapter 3, analysed in Chapter 7), and (2) observation and reflective analysis of the GV2000 Project case study (case study narrative in Chapter 8 and analysis in Chapter 9). The case study component is not action research; the researcher played the role of observer and not consultant, attempting to maintain independence from

the process of reform. As such, the column headed “action to” in Table 5.4 and Table 5.5 is relevant only in its assessment of actions observed. This will inform the framework for fiscal cadastral reform which will be developed, and which can be thereafter used in interventions. This limits some of the available methods which are geared for action and assessment of subsequent outcomes (e.g. SSM), but since the multimethodological approach allows the use of parts of methods, those which are relevant can be used.

The tabular format of Mingers (2006) (as in Table 5.4) is identified as an initial mechanism for choosing methodologies with which to model fiscal cadastral systems and their reform. The three worlds model of worldviews and cognitive mapping (rich picture) are identified as useful. Hard systems thinking will permeate observation and analysis, while SSM will be used to identify various cognitive systems, but can only provide snapshot models. These cognitive systems will form the framework for analysis of driving forces for reform. For observation of the GV2000 Project, VSM, with its functional perspective, offers a useful tool to model organizational structure, processes and relationships. These tools are not sufficient as structures for observation, or for understanding the design and management of the reform process. For this, the case study approach (real world research school) and approaches to change management (from the operations research school) are argued (in Chapter 6). Table 5.6 demonstrates the compatibility of the proposed methods, but the strengths of change management and case study methods will only become apparent to the reader after Chapter 6. The darker the shading in Table 5.6, the better suited the combination of methodologies is in that sector. However, not all tools for all chosen methodologies are employed. The tools to be used are detailed in Table 5.7, and again, the strength of this combination of methodologies is indicated by graduated shading.

SSM, VSM, CM	Appreciation of	Analysis of	Assessment of	Action to
Social	Social practices, power relations, social context/drivers/ risks/goals – SSM/CM/CS relationships - VSM	Distortions, conflicts, interests, social context, impediments, drivers, risks/goals- SSM/CM Relationships - VSM	Ways of altering existing structures - SSM, VSM Goals, constraints, risks – SSM/CM Performance – 7E's, CM	Generate empowerment and enlightenment SSM, CM Induce change, consolidate change – CM Induce further change - feedback
Personal	Individual beliefs, meanings, emotions – CS, SSM	Differing perceptions, personal rationality – SSM	Alternative conceptualizatio ns and constructions - SSM Individual goals and constraints, individual resistance – CM Performance – 7E's, CM	Generate accommodation and consensus – SSM/CM Communicate urgency, vision, short term successes – CM Induce further change - feedback
Material	Physical (material/ technical) circumstances Hard systems, SSM, VSM, CM, CS	Underlying causal structure, goals, risks, drivers - hard systems, VSM, CM	Alternative physical and structural arrangements Material/ technical goals, constraints, options – hard systems, VSM, CM Performance – 7E's, CM	Select and implant best alternatives SSM, VSM Induce change, , consolidate change – CM Induce further change - feedback

Table 5.6 Mapping of VSM, SSM, Change Management (CM), Case Study methods (CS), and 7E's in combination (adapted from Mingers, 2006, 229-230)

	Tools of Appreciation	Tools of Analysis	Tools of Assessment	Tools of Action
Social	system, organizational structure and processes, environment: VSM Historical influences, culture, social context, relationships, systems – rich descriptions Driving forces, goals, risks, diagnose current state, socio-political climate – CS Identification of current leaders/managers/power relationships – CS, CM	Goals, forces driving change - SSM rich descriptions and conceptual social systems, CM frameworks Cultural stream analysis in 2 strands model of SSM Identify collective resistance to change – CM Change processes - CM	Ways of communicating as a collective – rich pictures – SSM Gap analysis - SSM Means to empower change and overcome resistance – CM Performance measurement – 7E's, CM	Empower leaders, managers and groups for change – CM Strategy formulation, staged processes of reform - CM Variety of communication tools, group processes, conflict resolution – CM Feedback – 7E's, CM

continued on next page ….

	Tools of Appreciation	Tools of Analysis	Tools of Assessment	Tools of Action
Personal	CS interview techniques. Personal aspects which emerge in the data e.g. letters written by individuals - CS	SSM – rich descriptions of individuals Identify individual resistance to change - CM	VSM –ways of communicating, especially unstructured ways Reasons for resistance and responses – CM Performance – 7E's, CM	Communication tools, individual processes, rewards – CM Feedback – 7E's, CM
Material	Observation – SSM, CS Technical aspects – Hard systems, CM, CS Data production and stat analysis – Hard systems thinking physical aspects of organization – VSM, CS	Logic-based stream of analysis in 2 strands model - SSM Organizational cybernetics – VSM Gap analysis – SSM, CM comparative analysis of structure - CM	Gap Analysis Performance – 7E's, CM	Select best alternatives from the analysis – CM Strategy for change – CM Feedback – 7E's, CM

Table 5.7 Combined tools of SSM, VSM, Change Management (CM), Case Study (CS), and 7E's

5.6. CONCLUSION

This Chapter has partly addressed research objective 1.4.2 b) (methodological and analytical frameworks) through conducting research activities 1.5.1 b), 1.5.2 a). These activities deal with assessing the suitability of a systemic approach and identifying useful systems methodologies.

The progressive multiparadigm Three Worlds Model of Mingers (2006), built on a critical realist approach, is shown to be in synergy with the WSR Oriental approach of Zhu (2000a). It is also sufficiently inclusive, viewing the world as three indivisible and interrelated dimensions which form the basis for knowledge creation, inclusive of aspects in the TOP model and deals with non-linear processes in a holistic manner.

There are numerous schools of thought relating to social systems approaches. Those examined and critiqued were chosen as they are the predominant methods/methodologies used in the field of management science and organizational research. The methods of system dynamics, complexity theory, SAST, interactive planning, CSH, team Syntegrity, and postmodern systems thinking, are thought to be of minimal usefulness for this research project. In some cases, this is purely because the methods are designed for action research (such as SAST and interactive planning), while in other cases the methods are not well matched to observation of the case study of the GV2000 Project and modelling fiscal cadastral systems establishment and reform (e.g. complexity theory, postmodern systems thinking). However, the principle of plurality in approach and use of multimethodology, as well as the processes of naturalistic generalization, caution against writing off any approach, methodology, method or tool. In other contexts, some of these may well prove useful.

In synthesis of the above, a multimethodological approach is adopted in this study in line with critical realism and Critical Systems Practice (Jackson, 2003). Based on this, the

multimethodological framework of Mingers (2006), complemented by an awareness of the more intuitive WSR approach of Zhu (2000a), is a suitable approach for identifying methodologies for observation and analysis of complex change processes in organizations such as that of the fiscal cadastral systems reform in the GV2000 Project. A combination of hard and soft systems thinking and tools of SSM and VSM combine constructively to appreciate, analyse, assess and intervene in a problem situation.

Additional tools of change management, case study methods, and a 7E's framework for performance measurement and feedback are built into this assessment framework and shown to be complementary. It remains in the next chapter to investigate the tools of case study and change management in observation and analysis of a reform process, such as that of the GV2000 Project case study.

CHAPTER 6. TOOLS OF OBSERVATION AND ANALYSIS OF CHANGE PROCESSES

6.1. INTRODUCTION

Chapter 5 introduced a variety of social systems methodologies, methods and tools from which a suite have been identified as useful for research in fiscal cadastral systems reform. Case study and change management methods were included in this suite for completeness, but this decision remains to be justified, which is the subject of this chapter. As these are not explicitly social systems tools, they were not included under the analysis of methodologies within Jackson's framework (2003) in Chapter 5. Case study tools are particularly useful as mechanisms for research design, data collection and analysis of the case of fiscal cadastral reform while observation and reflection of change processes is better served by tools developed for change management.

The first section of this chapter discusses case study methodology both in general, and its specific application in the design and execution of the GV2000 project in Cape Town. The second part of the chapter explores strategic change management.

6.2. CASE STUDY RESEARCH

Approaches to a real world problem may take many forms, and the case study approach is increasingly being used by researchers in the field of information systems. It is able to include context (Lee and Baskerville, 2003, Benbasat *et al*, 1987) and to interrogate complex interactions "among organizations, technologies, and people" in a holistic fashion (Dube and Paré, 2003, 598) It is therefore in line with the Three Worlds Model of worldviews motivated in Chapter 5. It is a strategy for conducting qualitative and quantitative research of real world systems, with the aim of analyzing processes, structures, contexts, responses, changes, unanticipated phenomena etc. and the inter-relationship

between these. The aim is to understand them, to generate new theories, to develop causal explanations, and possibly to test hypotheses/propositions (Robson, 1993, Yin, 2003).

Case study methodology is well documented by authors such as Yin (1984, 2003), Robson (1993), Benbasat *et al* (1987), and Lee (1989). In particular, it has been recommended by Benbasat *et al* (1987) and by Lee (1989) as an appropriate strategy to employ in research involving information systems as the nature of the research themes in this domain have shifted from technological issues to organizational issues. Dalcher (2004) identifies the case study research methodology as suitable for forensic research in information systems projects. Benbasat *et al* (1987) has highlighted eleven characteristics of case studies from a variety of sources.

An alternative to the case study approach is ethnographic research. Myers (1999) advocates the use of this research design for some information systems research projects. However, he highlights that the main difference between case study research and ethnographic research strategies is in the method of data collection. In ethnographic research participant observation is a primary source of data and is augmented by interviews and documentation. In case study research, participant observation is not necessarily a primary source of data, and is not practically possible in the case of the observation of the GV2000 Project. However, non-participant observation, interviews and documentation do form major sources of case study evidence in the GV2000 Project. Ethnographic research is thus not deemed appropriate as a research design to investigate the GV2000 Project.

The observation and analysis of the GV2000 Project, with its complex mix of organizational, information systems, and social systems issues, exhibits all of these and case study methods are thus deemed appropriate.

6.2.1. Case study research and critical realism

Case studies and positivism

Case study research cannot be limited to a positivist paradigm (see 4.3.1). The natural setting of the problem is important in ascertaining the "facts", complexity must be accommodated, and the impartiality of the observer, his/her investigative skills and ability to build relationships of trust, should not be discounted (Benbasat *et al*, 1987). However, tools derived from a hard systems positivist approach are undoubtedly useful and appropriate for aspects of case study research.

Case studies and interpretivism

On the other extreme, pure interpretivist approaches to case study research have been highly criticized in lacking rigour and poor generalizability (Yin, 1984). Interpretivist approaches (see 4.3.1) consider reality itself to be unobservable, and focus attention on the transitive domain (see 4.3.3) of social structures, processes, relationships etc. There are, however, aspects of this case study area which can benefit from an interpretivist approach and methodologies (e.g. SSM).

Case studies and critical realism

Critical realism, as argued extensively in Chapter 4, provides a solution to this paradigmatic dilemma. Case study research is well suited to a critical realist outlook being a multiparadigm and multimethod approach. This feature enhances the generalizability of case study findings by employing triangulation (Yin, 1984) of methodologies and methods.

The GV2000 Project case study is a single case study, and hence the strength of a single case as opposed to multiple cases requires some attention, not least of all in the ability to generalize the findings, and the reasoning and research design which underpin this process. These concerns are addressed in the remaining parts of subsection 6.2.

6.2.2. Reasoning in the single case study of the GV2000 Project

The single case study relies primarily on inductive reasoning (Denzin and Lincoln, 1998, and see Figure 4.2), while abductive and deductive reasoning should not be excluded. With inductive reasoning, themes and patterns are expected to emerge from the data and conclusions about general cases are reached from specific individual cases i.e. generalizing from description to theory (Lee and Baskerville, 2003). The narrative form (Denzin and Lincoln, 1998) is used in the GV2000 case study followed by analysis and interpretation. Formal logical deductions are employed in the analysis of data (Lee, 1989). Generalization is improved by avoiding preconceptions of theoretical outcomes, methods of triangulation, iterative processes of research etc. (see section 6.2.4). These logical processes and design criteria are adopted in the study of the GV2000 Project, while the detailed case description in the form of a narrative is given in Chapter 8.

6.2.3. An argument for the validity of the single case study of the GV2000 Project versus multiple case studies

There is strong support in the literature for using a single case study. Yin (1984) identifies a number of real world scenarios in which single case studies are preferred to multiple case studies. These are when the case is critical in the testing of theoretical propositions, when the case is extreme or unique, for revelatory cases, and for pilot studies. The GV2000 Project at the time of its execution was unique, and the investigator was in a unique position of access enabling observation which would be inaccessible to other researchers - the researcher was able to access project staff due to relationships of trust established when she was employed with the City (1992-1996). Denzin and Lincoln (1998b) support the use of a single case study when access is critical and the opportunities to learn are good – atypical cases such as the GV2000 Project are often more valuable than typical cases.

6.2.4. Designing the single case study of the GV2000 Project for rigour

Validity

In critical research rigour is achieved through adherence to established rules of enquiry. Validity presents problems in critical research as the accepted methodologies themselves may be challenged (they are influenced by consensus views). Internal validity is largely related to scientific and credible research design which establishes causal relationships, while external validity refers to generalizing the case study findings to a broader domain (Yin, 1984). These traditional views of validity are rather replaced by the concept of trustworthiness, which embodies a different set of assumptions (Denzin and Lincoln (1998b). Trustworthiness relates to whether the emergent constructions are plausible - it is critically important in single case study research.

Trustworthiness is increased in the GV2000 Project case study by incorporation of the following in the research design: a chain of evidence, multi-facetted triangulation, explanation building, longitudinal analysis (2000-2007), and parallel/cyclic processes of data collection and analysis. The GV2000 Project case study employs the following forms of qualitative triangulation:

- Data triangulation: use of multiple data sources including project documentation, interviews, the press, court proceedings and observation.
- Theory triangulation: multiple perspectives are used to interpret the data since the approach is multi-paradigm, and follows a largely social systems approach. Furthermore, the research spans the hard-soft science boundary – a challenging task in terms of knowledge and skills of the investigator.
- Methodological triangulation: multiple methods are used to interpret the data since a multimethodological approach is adopted – methodologies from social science are integrated with change management.
- Interdisciplinary triangulation: this is the use of other disciplines to inform our research processes in order to broaden our understanding of method and substance (Denzin and Lincoln, 1998b). In this research design, the disciplines of change

management/organizational research, systems science and thinking, information systems, property valuation and taxation, and cadastral systems provide a broad platform for the research.

Generalization and the GV2000 Project case study

Generalisation in single case study research uses description to build theory (empirical statements to theory). Lee and Baskerville (2003), Denzin and Lincoln (1998a) and Eisenhardt (1989) defend generalizability of single case study research. When developing theory from case studies, Eisenhardt (1989) advocates as far as possible that the research design begins with a clean theoretical slate and that no bias or propositions be tabled at the outset. In the GV2000 Project case study, only research objectives are stated upfront, while propositions refer to the frameworks of methodology and analysis, and not to the properties of the case itself.

A thorough inclusion of relevant literature is key to not only internal validity, but also to generalizability and to the level of theory building (see Yin, 1994 for the two levels of theory building). Relevant literature informs Chapters 2, 3, 4, 5 and 6 of this thesis. This, and the match of the theory to the data (its grounding in empirical evidence), its logical development and coherence, its testability, and its brevity all count in assessing generalizability of theory generated from case study research (Eisenhardt, 1989). In instrumental cases, those undertaken to provide insight into an issue, or to refine a theory, the case itself is a medium and is of secondary interest only (Denzin and Lincoln, 1998b). The method shows how a phenomenon exists within a case and so the value of comparisons with cases in which the phenomenon is not present are worthless as there are too many ways for these cases to be different (Denzin and Lincoln, 1998b). This logic is followed in the extraction of meaningful conclusions from the case study of the GV2000 Project.

Statistical and analytical methods of generalization are replaced by those of naturalistic and temporal generalization in the case study. These are more in line with the multiparadigm approach and offer useful alternatives.

Naturalistic generalization

In naturalistic generalization a detailed picture of the context assists the reader in generalizing the research findings to new contexts. The case story is retold in a manner that parallels actual experience and allows for the most fundamental process of awareness and understanding as if the reader had personally been exposed to the case. This is termed a rich description. The constructivist approach maintains that knowledge is socially constructed; the case study researcher obtains evidence in a socially constructed observation phase, and reports the evidence and analysis in another construction (of the reader's knowledge) through the written work (Denzin and Lincoln, 1998b). This is conducted through the rich description for the case study of the GV2000 Project in Chapter 8. Transferability of findings is related to the closeness of fit (similarities) between the source and the new case studies (Lincoln and Guba, 1985, in Gomm *et al*, 2000) as interpreted by a future researcher. In this form, generalization can be an unconscious process.

Temporal generalization

This involves continuous longitudinal studies which contribute to the generalizability of findings over time. The lengthy case study of the GV2000 Project (about seven years) provides the necessary information to address the research questions, and enhances validity through temporal generalization. Figure 6.1 illustrates these concepts of project design incorporating the single case study of the GV2000 Project, pluralism and generalization.

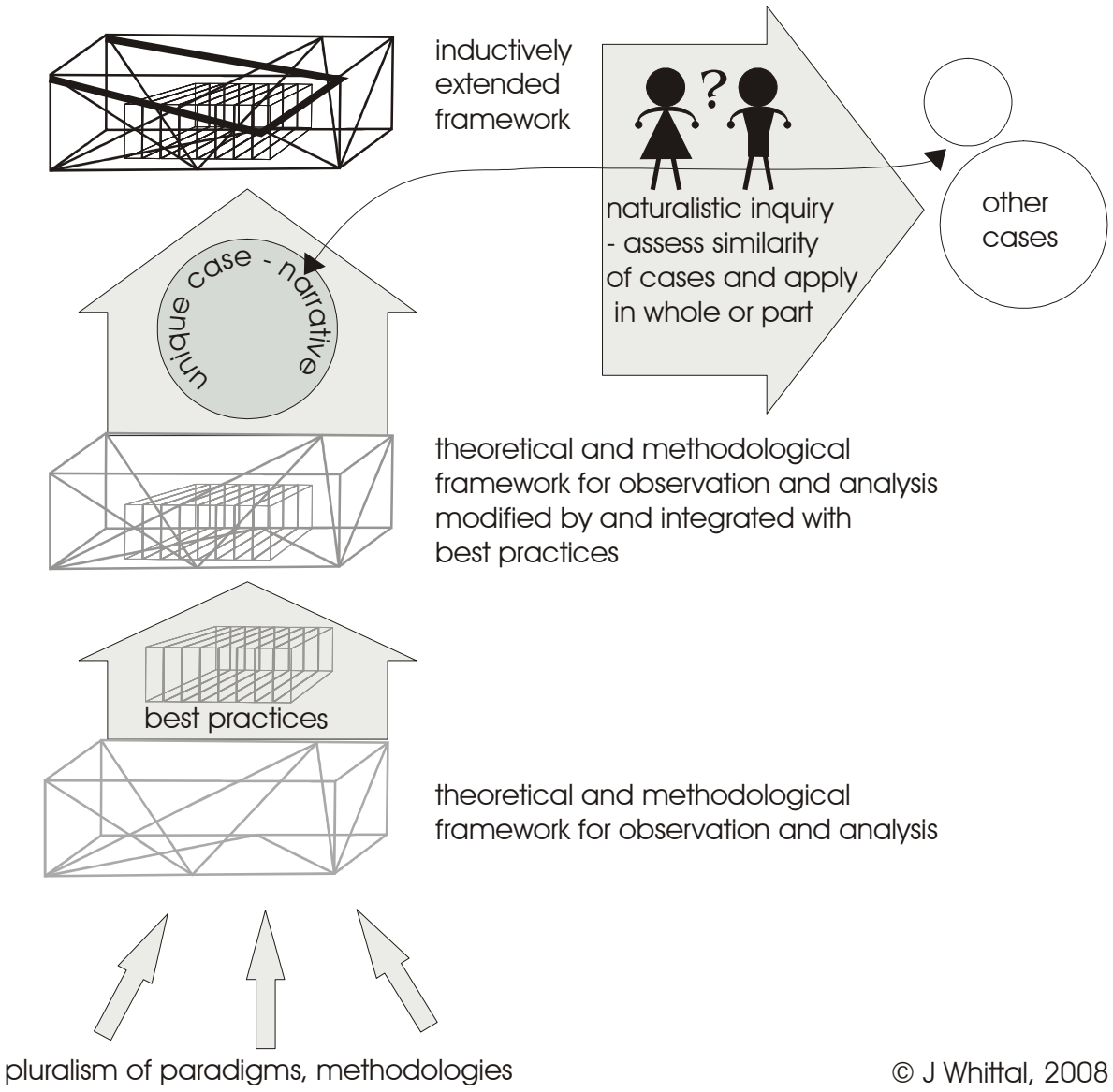


Figure 6.1 Rigourous design

6.2.5. Data collection and management in the case study of the GV2000 Project

Multiple sources of evidence

Multiple data sources are used and data is thus corroborated and repeatability is demonstrated. Triangulation (originally a land surveying phrase meaning the systematic derivation from a number of points of reference) is advocated by Yin (2003), Denzin and

Lincoln (1998b), Hay (2000) and many others. Documentation is fundamental to the reliability of the research process and the use of a well organised database (see below) and accepted case study protocol assists in this process.

The GV2000 Project case study database

This consists of the primary data/evidentiary database, as well as the reports of the investigator and secondary documents which provide information about context etc. The two categories are kept separate, in order to improve the reliability of the research. All sources of evidence are classified and filed for easy retrieval. The database is in the form of a spreadsheet with a unique reference system. All sources of data are reflected in that database as well as reference texts. Hard copy documentation is stored in date order, and reflects its unique reference number, while computer files are stored according to type and the unique reference number. The database contains information of the location of the electronic files.

Filing for the GV2000 Project case study

The use of multiple types of triangulation has implications of time and cost, as well as the requirement for broad data collection expertise and organised collation. Case study notes of the investigator from a variety of sources are filed in date order in the hard copy filing system; case study documents are filed in date order and a categorized bibliography of these is used; interview notes and tape transcriptions are filed in hard copy in date order; project documentation has a unique reference number and is filed in hard copy date order; Press articles and public debates are filed in hard copy date order.

Primary and secondary documentation in the GV2000 Project case study

Relevant GV2000 Project documentation includes internal memoranda, important email communications, project reports, public communications and promotion material, press articles, radio and television media interviews, and CAMA and property tax statistical indicators.

Case study interviewing

Interviewing is a key source of data in case study research. Initially, purposeful sampling techniques were used within the groups specified below. This took two main forms - key informant sampling and theoretical sampling. Key informant sampling was used to identify individuals who had an in-depth knowledge of the case and access to information. Their information played a role in shaping the research direction and design. Theoretical sampling identified individuals who could provide information relating to the research questions. Subsequent to this, snowball sampling (otherwise known as respondent-driven sampling (Heckathorn, 1997)) was used – the sample size was increased organically as more individuals were recommended or identified.

Groups from whom information was sought in the GV2000 Project case study were:

- Public officials and their private sector colleagues, some of whom were key informants. Thirteen public sector officials and three contracted valuers formed this group. These individuals were selected due to their specialist knowledge or position in the project team in order to provide information on all aspects of the project from planning to execution. Some of these informants were extensively interviewed at various stages of the Project.
- Ratepayer association representatives – two key individuals provided information from the perspective of the ratepayer associations on multiple occasions.
- Individual ratepayers from the following groups (16 in total):
    - Upper class (formerly "white") areas on the Atlantic seaboard that are subject to international property market forces.
    - Upper class (formerly "white") areas in the Northern and Southern Suburbs.
    - Middle class areas.
    - People in areas formerly falling within the Black Local Authorities (see glossary).
    - People in lower class formerly "coloured" areas (see Glossary for the meaning of "coloured").

- Beneficiaries of the government subsidies for sub-economic housing, but whose property is now subject to property taxation.

A sample of sixteen individuals provided information in interviews. The information provided was no different from that reflected by contract valuation staff working in these areas and also reflected in the media.

- Consultants to the GV2000 Project. Six consultants to the Project were extensively interviewed.

The process of choosing informants was not one of statistical sampling. Rather, final sample size was tailored both by sufficiency (enough to cover the range of informants and groups), and information saturation (enough to gather the range of information required to address the research questions). The data provided by these informants does not stand alone, but should be viewed in the context of all the data acquired for the project, as data types are complementary.

Ideally, a draft case study narrative should be reviewed by key informants. Due to the length of the narrative and the business of the project staff, this was not possible for the GV2000 case study. Key informants were accessible for meetings with the researcher, but were reluctant for the research to take up any additional time. However, questionable or contradictory data was queried, in some cases in follow up interviews. These procedures assist in the accuracy and construct validity of the research.

Direct observation

Direct observation provides case study data which may not otherwise be accessible. The following were directly observed in the GV2000 case study:

- Communications with relevant stakeholders - attendance at meetings of management, ratepayer bodies, and public meetings organised by the Project Team.
- Physical operating environments.
- Interactions between public sector officials and private sector contractors.

- Establishment, operation, and disestablishment of the public-private partnership Project Team.
- Organizational structures and processes.
- Dispute resolution processes (review and objections processes and resulting court cases).

Although direct observation was undertaken in the course of data collection, this took the form of passive observation and not active participant observation. Direct observation was not undertaken as resident observation and was limited to specific opportunities for observation which were not always planned in advance.

Cultural and physical artefacts

Cultural and physical artefacts are another important source of data and include technological tools/materials/objects used in the case study (Yin, 1984). This included the hardware and software used in the GV2000 Project.

Data collection time period

The time period over which data is collected is of relevance and impacts trustworthiness (see section 6.2.4). The data collection phase began in 1999 during which the GV2000 Project was in its proposal stage. Data collection continued until 2007 when the dispute resolution processes were complete and a new valuation cycle was underway. The period of time under which the case was studied indicates the high level of access and allowed the researcher to develop a deep understanding of the research context and the phenomenon observed, as advocated by Dube and Paré (2003) and Benbasat *et al* (1987). Longitudinal (long term) data collection in the GV2000 Project thus contributes to the overall rigour of the research.

6.2.6. Personal bias

Bias and qualities of research cannot be reported from an objective point of view, but an attempt should be made to do this. The primary researcher obtained a bursary from the City

of Cape Town for studying a BSc (Surveying) and thence proceeded to obtain her MSc (Engineering). Both of these degree programmes were highly technically oriented with no social or political components. The formal education of the researcher was not directed at all towards holistic and systems thinking, nor to aspects of philosophy, politics, social structure and processes, business management, organizational theory etc. However, a strong foundation in mathematics, statistics, surveying, and software engineering was obtained, seated firmly in the positivist paradigm and hard science tradition.

After studies, the researcher joined the City of Cape Town and was soon registered as a Professional Land Surveyor. This was followed by an academic position at the Department of Surveying and Geodetic Engineering (now the Division of Geomatics). She had worked for the City for a period of roughly 4 ½ years and was well acquainted with their systems and processes and had built up relationships of trust and respect with various key individuals in the organization.

Being resident in Cape Town for most of her life, and particularly having lived through the turbulent 1980's, the downfall of the apartheid government, and the changes of 1994 and thereafter, has afforded the researcher a particular, but valuable, experience of the South African context. This background facilitates a deeper understanding of the case study than would be possible without such a history of residence in the country.

In the course of this research the cognitive transition from technical surveying research to research in land tenure and cadastral systems has been undertaken. This is highly challenging as it crosses the boundaries between technical/natural systems and social systems research. However, experience and expertise in soft systems methodologies, organizational change, and case study research has largely been gained during the course of this research work.

Negative influence of bias on the research outcomes and on the generalizability of the findings was limited through multifaceted triangulation in the acquisition and analysis of

the case study data. Evidence of inclusion of personal and social aspects outside of the material/technical bias of the researcher is demonstrated in the Three Worlds Model of the case study (see section 9.4.3). Modelling of the case study of the GV2000 Project using VSM an SSM methodologies (see sections 9.2.8 and 9.2.9) does reveal a bias towards the material and technical, and the soft systems methods would most likely be embraced more fully by a researcher with different skills. However, the usefulness of both methods is adequately interrogated.

6.2.7. Analysis

The framework for appreciating context, preparing for change, conducting change, and assessing change is a combination of social systems methods and change management methods. It relies on theory in previous chapters, and in the rest of this Chapter. This theory will be tested in the analysis of the GV2000 Project. This analysis is expected to inductively extend this framework, as well as to provide a systems understanding of the fiscal cadastral reform process in the GV2000 project.

The inductive process (extending knowledge from the case study in an emergent manner) relies on analytical triangulation. This is based on the concept of "converging lines of inquiry" which straddles a number of areas of application (Yin, 2003, 98, referencing Patton, 1987) bringing together data from a variety of sources, from a variety of investigators, using a multi-paradigm/theory approach, and using a multimethodological approach to analysis. In addition, the critical realist paradigm adopted for this research acknowledges the effects of bias on the results, despite rigor in triangulation.

6.3. CHANGE MANAGEMENT

6.3.1. Change management tools and analyzing the GV2000 Project

Up to this point, a suitable tool to strategically manage the processes of complex reform involving cadastral systems, has not emerged. Social systems approaches covered in Chapter 5 can benefit from an understanding of change management theory, which offers a

structured framework for project based change. Change management is informed by the organizational research and management science (particularly strategy) fields. The uninitiated fall quickly into the "causative" trap of change management, in which it is purported to be correlated with success. This instrumental approach may hold true, but should not be presumed. At best, change management tools could result in significant reduction of risk, better project design and implementation, followed by more sustained results in complex projects such as those for fiscal cadastral reform.

6.3.2. Structure of this section

Before embarking on any change process, assessing the a priori context in which change takes place is critical. Particular attention is paid to the drivers/triggers that force or impede change, goals and assessment of risk. The multifaceted framework for managing change processes developed by Kotter (1996) is modified with reference to the experiences of Dolny (2001), who provides a South African experience of change, and further informed by transition management principles identified by Beckhard and Harris (1987). The framework is compared with the staged processes identified by Mingers (2006) and Zhu (2000a) and appears to be more explicit but less well linked to underlying philosophical paradigms than these. It is identified as an appropriate, inclusive, and adaptable framework for managing and analyzing change in complex contexts, and which can be used in conjunction with useful perspectives from the Mingers (2006) and Zhu (2000a) alternative approaches.

The effectiveness of change processes is often measured by assessing performance in relation to the achievement of goals stated a priori. Because the objectives themselves are likely to change, this is not necessarily the most appropriate method of assessment in complex and dynamic environments, such as those commonly found in the developing world context, and in the case study of the GV2000 Project. Appropriate methods of assessing effectiveness of change processes are explored for this research.

6.3.3. Appreciating the context of change

A change classifications framework has been developed by Hughes (2006) which is structured as a set of questions which are useful in observing and understanding a case of organizational change, rather than managing it. An understanding of the broader internal and external context of change, as well as future, current and historical contexts, adds to the value of the framework (Hughes, 2006). However, a rich description in a longitudinal study such as that undertaken in the GV2000 Project case study (see Chapter 8), is likely to reveal all of these rather superficial questions which appear to be structured for a small scale, quick, intervention.

A conceptual model for analysis of forces driving/impeding change

The conceptual model of forces driving change in fiscal cadastral systems identified from literature (see 3.4) is rather narrow in focus – it is accommodationist in design (designed to meet the needs of the environment), and is focused on material and technical aspects of property valuation and taxation to the detriment of the personal and social aspects. In the appreciation of the context of complex fiscal cadastral reform, this framework requires extension.

The conceptual framework for drivers/triggers of change identified by Fahey (1994) is advocated for this purpose as it includes social, technical, political, economic systems. In the context of the developing world a variation from Fahey's classification is advocated. This separates the legal aspects from the political aspects which, in the authors' opinion, offers a more faithful reflection of a reality in which these aspects are sufficiently different to be considered separately, although they are not likely to be independent. This is also more along the line of Heffron's (1989) classification of drivers/triggers as socio-cultural values, the political and legal environment, the technological environment, the human environment and the economic environment.

Socio-cultural forces

The social milieu consists of demographics, lifestyle and social values (Fahey, 1994). Socio-cultural drivers of change are likely to be manifest in expectations of service delivery. They may also be evident in resistance to change, particularly where the nature of change is radical (rather than incremental) and affects values, communication norms, task structures, organizational culture etc. Issues of trust, conflict, changing power relations, gender equity, empowerment/skills deficiency, affirmative action, and remuneration will have an impact on change processes and could even become drivers/triggers for change.

Political system forces

Fahey (1994) identifies the political milieu as the formal institutions of government (the executive branch, legislatures, judiciary, and the regulatory agencies), as well as the informal institutions of the media and local community arenas. The framework presented here considers the legislature as a separate aspect in the categorization of driving forces.

Political factors include those expressed in policy as well as the political discourse and political climate of the day. Political values such as responsiveness, accountability, representativeness, constitutionality, and democracy (Heffron, 1989) are often contained within the Constitution and policy documentation. These are all essential for legitimacy in a democratic system of government, and can be drivers of change when they are not met.

Internal political influences include the politics of organizational entities competing for resources and power. These can play an important positive or negative role in change processes. Ethical internal organizational politics exist in any large organization, and can be used to the advantage of the organization in meeting its goals (Du Brin, 1997). It should go without saying that they can therefore also be used ethically as an instrument in effecting transformation.

Technological system forces

Technological drivers of change include aspects such as the requirements of end-users and clients of the product of the organization. Digital access to data, integration and data sharing, internet access are examples of such cases. Also, the speed of delivery required by consumers may demand a partly technological solution. Advancing technology may offer opportunities for an organization to more efficiently realize its goals and thus become a core aspect of a change project, even expanding the goals of change (see section 4.2 and Orlikowski and Robey (1991)). Implementation of technology may well cause additional non-technological forces driving/impeding change to emerge or vary in strength.

Legislative system forces

It has been observed that legislative reform generally follows political changes and policy expressions of these. The process of legislative change is so slow, that in many cases, change can precede legislation, and even become itself a driver of legislative change (see section 8.8.3). Legislative forces have been observed to emerge whenever gaps between current practice and current legislation occur and can span the organizational structure and processes, human resources, the inputs and outputs of the organization if these are regulated by legislation, communication etc.

Economic system forces

Fahey (1994) identifies the economic aspects of change as patterns and levels of industrial and agricultural outputs, productivity, consumption, income, and savings. Economic aspects of relevance could be the gap between income and budgeted expenditure of the local authority to meet service delivery needs, which would directly influence improvements in the effectiveness and efficiency of the fiscal cadastral system. An aspect of this would be the cost-effectiveness of organizational units responsible for the fiscal cadastral system.

6.3.4. Principles underlying transformation

In many organizations and change processes there is a set of (often unstated) rules by which the transformation process must be executed. Principles underlying change will normally consist of certain moral codes (some of which may be included in the overall mission statement of the organization), in the goals of the transition, and may even find expression in the vision statement. Examples of such principles include: fairness and justice, transparency, equity, capacity building, consultation, and sustainable transformation. Identification, review and communication of these principles are important parts of understanding and managing the transformation process. Failure to adhere to the principles underlying transformation may render the process illegitimate if not illegal, with serious consequences. These principles are more often explicitly stated in public organizations than in private organizations. In the former, the communication of the rules of the game with the electoral base is critical, and must be considered in all decision-making processes. Sometimes these principles are legislated.

6.3.5. Goals

Goals of change are explored in detail in section 2.6.1 and may be implicit as well as explicit, temporal, and conflicting. They can be political, social, personal, material/technical, organizational etc. Often, they are use to measure performance, and are often not stated or investigated prior to a change effort. Analysis of goals is an important step, and emerges from the SSM process of gap analysis. Conception-reality gaps will result if goals are unrealistic as would be the case if unrealistic desired states are envisioned.

6.3.6. Staged processes of change management

Change processes in organizations are most often approached from a strategic perspective in which change follows a defined course. The type of strategic change employed (classical/managerial, evolutionary, processual, systemic) aids in understanding the change process. Since a systems approach has been identified as useful for projects involving fiscal cadastral systems reform, a systemic strategic approach to change management is preferred.

In such an approach social systems influence goals and processes resulting in a change process that is designed to meet the needs of the organization as well as societal needs. Following a pluralist ideal, a hard distinction between a planned approach and an emergent approach is not advocated. Instead, the planned approach is likely to predominate at the outset, while an emergent mode becomes useful in dealing with unplanned events which can be expected in complex change projects.

A linear, staged set of processes is generally chosen for the initial stages of the project. There are many variations of staged approaches (see 2.4.4). The staged processes of Kotter (1996), due to their strategic design, further developed by Dolny (2001) are compared with those of Mingers (2000) and Zhu (2000a) below, and advocated as a useful framework for analysis of the change processes in the GV2000 Project.

Kotter's eight-staged processes of change management

The first four stages of Kotter's eight stage framework (1996) involve creating the climate in which change can take place; stages five to seven involve the introduction of new practices into the organization; and stage eight involves changing the organizational culture.

Establishing a sense of urgency - Stage 1

This stage largely relates to understanding the context, the current organizational state (Beckhard and Harris, 1987) and driving forces for change covered in the previous section (section 6.3.3). Needs are identified, and the urgency of change appreciated and communicated from a systems perspective (Beckhard and Harris, 1987).

Creating the guiding coalition - Stage 2

Individuals who can identify the vision, communicate this and motivate role players is identified. Good managers provide a role in ensuring that the plan is executed. A core group with enough credibility and power to lead the change through the transition state is then formed with these individuals in line with the "Kitchen Cabinet" approach of

Beckhard and Harris (1987). Establishment of trust, a common objective, and an overall team mentality is required of this group. The guiding coalition of Kotter (1996) is otherwise referred to as a group of change agents (Hughes, 2006).

Developing a vision and a strategy - Stage 3

A vision needs to be created in order to direct the course of change. Strategy specifies change priorities, sets timeframes by which various changes should occur, and required feedback be delivered, which may result in changing the targets (Dolny, 2001). The transformation budget would most likely be proposed and approved at this stage.

Communicating the vision - Stage 4

All practical means should be used to communicate the new vision and both vertically and horizontally within the organization or system. Communication beyond the determined boundaries of the system (i.e. outside the organization) is also essential if external individuals or groups (e.g. politicians, public representatives and shareholders) have a controlling influence over the change process. A large-scale communication strategy may be critical to the effectiveness of the change process for public concerns i.e. where political backing is needed (Dolny 2001). The communication strategy may also require the communication of the urgent need for enabling legislation.

Empowering broad-based action - Stage 5

Closing the "knowing-doing gap" (Pfeffer and Sutton, 1999) through removing obstacles may be required. This may involve communication, training to change social impediments, starting the processes of legislative reform required. Systems and structures may also need to be changed as well as human resources systems. This stage also includes tackling resistance to change by individuals and groups. Beckhard and Harris (1987), Heffron (1989), and Dolny (2001) have advice as to how to overcome resistance, but resistance can also be positive as it is a stabilizing factor (Hughes, 2006). Where resistance is linked to cultural norms and values, the ethics of intervention need to be questioned (Hughes, 2006).

Generating short-term wins - Stage 6

Positive feedback in the early stages of the project plays an important part in sustaining the vision and eventual successful change. Communication of the achievement of interim targets, rewarding performance, etc. encourage reflection on the vision and strategies, and may also help to bring resistors on board (Kotter 1996).

Consolidating gains and producing more change - Stage 7

Systems, structures, and policies may be further adapted to be in line with the vision. Hiring, promoting and developing people who can implement the changed vision may be undertaken; new projects, themes, and change agents serve to renew energy in the process (Kotter 1996).

Anchoring new approaches in the culture - Stage 8

Maintaining the results of change in organizational, group and individual culture is difficult and relies on the previous stage of consolidating change. Connections between new behaviours and organizational success need to be clearly articulated. Over-reliance on the leader is problematic and can be reduced by leadership development and succession. Change in organizational culture runs throughout the process of change, but is only realized at the end (Kotter 1996).

Additional change management issues identified by Dolny

Dolny (2001), although a strong supporter of Kotter's (1996) model, added four additional issues from her experience of the South African Land Bank transformation process. These are cross-cutting (non-staged) issues that are particularly relevant in post-apartheid South Africa.

Dolny (2001) highlights internal organizational politics which refers to the sum of informal processes of gaining power other than by luck or merit (Du Brin, 1997) and is often related to competition for resources and relative power structures. She also draws attention to extra-organizational politics and public relations. Developing and nurturing power contacts

was a powerful political tool which Dolny (2001) recognized as one she omitted to use in the Land Bank transformation. Organizational politics can be used to good advantage in ensuring that the strongest leaders are promoted, and can facilitate change (Hughes, 2006).

In Dolny's (2001) case of organizational change in the Land Bank, she specifically cites her lack of continuous engagement in dialogue with those with whom her relationship appeared (or was rumoured) to be souring. This continuous engagement in dialogue would have served to minimize differences and polarization, possibly even leading to the finding of some common ground. This need fits in with the communication stage of Kotter's framework and relates to addressing resistance to change.

A further aspect was Dolny's (2001) lack of knowledge of the relevant statutes relating to the organization, its environment, and specifically change, which she identified as a priority from the outset. Lastly, Dolny (2001) identified issues relating to race and gender as critical. These elements of Dolny (2001) add richness to the framework of Kotter (1996), particularly in the context of South African national transformation to a non-racial society.

Staged processes of Mingers

Mingers and Brocklesby (1997) have identified the various stages of a project as suitable units for matching different methods and methodologies. At this point one can gain an appreciation of the usefulness of a variety of approaches by considering the SSM activity project breakdown of Mingers and Brocklesby (1997) involving appreciation of the problem situation, analysis of the problem structure, assessment of goals and constraints, and action to induce change. This follows the same flow as that of Kotter (1996) and is not necessarily linear, sequential, or discrete. A multimethodological approach to these is advocated, which supports good research design.

The WSR staged approach of Zhu

The WSR approach identifies activities which are undertaken in a staged process (Linstone and Zhu, 2000) which is repeated in whole, or in part, in a spiral manner Zhu (2001). This

approach is thus not in conflict with the staged process of Kotter (1996) and Mingers (2006). A staged process is a good starting point for change as it allows for the inclusion of all role players in learning and creativity (Linstone and Zhu, 2000). However, constant learning and "adaptive development" is advocated (Zhu, 2001). Repetition of some or all stages is possible (see Figure 9.19). The stages of WSR are (in no particular order): understanding desires, investigating conditions, formulating objectives, creating models, and implementing proposals. Coordinating relations is the glue that holds it all together. The staged process of WSR was initially designed for general application (General Problem Solving) and was then adapted for the specific environment of operational research (OR), or Information Systems Design (ISD). The diagrams of Zhu (2000a, 190-191) illustrate these stages, each of which contains sub-stages. The WSR *Wuli, Shili,* and *Renli* elements are not confined to any particular stage and may emerge at any stage of the process. These are therefore visualized as bubbles which rise to the surface unpredictably. They are also interwoven, should be considered as indivisible aspects of a whole, and are not hierarchically differentiated.

Comparison of the Kotter/Dolny framework with that of Mingers and Zhu

The change management framework of Kotter (1996) is seldom mentioned in current operational research or practice, probably as his work is more geared towards the popular management audience. However, current discussions by Mingers (2006) and Zhu (2000a) also involve staged analysis of change processes, and it is thought helpful to see these in parallel in order to identify a useful approach, or combined approach. A thorough comparison of these approaches would warrant another study, with an inclusive analysis of their underlying philosophical assumptions which are obviously different.

It is apparent from this simple comparison that the method of Kotter is more explicit than its rivals in the definition of its eight stages. However, the methods are also grouped in order of increasingly explicit philosophical position. Kotter's methods do not identify a paradigmatic home, while Mingers's processes are overtly based on critical realism and Zhu's are intended to be unbounded by any particular paradigm. Kotter's framework is

based on extensive change management experience and can be applied from a critical realist perspective as it can accommodate a systems approach including the natural and the social aspects of the system. If anything, it is weighted towards the social and personal rather than the material. The staged process of Kotter modified by that of Dolner, and with an awareness of those of Mingers and Zhu is thus the preferred change management framework for a reflective analysis of the case study of the GV2000 Project and to guide future fiscal cadastral systems reform processes.

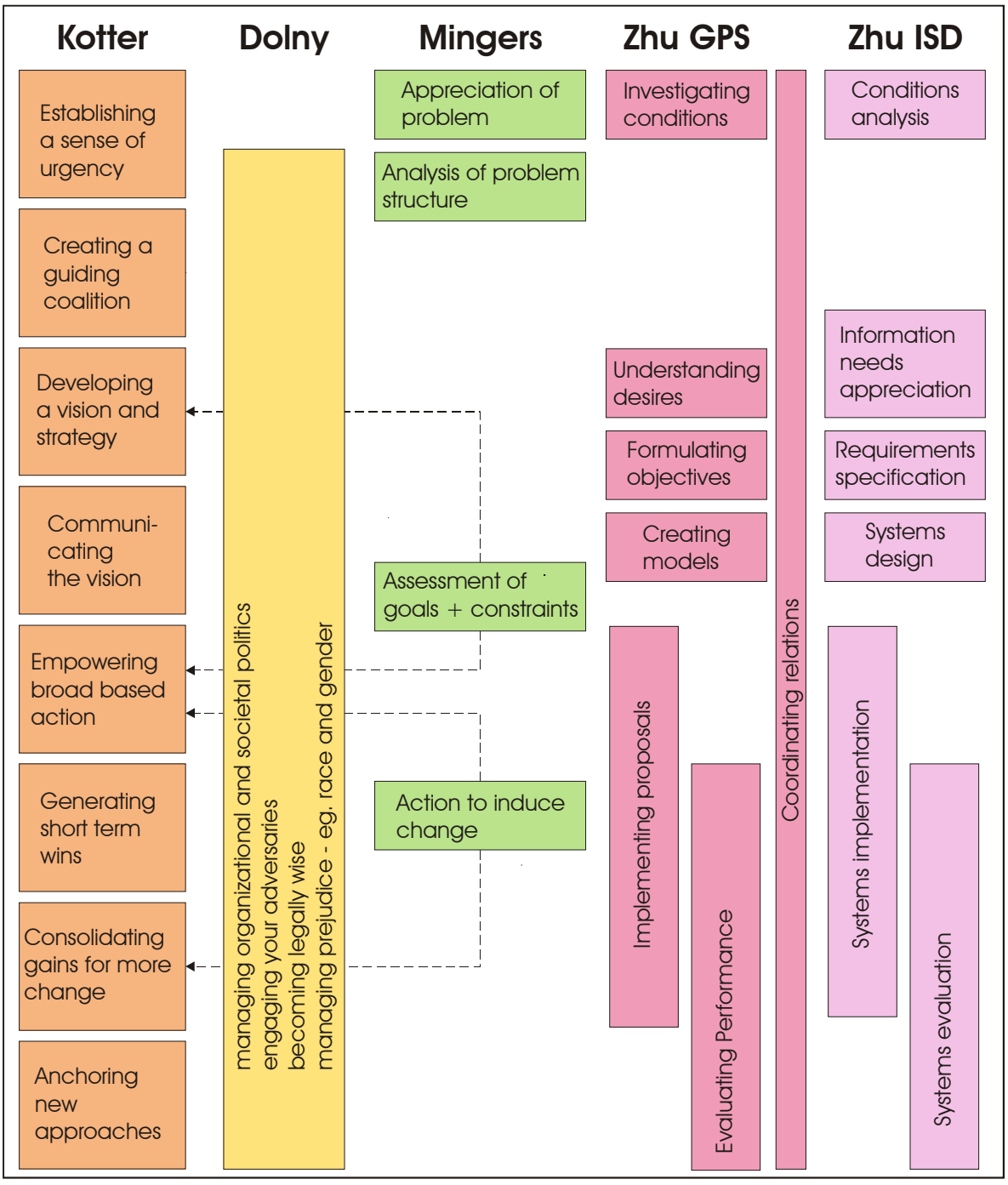


Figure 6.2 A graphic comparison of the Kotter, Dolny, Mingers and Zhu staged processes of change management (GPS-General Problem Solving, ISD – Information Systems Development)

6.3.7. Measuring performance of change processes

An important, but underemphasised, aspect of change management is the measurement of performance. Most performance assessment frameworks concentrate on organizational performance rather than performance of a change process, and are not holistic in design. The proposed framework for measuring performance both during a process of reform, and afterwards, is the 7E's framework of efficiency effectiveness/efficacy, elegance, empowerment, emancipation, exception, and emotion (see sections 3.8 and 5.3.2). This framework has already been used in Chapter three (section 3.8) to reflect measures of performance in what is considered to be "best practice" in fiscal cadastral systems reform. It is a social systems framework derived from the SOSM taxonomy of Jackson (Table 5.2) and is related to the 3E's and 5E's frameworks of Checkland (1999). It can be generally applied to measure performance in all three aspects of the Three Worlds model of worldviews (i.e. it is holistic). It provides essential data for feedback which is required in repeat stages, and spiral processes of reform (see 2.4). The following section presents the framework for assessment of generic change management performance.

Efficiency – minimizing the use of resources

Efficiency measures the amount of input required to achieve a certain output (Heffron, 1989). Efficiency can be driven by and measured by goals which are vague or explicit (see section 2.6.1 for a discussion of goals in performance measurement). In obtaining data for measurement of efficiency, all resources should be included, including staffing, space, etc.

Efficacy/effectiveness – delivery

Effectiveness is a measure of the ability of the process to deliver in accordance with expectations. It is multidimensional and no organization is likely to measure the same level of effectiveness using all criteria (Heffron, 1989). Quality should not be ignored in the assessment of efficacy/effectiveness (Heffron, 1989). Sensitivity of the processes of change to changing conditions (e.g. the environment, client needs) influences efficacy. The effectiveness of the change process is related to how responsive it is and whether it is able to still deliver in the midst of complexity and rapidly changing conditions. Sensitivity and

responsiveness are elements related to the emergent rather than planned theory of change management, and illustrate the need for multiple approaches, particularly in complex projects. Effectiveness can be influenced by efficacy of communication.

Elegance – acceptability to stakeholders

Acceptability to stakeholders is not unrelated to the previous measures of performance. Stakeholders include all role players and interested and affected persons – internal and external to the system. Goals of various stakeholders may be incompatible (3.5.1). In such an environment acceptability of the results of a change process and outcome is likely to be varied.

Empowerment – contribution by stakeholders to decision-making and action, inclusion

Structural and procedural inclusion is measured and reflected by empowerment as a measure of performance. Cognizance of varying cultural norms of communication and group participation is essential to ensure that empowerment is truly accommodated. Marginalisation, or perceptions of marginalisation, would indicate poor empowerment of individuals or groups. Empowerment can also be judged by how new tasks and procedures are introduced. Aspects such as what training is provided, how different behaviours are reinforced, and whether training accommodates a variety of learning styles and speeds, are indicative of empowerment in the change process.

Emancipation – assisting the marginalised/disadvantaged

Emancipation is hard to measure accurately, since weaker groups or individuals (being those whose norms and culture is at odds with the dominant norms and culture of the project) may leave little or no footprint indicating their marginalisation. Often, active inclusion of disadvantaged groups is required, and such activity can be a measure of emancipation. The identification of change goals which promote the marginalised/disadvantaged, such that the organization's outputs are better geared post-change to address the needs of marginalised/disadvantaged people, are also a measure.

Exception – ability to hear and act on suppressed viewpoints/concerns

Exception is evidenced by non-paternalistic, concerned attitude of the core team and other management structures and individuals, who would then take pains to ascertain the merit of public/stakeholder concerns, even to the extent of commissioning enquiries and expert independent opinions.

Emotion – doing what feels right

Measures of performance in this category are not straight forward to identify and will most likely be revealed through rich case data only.

6.4. CONCLUSION

This chapter has completed the investigation of research objective 1.4.2 b), which deals with the identification of suitable methodological and analytical frameworks. This is undertaken through research activity 1.5.2 b), which builds on the social systems approaches critiqued and adopted in Chapter 5 in the identification of systems tools for research and analysis of processes of reform of fiscal cadastral systems.

The case study methodology is shown to be ideally suited to observation and analysis of the single case study of the GV2000 Project. Specific aspects in the design of the case study have been identified in order to ensure research rigour and generalizability of the findings (naturalistic generalization). Change management tools such as those geared to appreciate context, prepare for change, manage change, and assess change outcomes provide a framework for assessing these aspects of the case study. Although the change management approach of Kotter (1996) is geared at strategic management of change initiatives, it has been compared with processes advocated by Mingers and Zhu and found to be more inclusive and also easier to understand and apply. A systems framework for performance measurement, which provides essential element for feedback and further change, is presented as an extension to existing change management theory.

CHAPTER 7. ANALYSIS OF FISCAL CADASTRAL SYSTEMS "BEST PRACTICE"

7.1. INTRODUCTION

Preceding chapters have identified proposed theoretical and methodological frameworks suitable for investigation across the natural and social, or hard-soft boundary, within the broad field of implementation of information systems in a context of complex change. These have been directed at application to cases of fiscal cadastral system reform, and have been primarily informed by literature. In line with the research logic proposed in section 1.3, research activity 1.5.2 c) is undertaken in this chapter. This deals with the analysis of "best practices" in fiscal cadastral system establishment and reform, which were identified in Chapter 3, using the proposed theoretical, methodological and analytical frameworks in order to ascertain their usefulness in this field of application. These frameworks will again be used to analyse the case study to be presented in Chapter 8.

It is reiterated at this stage (see section 3.1), that "best practice" is a collective term for an internationally accepted suite of desirable practices. The author does not necessarily agree with the premise that such a set of practices are "best", desirable, or practical in all contexts. However, since such an understanding dominates thinking and practice in the fiscal cadastral field (and cadastral practice in general (see 2.6.1)), it is a necessary starting point for analysis. "Best practices" are sometimes called benchmarks, or standards, but these two terms have other uses which are adopted in this research (see the glossary, and sections 2.6.1).

Chapter 7 follows a structure which has emerged from the previous chapters. It begins with analysing the underlying paradigms and worldview predominant in fiscal cadastral "best practices", as well as identifying the predominant theoretical approach to fiscal cadastres, and whether a systems approach is evident. Systems and change management tools identified as useful in Chapters 5 and 6 are then used to analyse "best practices". These

include appreciation of context, staged processes of change management, and measures of performance. The SSM Two Streams Model is used to interpret aspects of the cultural stream and the logic based stream of analysis evident in "best practices". Other methodologies, methods and tools identified in Chapters 5 and 6 as appropriate for observation and analysis of the case study of the GV2000 Project, are not applicable to a "best practice" model such as is presented in Chapter 3 and critiqued here, and as such are not used at this stage.

The reader is reminded that the analysis contained in this chapter refers to "best practices" in fiscal cadastral establishment and processes of property valuation and taxation. These were identified and reported in Chapter 3. These are not repeated here, but are cross-referenced.

7.2. ANALYSIS OF UNDERLYING THEORETICAL APPROACHES IN "BEST PRACTICE"

Theoretical development in the field of fiscal cadastral systems is limited and is based largely on agent/consultancy-based reflection of a handful of property valuation and taxation consultants and academics. Although these reflections are very valuable and have been drawn on extensively in this research, scientific processes of theory development and testing are not evident in the literature, and approaches to research are not explicitly formulated. Similarities with the operations research fraternity can be drawn - debate by that forum regarding the benefit of and relationship between practitioners and academics is reflected in the Journal of the Operational Research Society.

7.2.1. Suitability of critical realism as an underlying paradigm for "best practices"

Critical realism is a particular philosophical understanding of the world and creation of knowledge. As such, it is not expected to form part of any "best practice" framework such as that of fiscal cadastres and property valuation and taxation processes as presented in Chapter 3. However, evidence of the suitability of critical realism as an underlying

approach may be explored. Modelling in particular is key to such "best practices" and also forms part of a critical realist understanding of reality and conceptualization thereof (see Figure 4.3.

Models, reality, and critical realism

Modelling is an essential part of all CAMA implementation. Models are an expression of how an observer (or group of observers) perceives and conceptualizes real world objects and their relationships. Models may be physical, mathematical, or conceptual. They are usually tested in order to support or negate the view of reality that they represent, and after adoption are often used to predict events. The predictive ability of a model is highly contentious (Mingers, 2006), and relies on the underlying premise of predictive causality – this relies on a positivist paradigm in which all perceived events are attributable to real actions, and assumes that our perception of the effects of these events is value-free, and entirely objective. Critical realism maintains that this is not fully possible, and that all perceptions and measurements made by us human beings are subjected to our processes of ascribing meaning, and that they are interpreted in a manner which can never be fully objective (see 4.3). The following discussion seeks to explore the modelling of market value in CAMA from a critical realist perspective.

CAMA modelling assumes that market value (see 3.7.2) can be objectively predicted (not into the future, but for a base date in the past). It assumes that valuers have access to data which is objective and representative of the real world influences on value, at least to the extent that resulting property values can be accurately estimated. The researcher contends that this is not true, and it is apparent that a sub-set of all possible property characteristics can never perfectly model real property values due to the influence of property characteristics which are excluded (as explained in 4.3.3 and below under the subheading "*Market value*"), the limitations of the model itself (e.g. simplicity), and also due to the subjectivity of decision making by the buyer and the seller, which defies modelling.

Representativeness is perhaps the most philosophically interesting of a number of preconditions for MRA (using in CAMA), in that it refers to the closeness of the model design to the real situation. This is revealed through model testing which is generally performed by experienced valuers (noting that this acknowledges that the process has an element of subjectivity), through site visits, and simple comparisons to actual sales of similar properties. Representivity can never, in accordance with critical realism, be perfect as it is always a function of the structural coupling of the observer (or group of observers) and the real world. This understanding of the nature of real world relationships as they pertain to property valuation is improved by a process called stepwise regression, as well as by correlation analysis. These mathematical and statistical processes are well covered in Musekiwa (2004) and Eckert *et al* (1990).

However, a good set of data may be able to model property value sufficiently well for property taxation purposes, and hence standard statistical measures of performance of the model are used. Property tax is insensitive to property value – only relatively large changes in property value will translate into significant changes in property taxation. Change in property value of 10% per annum of determined market value for a property valued at US$500 000 yields a property tax change of only US$42 per month if a property tax rate of 1% is used. With such a property tax rate, a US$10 000 "error" in market value determination relates to a US$100 error in annual taxation, or a property tax difference of US$8 per month. Determination of market value need not take into account minor variations in property value, and it is inexpedient to attempt to do so for the purposes of determining property taxes.

Market value and modelling

Market value is a notional value for a property, and is considered to be an unbiased estimate of its real objective worth at a certain date (see 3.7.2). This notional value may well differ from the actual sale price of a property sold on the base date due to non-normative factors such as human bias etc. The modelling of CAMA smoothes out biases more effectively as the number of sales prices used in the modelling process increases.

These appear as outliers and their influence on the model is thus reduced as the volume of good data increases.

When considering the various types of property value from a critical realist perspective, it is possible to construct a conceptual model of the interrelationship between these, property characteristics, and the CAMA modelling process. This is best conveyed by means of an illustration, which appears below (Figure 7.1). This should be interpreted only after reading Chapter 4 and interpreting Figure 4.3.

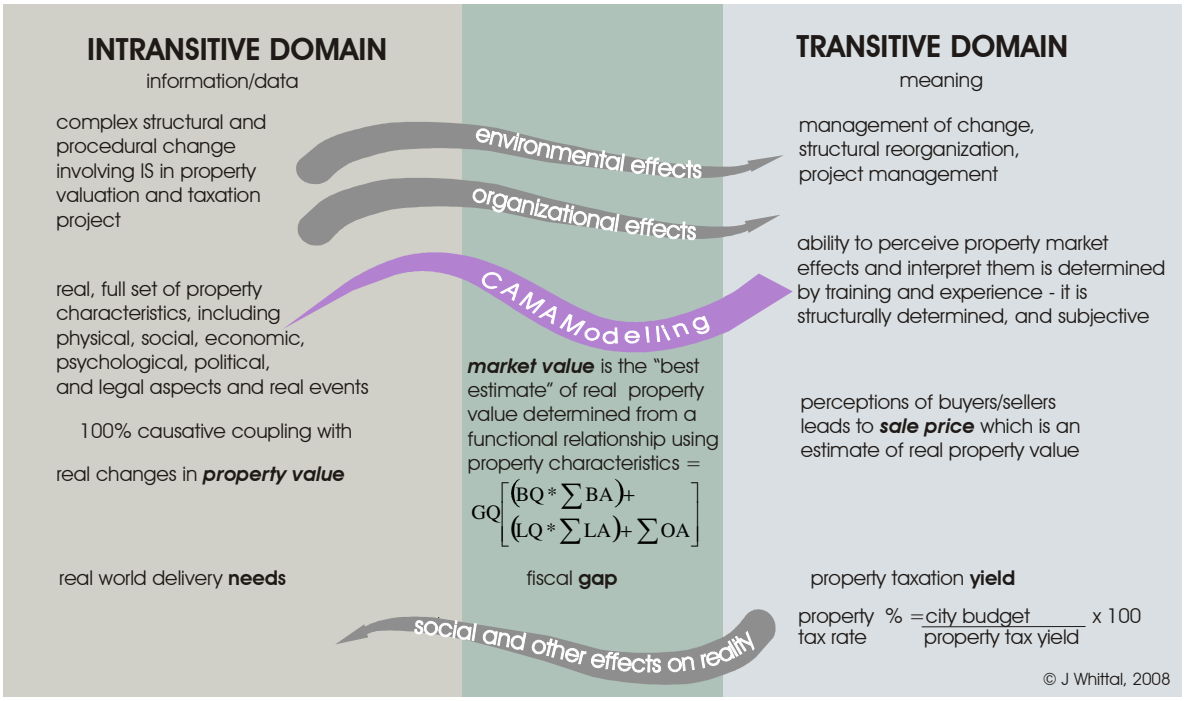


Figure 7.1 A critical realist conceptual model for the relationship between types of property value and between City income needs and property tax yield

It appears that critical realism offers the researcher the opportunity to understand the processes of modelling within the context of the transitive and intransitive domains of the critical realist framework for understanding our world and knowledge creation. Alternative approaches of pure positivism or pure interpretivism restrain the researcher to either the transitive or the intransitive domains, and would thus fail to accommodate the element of

modelling, which falls between these domains and seeks (a predominantly positivist) mechanism to link these – the model.

7.2.2. Modelling worldviews in "best practice

In my observation, the ontology of the proponents of "best practice" in fiscal cadastral systems is predominantly positivist (see 3.3.1). This is expected with a field of practice which has emerged from the cadastral, valuation and economics disciplines, which are historically highly reliant on quantitative data and mathematical/statistical interpretation. These communities rely on the independence of the observer and every effort is made to control variables and enhance objectivity over subjectivity (see 3.8.2). Reasoning behind actions and processes needs to be sufficiently logical so as to stand up to challenge in courts of law (see 3.7.2).

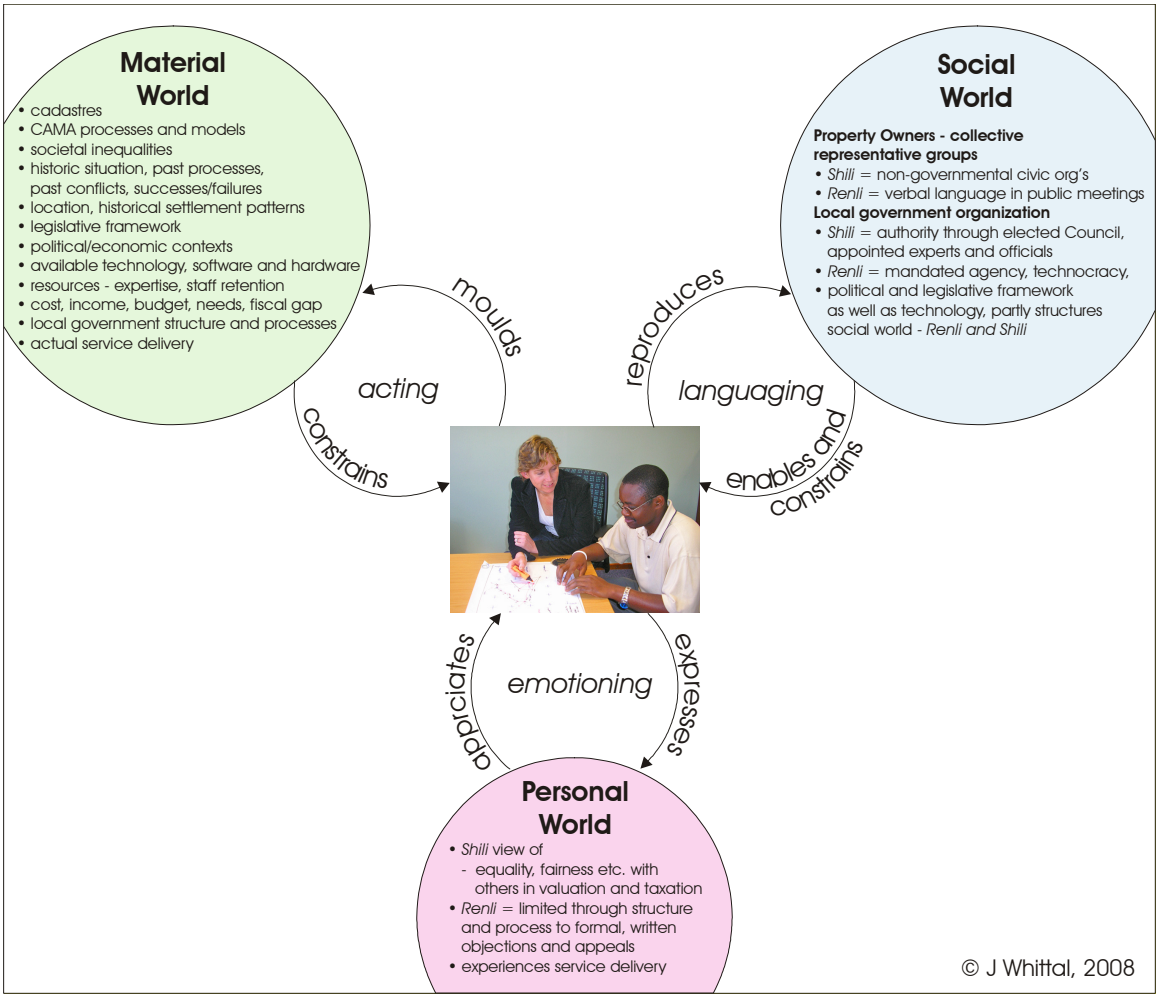


Figure 7.2 Perspectives of "best practice" in fiscal cadastral systems using the Three Worlds Model with integrated WSR elements.

Upon reflection of "best practices" presented in Chapter 3 the trinitarian world view model of Mingers and Zhu (see sections 5.2) is used to illustrate perspectives of "best practices" in Figure 7.2. This model reflects a bias towards the material and technical aspects predominant in so-called "best practice" and most of the social and personal aspects are likely to be present, but those "worlds" are not actively engaged. The natural is elevated in importance over the social, which is poorly/marginally accommodated.

It is noted that only the worldview of the leaders of property valuation and taxation processes can be ascertained from the literature, and that the worldview of role players in general cannot be accessed in relation to "best practices".

7.2.3. IS approaches and "best practices"

Theory and practice in the field of fiscal cadastres and property valuation and taxation reflects largely mechanistic processes (follows a machine process model – input, then process, then output). Evidence of technologically deterministic (possibly soft-technological determinism) and instrumentalism is found (section 3.3.1, and from reflection of Chapter 3 content in general), even in the face of a great deal of evidence of the failure of such approaches to information systems practice in the developing world (see 2.5.2). In some instances this risk is exacerbated with the primary IS tool of CAMA being perceived to be an end in itself and elevated to the status of a self-serving goal (in line with the goal of using world class technology – see section 3.5, and as observed and reported in Chapter 8).

The moral neutrality of CAMA and other aspects of IS in "best practice" (see 4.2.1) requires critical review in the light of the impact of property valuation decisions on society. Economic, political, and social incidence of property valuation and taxation decisions, even at the policy level, remain focused on short term economic benefits, with scant regard to longer term consequences and issues of sustainability. From a viable systems perspective (see section 5.3.1), this can be interpreted partly as a response to the imperative of political acceptability – local government political leadership ceases to be viable if its decisions are not, in the short term, politically favourable. As such, bureaucratic organizational elements such as property valuation and taxation departments are required to deliver services which are not only politically acceptable, but politically favourable (Heffron, 1989).

7.2.4. A systems approach in "best practices"?

Eckert *et al* (1990) introduce systems thinking as an alternative approach to what they term the classical and neo-classical approaches to management in the context of fiscal cadastral implementation and operation. Systems thinking is not used to model the fiscal cadastral

systems itself, but restricted to use as a management approach. Although Bahl and Linn (1992) advocate a systems approach (sections 2.3.5, 3.3.2), the conversion of a general notion of holistic thinking into a practical and testable systems framework has, to my knowledge, not yet been performed.

Hard systems thinking predominates in "best practices" in fiscal cadastral systems (see 3.3.1). Goal-oriented approaches to change and measurement of performance predominate and are underscored by a functionalist paradigm (see 3.4, 3.5, 3.8). Social and personal aspects are included in planning only to the extent that they pose risks to attainment of project goals, while conflicting interests, beliefs, goals and values of role-players are not overtly accommodated or managed (see 3.5.1). The role of politics is understood within the system as a driver of change (see 3.4), but also as part of the historical context and the current real world problem situation, and again features in the conceptual socio-political subsystem (all modelled in Figure 7.5). However, politics and power are not dynamically integrated into "best practice" processes. In line with an experimental approach, an attempt is made to control or model variables (risk factors) (see 3.6). The dominance of benchmarking and standards (section 3.8) in the industry points to an understanding of implementation and change processes as causative – actions are expected to lead to predictive results. This assumption becomes less valid as complexity increases (see 2.4.2). The application of these benchmarks and standards, which are generally developed in the West under First world conditions, to projects in other contexts (e.g. Third world, other cultures) has not been rigorously tested (see 2.5.2). In addition, these benchmarks and standards concentrate on quantitative data and analysis and are very narrow in focus (see 3.8).

So, as yet, the conceptualisation of "best practices" from an overtly systems perspective remains an enigma and will be further developed (see 7.3.6) as part of this research work in line with identifying an analytical framework to describe and analyse fiscal cadastral systems reform (research objective 1.4.2 b).

7.3. ANALYSIS "BEST PRACTICES" USING THE IDENTIFIED METHODOLOGIES, METHODS AND TOOLS

7.3.1. Application of the methodological framework to "best practices"

A suite of systems methodologies has been identified in section 5.5 for application in the investigation of a real case of fiscal cadastral systems reform. These are augmented by the forces, risk, goal, and performance measurement frameworks in section 6.3. Modelling using VSM is included in this suite, but is not appropriate in the context of analysing "best practices" as it focuses on organisations, and the generic framework does not contain such information. It is thus excluded in this desktop study. All other aspects of the proposed theoretical and methodological frameworks are applied below in order to identify aspects of the "best practice" which require extension, and minimally, to provide preliminary information on their usefulness prior to their application to the case study of the GV2000 Project in Chapter 9.

7.3.2. The systems framework for drivers of reform

Increasing outputs from property taxation is the main driving force behind reform of fiscal cadastral systems (reflecting aspects of both efficiency and effectiveness – see 6.3.7). This in turn is driven by increasing service and delivery needs in the client society, which are exacerbated by a development context with rapid urbanization and a changing property market (see 3.4). These changes in the structural coupling between the population (3.4.1), property ownership (3.4.2), and the fiscal cadastral system, are understood in most circumstances to drive reform of the system. A lesser driver of reform is recognised to be technological advances (3.4.3), which can become the main goal of reform, but generally serve an instrumental role as support for the primary driver of increasing efficiency and effectiveness of property valuation and hence property tax. As is evident from the above discussion, socio-political and economic factors can play a significant role in driving change. However, "best practice" processes in the fiscal cadastral domain are found to be weak at including these factors in project design and implementation (see 3.7.3).

7.3.3. Analysis of goals and risks in "best practice"

There is no specific evidence of frameworks to assess and manage goals and risks in "best practices" in fiscal cadastral systems establishment and reform. Bahl and Linn (1992) refer to many aspects of the problem situation/context which require consideration, but a framework to guide such an analysis is absent from the literature identified in this research.

7.3.4. Principles and key elements of reform in "best practice"

Both the principles which underscore "best practice" reform in fiscal cadastral systems, as well as the key elements required to effect reform, acknowledge the socio-political aspects as imperative (see 3.6). However, despite their recognition in literature on the subject, these have not been included in benchmarks and standards of "best practice". Rather, they are framed as anecdotal warnings based on particular case experiences, and are not readily accessible to practitioners.

7.3.5. Project design and staged processes of reform in "best practice"

There are various stages identified in so called "best practices" in property valuation and taxation (see 3.7), but these are seldom related to theoretical models. A simple linear, causative, process model of information systems implementation appears to be followed, rather than an integrated, holistic, and model designed for long-term sustainability such as that identified in Chapter 6. These three stages of discovery and identification of parcels, classification and valuation, and determination and collection of property taxes, are illustrated in Figure 7.4. Three main process types are identified and split. These are the data manipulation process, the information exchange process, and the decision making process. These processes each form critical paths in the "best practice" model (see 3.7), and are entirely dependent on the other process streams.

Figure 7.3 reflects the processes of Dale and McLaughlin (1988, 1999), Ward (2001a), Dillinger (1991), Bahl and Linn (1992), and Eckert *et al* (1990) (see Section 3.7). A fourth stage of performance measurement is noted to be absent, and is only reflected in the

decision process stream. The categorisation into data manipulation, information exchange, and decision process streams is the author's.

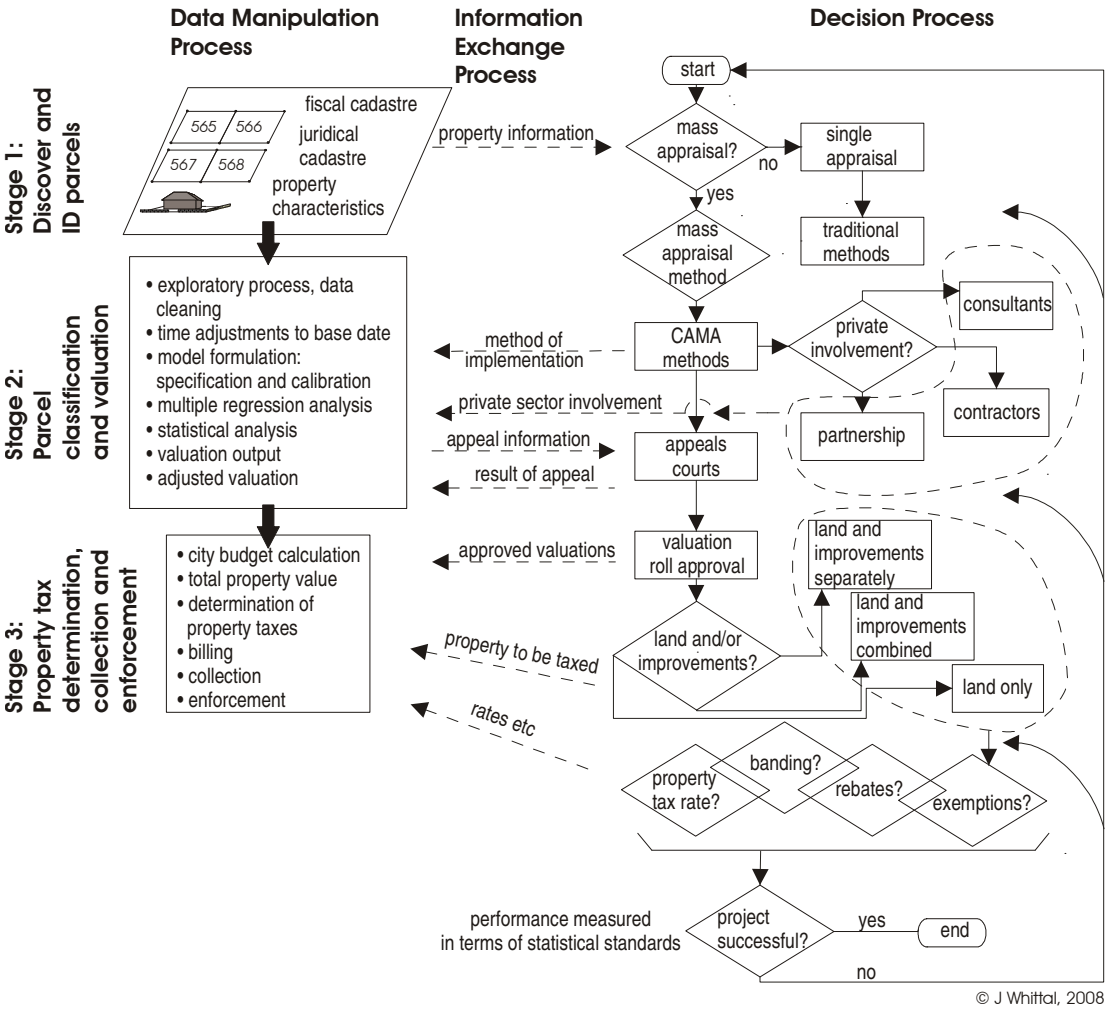


Figure 7.3 Staged processes of "best practice"

Comparison of "best practices" against staged processes for change management

The initial stage of identifying the urgency for change (as per Kotter, section 6.3.6) is not built into the best practice model. There does not appear to even be a recommendation to undertake a gap analysis (see 2.4.6). It is simply understood that "best practice" is not underway and that changes should be made to that effect. There is no attempt to analyse the

current environment, apart from some references in literature to the legislative framework, and references for the need for political support etc.

Creating the guiding coalition (Stage 2, 6.3.6) is similarly not incorporated, while the change vision (Stage 3, 6.3.6) is predetermined as the "best practice" fiscal cadastral system (as in Chapter 3), and is not modified to meet the specific context of application. The strategy is similar to an IT lifecycle process model – it does include the order of change events, budget approval etc. Communication of the vision (Stage 4, 6.3.6) is not included, while training for the technical aspects of valuation is included as well as the possible need to change legislation (Stage 5, 6.3.6). This is in line with the material/technical focus of the "best practice" model. It is acknowledged that changes in human resources management may be required to retain key staff. Positive feedback (Stage 6, 6.3.6) and consolidating gains (Stage 7, 6.3.6) as well as anchoring new approaches in the culture (Stage 8, 6.3.6) are not included in "best practices" as reflected in Chapter 3. These aspects relate to the personal and social factors, and are outside of the dominant technical/material world view of the architects of fiscal cadastral systems and their reform (see 7.2.1, 7.2.3).

7.3.6. Analysis using Soft Systems Methodology (SSM)

A number of SSM tools are not appropriate for analysis of the "best practices" as explored in Chapter 3. This is primarily due to the purpose of SSM which is primarily as an instrument for intervention. The tools of activity modelling as well as CATWOE and PQR analyses (Checkland, 1999) are therefore not deemed appropriate. Further information on these tools can be found in section 9.2.9. This analysis uses only the rich picture and the Two Streams Model, which do contribute to an understanding of "best practice" from a systems perspective.

Rich picture

The rich picture (an SSM tool) of Checkland (1999) is used below (Figure 7.4) as a first step to illustrate the main components of the property and its owners/occupants, the juridical cadastre, the fiscal cadastre, property valuation and taxation, communication

processes, dispute resolution processes, and collective owner representative bodies. This rich picture has been created by the author using a white board tool which allows creativity and lateral thinking in the process (as opposed to other techniques, particularly computerized graphic tools, which may lead to a skewed picture due to unfamiliarity).

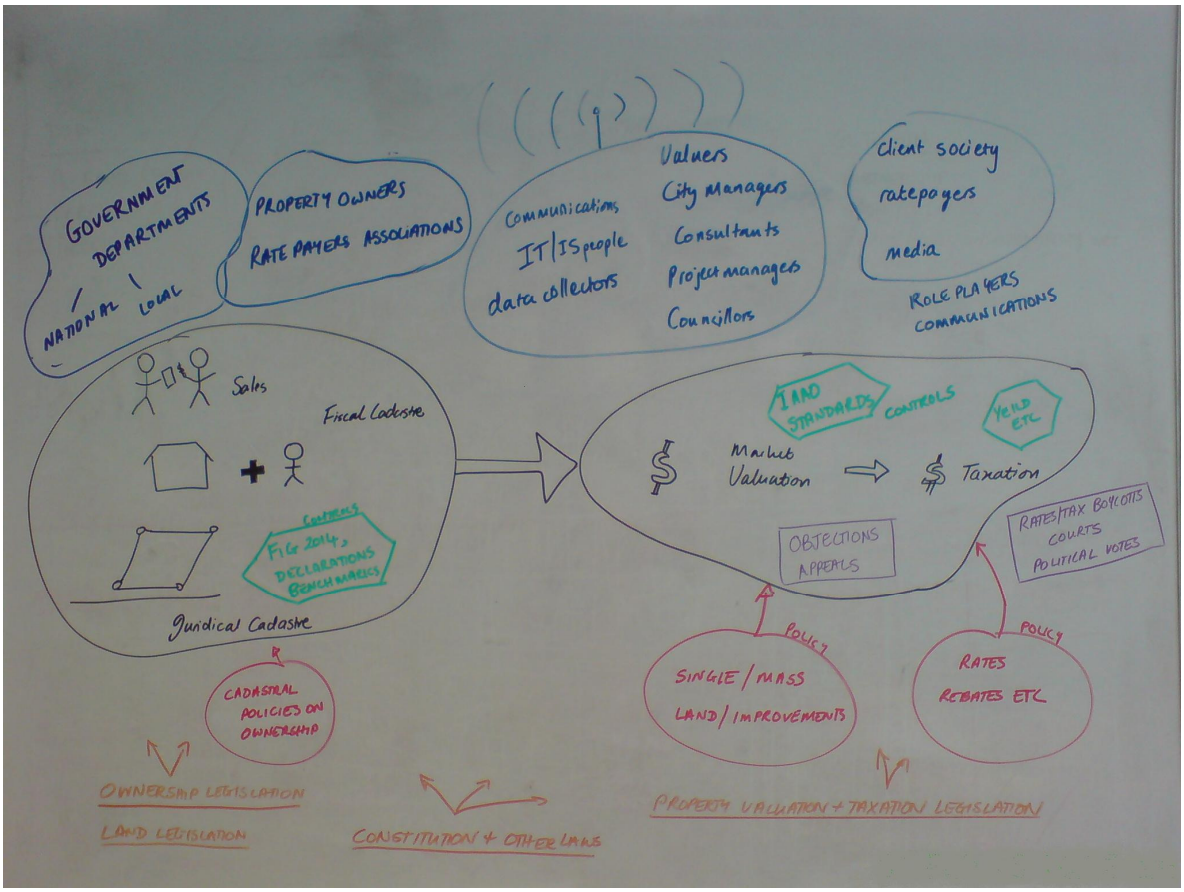


Figure 7.4 A rich picture of elements and processes

Two Streams Model of SSM

The generic Two Streams Model of Checkland (1999) provides a conceptual picture of the historical situation, socio-political and cultural influences (cultural stream) and is adapted by the author to visualize "best practice" in fiscal cadastral systems reform as a set of conceptual systems. The model is also used here to reflect the "footprint" of "best practices" on this Two Streams SSM framework and is illustrated by the graduated colour in the elements of Figure 7.5. Solid green indicates that the illustrated aspect is well

covered within what is understood to be "best practice". Graduated green indicates an aspect which is covered, but not fully. Graduated red indicates an aspect which is only touched on, within accepted "best practices", but is not dealt with thoroughly. An example is the legal model: a statement such as that the relevant legislation needs to be in place, indicates that this must be considered, but does not treat this in a holistic or systemic manner – rather, it is an aside to the technical aspects, and is hence the legal model is represented in graduated pale green.

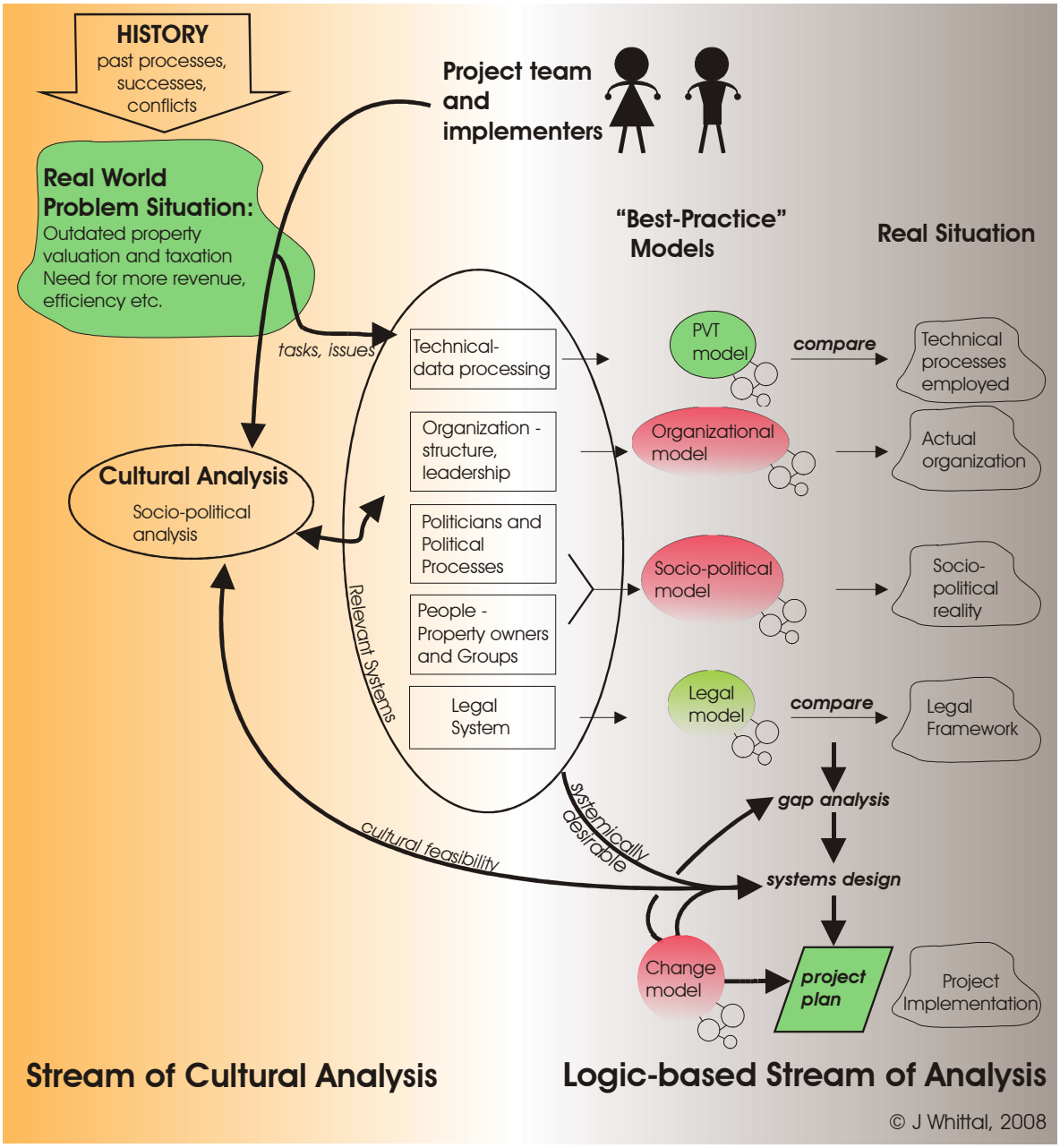


Figure 7.5 SSM Two Streams Model illustrating conceptual systems of fiscal cadastral system "best practices" (PVT = property valuation and taxation) (adapted from the generic model of Checkland, 1999).

It was shown in Figure 7.1 that the material/technical considerations in the "best practice" model outweigh all other aspects. These are the predominant aspects used in "best practice" gap analysis as reflected in Figure 7.5, and form the main input to the project plan.

Although holism is espoused, it is clearly not translated into practice. This is of critical importance given the failure of IS in the African bureaucratic context (see 2.5.2), largely due to socio-political and cultural aspects, and not only material and technical aspects. There are no structured processes of feedback and repetition of phases represented in the SSM model, nor in "best practices".

The usefulness of the systems framework for analysis illustrated in Figure 7.5 appears to have merit. Each relevant system can be thus identified and investigated as part of the indivisible whole.

7.3.7. Performance measurement in "best practice" against the 7E's framework

Performance measurement is intrinsic to Stage 2 in the benchmarks and standards approach to "best practice" (see 3.7). It is, however, limited to statistical processes of measuring performance of CAMA models. A separate project-wide analysis of performance is missing from the "best practice" model. The consequence of this gap is that no data is provided for feedback and review/reworking processes.

The analysis of measures of performance according to the social systems 7E's framework in section 3.8. shows the dominance of quantitative measures of performance of efficiency, effectiveness, and emancipation. These are mainly assessed in the standard ratio studies for valuation in Stage 2, as well as in assessment of the property tax revenue (Stage 3).

Elegance (acceptability to stakeholders) focuses on the explainability of the Stage 2 processes of valuation. This is extended to transparency of the processes of objection, also in Stage 2, and taxation in Stage 3. Legitimacy, political acceptability, and trustworthiness are also classified as measures of acceptability to stakeholders, and are cross-cutting. However, there is no clear framework for performance measurement which assesses these, and they are generally left in the realm of goals. The number of objections to the valuation process and appeals against the decisions of the Valuations Boards is one indicator of

acceptability, but is likely to be highly conservative as many other factors such as education and poverty will play a role in the lodging of a formal objection.

Empowerment (contribution of stakeholders to decision-making and action) is poorly accommodated in the "best practices" of fiscal cadastral reform. Again, measures to gauge mechanisms such as public participation have not been explored.

Exception and emotion are poorly measured in terms of assessing performance of fiscal cadastral systems and their reform in "best practice". These aspects are part of the personal and social domains in the Three Worlds Model (Figure 7.2), which is not well integrated in current "best practices".

The 7E's framework for performance measurement is shown above to be useful in the analysis of whether "best practices" are sufficiently holistic in their approach to measuring performance. Aspects of performance which relate to the personal and social aspects appear poorly accommodated, with a preference for quantitative measures relating to material/technical aspects of the system.

7.4. CONCLUSION

This chapter has completed investigation in line with research activity 1.5.2 c) which specifies that fiscal cadastral establishment and property valuation and taxation processes purported to be "best practice" by leading researchers and practitioners be critiqued from a critical realist and systems perspective. This chapter relies on the understanding of such "best practices" derived from literature and contained in Chapter 3.

Analysis of international "best practices" in fiscal cadastral systems reveals a number of substantial gaps in that framework's ability to accommodate social and personal aspects of the system. These gaps are evident when using social systems tools of analysis such as the Three Worlds model of perspectives (section 7.2.1), the social systems "7E's" model for

performance assessment (section 7.3.7), and the SSM Two Streams Model (section 7.3.6). The world view in this sector is dominated by a material focus and approaches to change are instrumentalist and accommodationist. Establishment and reform of fiscal cadastral systems is not approached from a systems perspective, although a holistic approach and consideration of socio-political elements are advocated by a few. These approaches are not accessible to mainstream practitioners as they are not built into benchmarks and standards in common use. There are many aspects of "best practice" which are underdeveloped and will be inductively extended through the case study in Chapter 8 and subsequent analysis thereof in Chapter 9. Such areas as appreciating the context of change, management from a systems perspective, and performance measurement and feedback processes are underdeveloped in this field and will be inductively extended.

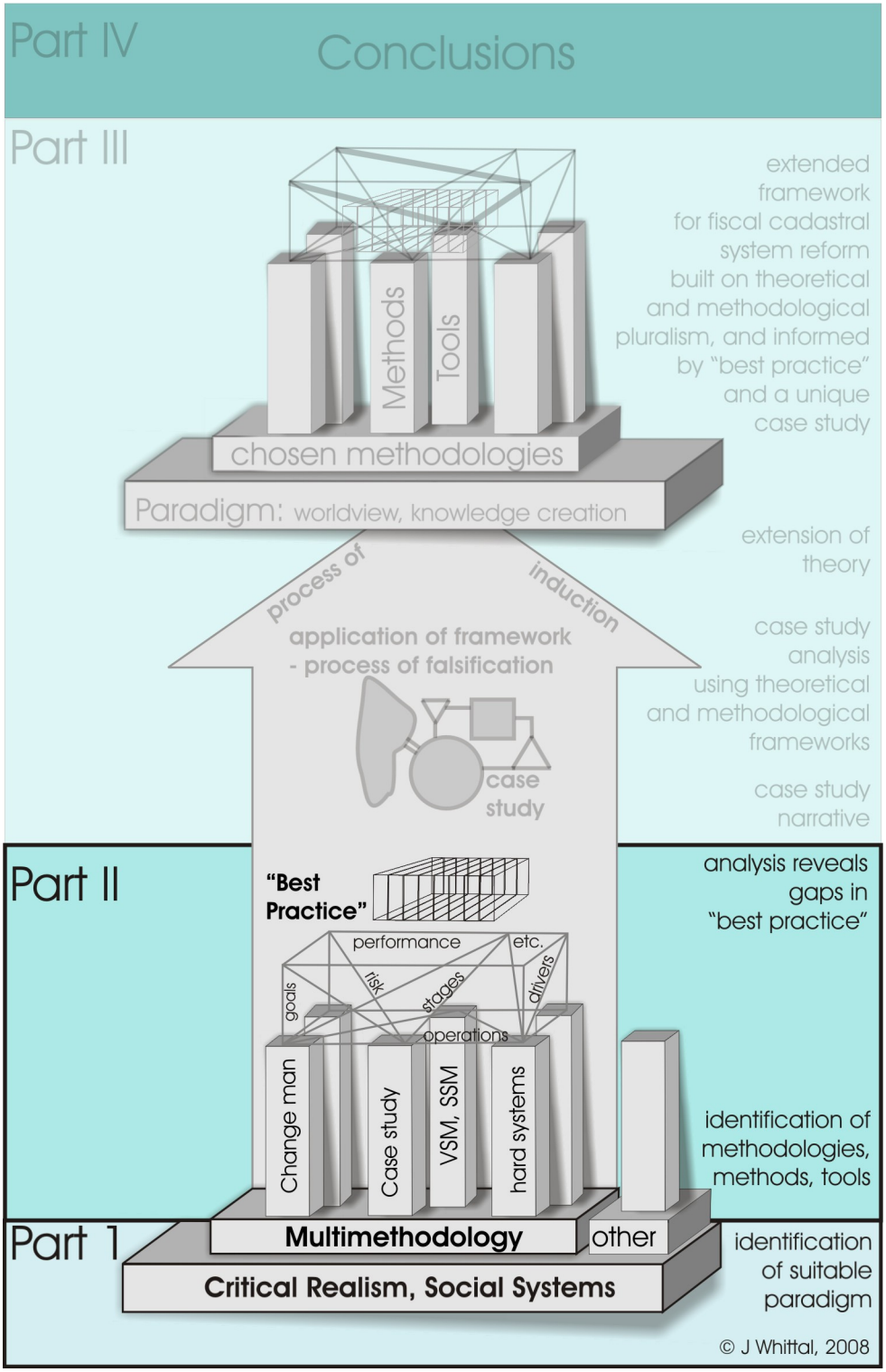


Figure 7.6 Progression of research logic – Part II

Part III: The Case Study

Part III uses the underlying theoretical framework of critical realism identified in Part I, along with the multimethodological framework of Part II, to analyze the case study of the General Valuation 2000 Project of the City of Cape Town. This project demonstrates the use of computer technology in the form of Computer Assisted Mass Appraisal (CAMA) to effect fiscal cadastral system reform in the midst of complexity at many levels. A rich description of the case study is provided in Chapter 8. This focuses not on the technical matters of actual valuation using CAMA, but rather on the structures and processes of change management. This case study is then subject to critique in Chapter 9 using the proposed theoretical and methodological frameworks which are inductively extended based on case study evidence. This fulfills the primary research objective in the development of a systems framework to guide the process of reform of a fiscal cadastral system. Part III leads on to the formulation of research conclusions in Part IV.

CHAPTER 8. THE CASE STUDY OF THE GENERAL VALUATION PROJECT 2000 OF THE CITY OF CAPE TOWN

8.1. INTRODUCTION

This chapter provides a rich description of the single case of the General Valuation Project 2000 (GV2000) of the City of Cape Town (hereafter referred to as the "City"). The case study is presented in the form of a historical narrative. The aim of the narrative is to provide a synthesis of the data as unsullied by personal interpretation as possible, in order that, in line with principles of naturalistic generalization, other researchers may interpret the data for application within their own specific contexts (see 6.2.4, Figure 6.1). However, subjective processes in data collection and presentation are acknowledged as an inevitable part of the case study approach, no matter how well the researcher attempts an unbiased observation and account of events (see sections 1.7-1.9, 6.2.1-6.2.4). This chapter fulfils part of research activity 1.5.2 d) in the presentation of the case study.

8.2. CASE STUDY DESIGN

This case study is designed as a single case study as envisaged in section 6.2. Validity, bias and generalization (naturalistic and temporal) are argued in sections 6.2.2-6.2.4. Data sources are motivated in section 6.2.5 and listed in Appendix A, while the basis of case study analysis is argued in section 6.2.6 and executed in Chapter 9. The case study observation began in 2000, at the outset of the GV2000 Project. It continued until 2007, once all objections to the GV2000 Project had been processed and a new general valuation (GV2006) had been implemented. Most of the data collection took place in 2001 and 2002. The extension of the period of observation beyond the formal closure of the GV2000 Project and overlapping with the next cycle of valuation allowed for retrospective observation, strengthening the generalizability of the findings.

8.3. THE CASE OF THE GENERAL VALUATION PROJECT 2000 – AN INTRODUCTION

When the apartheid system in South Africa officially ended in April 1994 with the first fully inclusive elections, local government transformation followed. A primary component was the redefining of local government boundaries along non-racial lines. Consequently, property tax bases were redefined, which created some major challenges as many different authorities had minor differences in their valuation systems. In the City of Cape Town, which was created by amalgamating a total of 18 different administrations into a single metropolitan municipality, there was an urgent need to reform and integrate the property valuation and taxation systems into a single system. In a transforming society such as in South Africa, efficient taxation is critical as cities are burdened with supplying conventional municipal services as well as implementing social transformation policies.

The previous apartheid structures and concomitant social engineering created a number of problems that influence current taxation policies in South African cities (Bell and Bowman, 2002, White Paper, 1998):

- skewed settlement patterns;
- concentrations of wealth and poverty of residential areas;
- commercial and industrial areas concentrated in former White Local Authorities (WLA's);
- concentrations of areas of poor infrastructure and public services.

The City's General Valuation Project 2000 (GV2000) was a bold and multifaceted project to effect reform of the fiscal cadastre and processes of property valuation and taxation. As a key aspect of this project, CAMA techniques (see Glossary) were used for the first time in South Africa to conduct the appraisal of more than 540 000 residential properties within a short time frame. The implementation processes are particularly instructive in the application of technology in cadastral reform processes within the context of City-wide complex transformation initiatives.

8.4. POLITICAL BACKDROP

South African politics was dominated by the racial segregation policies, termed apartheid, from 1948 until the early 1980's. During the 1980's, the National Party (NP), the government of the day, retreated from hard-line apartheid policies. Political and economic reform was acknowledged to be an imperative to stability and growth. This resulted in the tricameral Constitution of 1983 which reflected this shift in NP thinking (Republic of South Africa Constitution Act No. 110 of 1983).

Local government structures prior to 1994 were non-uniform, highly fragmented, and reflected the special segregation policies of apartheid. Local government control had been removed from the four Provinces to the national government's newly created tri-cameral parliament consisting of White, Coloured and Indian houses. This framework endorsed the formation of local government structures along ethnic lines (Cameron, 1993). In the Cape Town area there were three racial classifications (effected in accordance with the Population Registration Act, No 30 of 1950) linked to local authority creation: white, coloured and black (see Glossary). Coloured areas were administered in conjunction with the WLA's, but these administrations were white controlled as non-white people were largely disenfranchised.

Black Local Authorities (BLA's) were created by the Black Local Authorities Act (No. 102 of 1982) and replaced the Community Councils of 1977. The former black residential areas of Nyanga, Langa, Gugelethu, Khayelitsha, Mufeni, Llwandle, and Crossroads in the Cape Town area fell mainly under the Ikapa and Lingelethu West BLA's. Although being within the boundaries of a BLA, many informal settlements were not included in any local government structure. As the BLA's were created by the apartheid government structure, they were seen as politically illegitimate. They were poorly resourced by national government and huge rental and rates hikes were required for their financial independence. Violent protests resulted, and civic organizations were involved in coordinated rent, service

and rates boycotts (Cameron, 1993). BLA's largely ceased to function, being incapacitated by a shortage of funds and poor administration.

Historically, most businesses (commercial and industrial) were established in the former WLA's (Cameron, 1993) due to apartheid restrictions on non-white business. This resulted in a skewing of the tax base in favour of the WLA's, as businesses were taxed more heavily than residential properties.

A pro-poor redistribution and development policy and an attempt to address the issues facing the BLA's drove the creation of Regional Services Councils (RSC's) through the passing of the Regional Services Act No 109 of 1985. It reflected the necessity to provide bulk services to the entire metropolitan area, to provide additional finance for local authorities, and to facilitate multi-racial urban planning. This was a landmark piece of legislation in its application across racial boundaries. However, it was reliant on apartheid government structures, and was rejected as illegitimate by liberal councils, and leftist revolutionary political groups (Cameron, 1993).

In the Cape, the RSC's took over the mandates of the former Cape Divisional Councils. The RSC's obtained their income from business turnover, and levies on salaries and wages of employees within their areas. The RSC's tax base failed to generate sufficient income to provide bulk services and development in impoverished areas (Cameron, 1993).

In 1990, political parties such as the Pan-African Congress (PAC) and the African National Congress (ANC) were unbanned. The Group Areas Act No. 41 of 1950 which specified special segregation according to race, and other primary legislation underpinning apartheid were scrapped, and negotiations towards democratic reform were underway. These negotiations led eventually to the first democratic national elections in 1994 in which the former liberation movement, the ANC, took control of national government from the NP, ending the reign of apartheid.

In the political reform of the nation of South Africa since the end of apartheid in 1994, a number of theoretical approaches have influenced government, and hence local government reform. The ANC as a liberation movement was in favour of abolition of apartheid local government structures and recreating them from scratch (Reddy, 1995). This strategy was abandoned when the ANC came into power in 1994 as it realized that the delivery of local services was essential to its national policies and that there needed to be some continuity in service provision.

It turned its attention to deracialising and democratising local government structures. The Reconstruction and Development Programme (RDP) policy document stated that about 800 local authorities needed to be transformed into about 300 new local authorities. Initially driven by the RDP, changes were informed by leftist, people-centred, "struggle" approaches to reform within the context of democratisation of government. Of relevance to local government was the emphasis of reform on delivery of services and welfare at the local level.

This approach underwent a sharp shift in policy between 1994 and 1996 (Coetzee *et al*, 2001) coincident with the reabsorption of South Africa into the international community and the effects of increasing globalisation. There was a shift away from the people-centred approach to transformation (although this is still very much part of the service delivery framework and has been entrenched in legislation). The shift was towards what is arguably known in South Africa as a neo-liberal approach (some might call it neo-conservative). This is endorsed by the United Nations, the World Bank and the IMF (the "Washington consensus") (Bond, 2001). It is understood broadly to embrace free market principles and favours capitalism – government intervention in the economy is minimized, privatisation is undertaken, the national budget is balanced, and interest rates are kept low.

This period is characterised by the Growth, Employment and Redistribution (GEAR) government policy which has been further influenced by the parallel New Partnership for Africa's Development (NEPAD) principles of accountability, morality and disinterest

inherent in good governance through the NEPAD African Peer Review Mechanism. The goals of "reinventing government" (see 2.5.2) are also part of the NEPAD approach, particularly in use of Information and Communications Technology (ICT) as a tool to close the good governance gap between African nations and the rest of the world.

8.5. THE IMPORTANCE OF THE PROPERTY TAX IN CAPE TOWN

The fiscal cadastral system is the basis for the generation of local government revenue. An effective fiscal cadastral system is essential for the operation of democratic, independent local government and supports application of policies of local government (Ebel and Vaillancourt, 2001). The role of the fiscal cadastral system in local government transformation in post-apartheid South Africa is thus critically important.

The overarching legislation controlling property taxation is the Constitution of South Africa (Act No. 108 of 1996) with its amendments. A municipality may impose rates on property and surcharges on fees for services provided by or on behalf of the municipality, and may also charge other taxes, levies and duties as provided for by national legislation (Section 229 (1)). Also, any revenue raised by municipalities will not affect the amount of revenue allocated from the national government revenue, and conversely, if a local government structure fails to raise sufficient funding commensurate with their ability in terms of their fiscal capacity and tax base, this will also not affect the income derived from the national revenue fund (Section 227 (2)).

It is expected that local government structures should raise 90% of their own funding (Camay and Gordon, 2000). Immediately prior to the start of the GV2000 project, the percentage operating income generated by South African local governments themselves was 19% (Figure 8.1). In the 1998/99 financial year in Cape Town, property taxation accounted for 24.2% of the operating income while levies and grants yielded 8% and service charges accounted for 46.5% of the budget (the remainder is obtained from other sources). Property taxation was therefore a significant source of income for Cape Town

prior to the reform process. Residential property taxes accounted for about R0.9 million - 10% of the overall City budget. A similar contribution to the City's income is made by commercial properties (Saffer, 2002b, na, 2002b). Property taxes in 2001, the year prior to the implementation of the GV2000, yielded R2 billion of the R8.9 billion budget (Smith, 2002a).

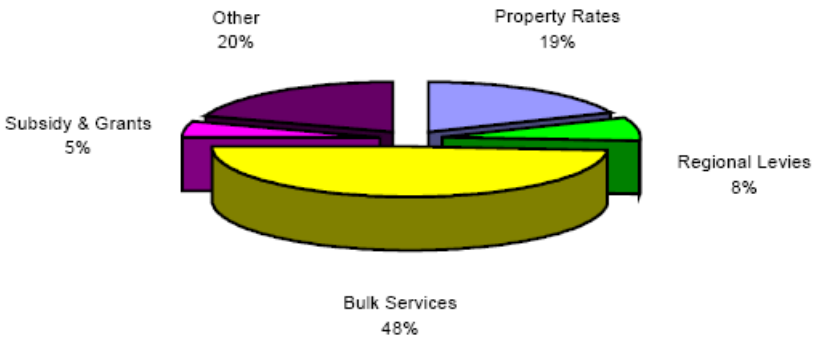


Figure 8.1 Average Local Government Operating Income in South Africa in 1999 Budget

At the time of fiscal cadastral system reform, the City was facing increasing financial needs. Reduction of the number of municipalities from 843 to 284 in December 2000 (Department of Finance, 2001, 2002) and the accompanying restructuring was a costly exercise. In addition, structural reform in the delivery of bulk services such as water and electricity, and cut-backs on staffing due to over expenditure in this sector added to the increased financial burdens of the City (Department of Finance, 2001, 2002).

Social change has lagged behind political reform in South Africa, and is exacerbated by the urbanization of poverty caused by rapid influx of the rural population to the cities, including Cape Town. Redefinition of the municipal boundaries ensured an uneasy mix of poor and wealthy residents within municipal boundaries in order to promote integration and redistribution. By 2002, the date of implementation of the reformed property and valuation system, approximately one-third of the City's residents were identified as being indigent and incapable of contributing to the City's income by virtue of systemic impediments to

training and the basic economic structure of the City (*Rates Action Group v City of Cape Town* [2004] 3 All SA 368 (C)). In light of substantial long term social transformation challenges, there was an obvious and serious need to ensure equity across the City, as well as to increase the generation of income to finance remedial initiatives.

8.6. LOCAL GOVERNMENT REFORM AND THE IMPACT ON PROPERTY VALUATION AND TAXATION AFTER 1994

Historically, the nuts and bolts of property valuation and taxation were spelt out in the Property Valuation Ordinances (PVO's) of the four pre-1994 provinces. Various property taxes were levied during colonial times dating back to 1677, but the property tax as we now know it was introduced in 1836 by the Cape Municipal Ordinance within the Colony of the Cape of Good Hope (Franszen, 1999). The Cape Valuation Ordinance 26 of 1944 was in force for most of the last century and based property tax on depreciated market value (Interview J, 2002). It was repealed only in 1993 by the Property Valuation Ordinance (PVO). The Municipal Ordinance 20 of 1974 (Cape) sections 78-96 were in force until they were replaced by the Property Valuation Ordinance in 1993 (Cape) and eventually this was superseded by the Local Government: Municipal Property Rates Act No. 6 of 2004. An early element of reform of property taxation was effected by the Rating of State Property Act No79 of 1984. This essentially changed the status of government land from non-taxable to taxable, but with some exceptions and with a general tax rebate of 20% or 10% (Bell and Bowman, 2002).

General valuations in metropolitan Cape Town have a chequered history and have not gone unchallenged in the past. The General Valuation (GV) Project (GV1990) (for implementation in 1993) failed as a result of a challenge by wealthier tax payers in the City. Differential increases in property value across the City since the last general valuation in 1979 resulted in relatively higher valuations in wealthy areas compared to middle income and low income areas (Bell and Bowman, 2002). The 1990 GV was based on the Valuation Ordinance of 1944. It used market valuations of land only, while improvements were

valued using the cost approach minus depreciation. The cost of this rejected valuation was about R19 million (Interview J, 2002). The valuation was by all accounts sound, but the objectors claimed that the site inspections were not sufficient (van Ryneveld and Parker, 2002). The matter was not taken to court as the local authority decided to revert to the old valuation roll.

The Steyn Commission of 1990 recommended that the City phase in (over 10 years) a composite rating system with a ratio of 1:10 for the tax on improvements: tax on land. This was advised in order to stimulate development and efficient land use. Because the 1990 GV was abandoned, these recommendations were not implemented (van Ryneveld and Parker, 2002).

The Local Government Negotiating Forum (LGNF) was launched on 22 March 1993 and comprised local authorities, civic organizations, and other interested parties. It was tasked with developing a local government structure which would improve equity and representivity. These negotiations led to the Local Government Transition Act No 209 of 1993 (LGTA) which was the first reform legislation to affect property taxation. In particular it addressed taxation of properties during the period of transition to new democratic local authorities, and the inclusion of areas which had not previously been included in the property tax base. It also insisted on taxation of immovable property (interpreted as land and improvements) and provided for a "common rating system" across the metropolitan area, which meant that all local authorities in the City had to employ the same policies and system of valuation and taxation. The LGTA, a national statute, took precedence over provincial Ordinances if conflicts arose (Van Ryneveld and Parker, 2002). However, restructuring of local government in accordance with the provisions of the LGTA was still to come.

The Property Valuation Ordinance (PVO 1993) was also enacted in 1993. Issues such as the period between valuations (10 years in the Cape Province), and the tax system were addressed in the PVO's. These included provisions for site (land only) tax, as well as

taxation of land and improvements, either with uniform rates (flat rating) or differential rates (composite rating). Land and improvements had to be valued separately, even if flat rating was to be employed. The LGTA's insistence on taxation of land and improvements was thus more restrictive than the provisions of the PVO 1993. Site-only taxation could be effected through setting a zero tax rate on improvements, but these would, under the LGTA, still have to be valued.

The PVO 1993 specified the registration of valuation professionals, as well as the provisions for appeal (Bell and Bowman, 2002). The Valuers Act No 23 of 1982 regulates the valuation industry and establishes the Council for Valuers which controls the registration of valuers, associate valuers and valuers in training.

In the Cape Province the property taxation rate was uniform and capped at 2%, although this could have been exceeded with provincial approval (Bell and Bowman, 2002). The Ordinances also made provision for property tax relief in the form of exemptions (property tax rate set at 0.0%), rebates (reduced rate), grants-in-aid, and deferrals (with interest). The absolute non-uniformity of property taxation in South Africa was thus supported by provincial legislation.

Public input into the PVO 1993 was restricted as it was enacted as a resolution of the City Council. There was no platform for debate on the philosophical issues underpinning property valuation and taxation (Interview J, 2002). Some interpreted the PVO as part of the move away from a consumption tax to a wealth tax based on market value of property and saw it as driven by a "liberal socialist agenda" (Interview J, 2002). However, the principle of market value as a basis for property taxation was not a new one. There was a feeling that the responsibility of poverty alleviation was shifted from national to local government through the use of the property tax as a redistributive mechanism. This was effected through the creation of the UniCity Commission (beginning in 1999) (see page 209) and through the change to a market value based system in which property is converted from a pure asset to a partly unlimited liability (Interview J, 2002).

In 1994, the first fully democratic elections were held in South Africa. The ANC took control of national government, but the local government WLA of the City of Cape Town was dominated by the chief opposition party, the Democratic Party (DP).

The interim Constitution (No. 200 of 1993, enacted on 27 April 1994) established a new inclusive provincial structure. The four independent homelands were amalgamated with the four provinces and the seven self-governing territories. Nine new provincial structures resulted, leading the way for the restructuring of boundaries at local government level in accordance with the LGTA. The policy of moving to a "uniform structure" of property valuation and taxation was included in this interim Constitution (1993), but had yet to be effected through legislative reform and practice. The interim Constitution also reserved property taxation as an income generating mechanism for local government only, excluding it as a provincial or national tool.

> "178 Administration and finance
>
> (1) A local government shall ensure that its administration is based on sound principles of public administration, good government and public accountability so as to render efficient services to the persons within its area of jurisdiction and effective administration of its affairs.
>
> (2) A local government shall, subject to such conditions as may be prescribed by law of a competent legislature after taking into consideration any recommendations of the Financial and Fiscal Commission, be competent to levy and recover such property rates, levies, fees, taxes and tariffs as may be necessary to exercise its powers and perform its functions: Provided that within each local government such rates, levies, fees, taxes and tariffs shall be based on a uniform structure for its area of jurisdiction." (Interim Constitution, Act No 200 of 1993)

The local government structures in Cape Town were illustrative of fragmented approaches to governance at the local level as a legacy of apartheid policies and early attempts at

transformation. In 1994 there were 70 racially based councils with 18 different administrations in the Cape Town area (Van Ryneveld and Parker, 2002). The Local Government Transition Act No. 209 of 1993 (LGTA), whose aim was to facilitate integration of local government structures, was amended in 1995 and reorganization of local government began in earnest.

In 1995, Bell and Bowman (2002), linked up with a group of South Africans dealing with Local Government transition issues and finances. They began a series of studies, workshops and tours in conjunction with US partners in order to investigate and strengthen the property tax in South Africa. The knowledge gained in this process influenced decision making in the early stages of the GV2000 Project. This process led to the production of the book by Bell and Bowman on South African property taxes (Bell and Bowman, 2002).

Local taxation and service delivery remained fragmented across the City and was a highly politicized issue. A culture of non-payment of rates and service charges had developed from the early days of the BLA's. In an effort to counter this dominant response to poor and inequitable service delivery, the Masakhane campaign was launched in 1995. Its aim was to encourage payment by the promise of improved services and infrastructure. It did not achieve the desired success largely due to its emphasis on payment (Khan and Maharaj, 1997). There was also inadequate payment infrastructure at the local level, and mass poverty in targeted communities with many people unable to afford basic services. In addition, policies made at national and provincial level required execution at local level without sufficient funds available. This resulted in unaffordable and unpopular rates hikes (Khan and Maharaj, 1997) which resulted in a rates boycott.

Eventually, the provisions of the LGTA (1993, as amended in 1995) were executed in the reform of municipal boundaries and structures. This aspect of reform was driven by the needs for racial desegregation, rationalization of administrative resources, and financial redistribution (Bell and Bowman, 2002). In 1996 the old apartheid administrations were amalgamated under one umbrella body, the Cape Metropolitan Council (CMC) under

which six new sub-structures, or Transitional Metropolitan Local Councils (MLC's), were formed. In the Cape Metropolitan Area these were called Cape Town (the city centre/downtown and surrounds), Tygerberg, South Peninsula, Helderberg, Oostenberg, and Blaauberg (Figure 8.2).

The new metropolitan areas were to be defined by the following characteristics (Khan and Maharaj, 1997):

- comprises the area of jurisdiction of multiple local governments;
- densely populated with an intense movement of people, goods and services within the area;
- extremely developed or urbanized with more than one central business district, industrialized area and concentration of employment, and
- forms a functional unit comprising various smaller units, which are independent economically and in respect of services.

The aim of this two-tier (metropolitan and municipal local councils) government structure was to address the social, economic, wealth, political and spatial fragmentation of South Africa's post-apartheid cities. The CMC was seen as having three potential roles: functional, strategic, and resource allocation (Khan and Maharaj, 1997). The functional role addressed service delivery in the metropolitan area. The strategic role addressed land use planning and economic development, in order to achieve the goal of economic growth. The resource-allocation role also dealt with resource issues and with the articulation of policy and planning frameworks to be used by the MLC's.

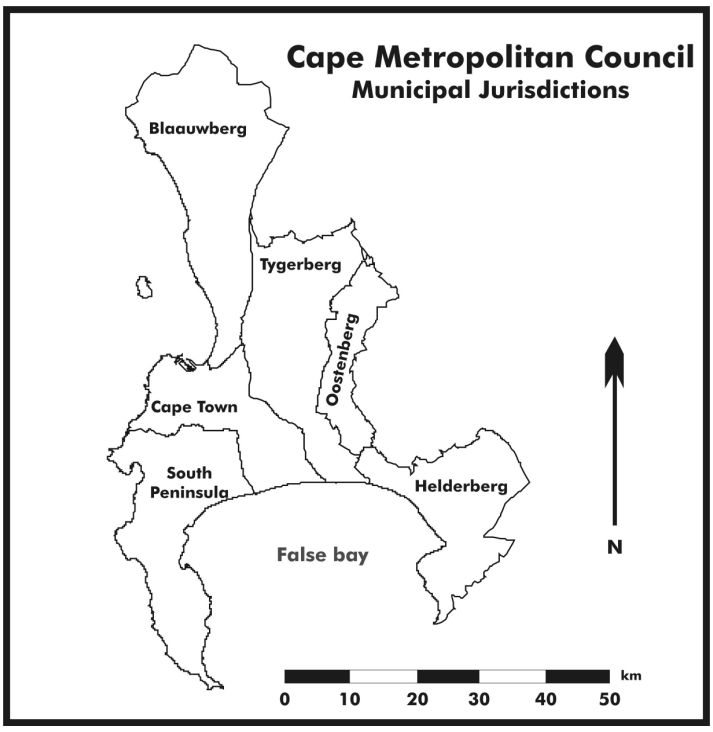


Figure 8.2. Jurisdictions of the Transitional Metropolitan Local Councils within the Cape Metropolitan Area (from Barry, 1999, 103)

This local government structure presented a number of problems of relevance to this research (Khan and Maharaj, 1997):

- potential separation of plan formulation and implementation;
- effective plan formulation should include negotiation of resources for implementation; this structure has the potential of omitting this step;
- loss of political control and accountability;
- scale of planning could lead to loss of scope and latitude for local, specific economic development strategies;
- conflicting interests of participating persons/bodies.

As an example of the issues facing the MLC structures, those in the Cape Town MLC are highlighted. In this municipal area, 55% of the population was classified according to previous apartheid legislation as “coloured” while the remainder was more or less equally “black” and “white” (van Ryneveld and Parker, 2002). Property valuation and taxation was

a task devolved to MLC level, and not conducted in an integrated manner across the greater Cape Town metropolitan area. The Cape Town MLC (Figure 8.2) inherited 80% of the taxable value included in the 1979 valuation roll, with the remainder incorporated into other MLC's. It also included six areas taxed using a 1974 valuation roll, one area under a 1981 roll, and two BLA's (Ikapa and Lingelethu West) where no valuation roll existed. In terms of property taxes, the six MLC's continued to collect property taxes based on whatever valuation rolls they had available, while the CMC collected levies on businesses as a form of income.

Towards the end of 1996 the first democratic local government elections were held. The Cape Town MLC was the only sub-structure to elect the national governing party, the ANC, into power. The New National Party (NNP) won the majority of votes in the remaining Councils.

Also in 1996 was the passing of the new Constitution of South Africa (1996) which took effect early in 1997. This legislation addressed property taxation from a policy level and most importantly, like the interim Constitution of 1993, reserved the tax for local governments only. It also regulated the economic tax incidence.

> "229. Municipal fiscal powers and functions
> Subject to subsections (2), (3) and (4), a municipality may impose
>
> - rates on property and surcharges on fees for services provided by or on behalf of the municipality; and
> - if authorised by national legislation, other taxes, levies and duties appropriate to local government or to the category of local government into which that municipality falls, but no municipality may impose income tax, value-added tax, general sales tax or customs duty.
>
> The power of a municipality to impose rates on property, surcharges on fees for services provided by or on behalf of the municipality, or other taxes, levies or duties

- may not be exercised in a way that materially and unreasonably prejudices national economic policies, economic activities across municipal boundaries, or the national mobility of goods, services, capital or labour; and
- may be regulated by national legislation."

(Constitution, Act No. 108 of 1996)

In 1997 the Cape Town MLC (with the ANC in power) planned a new general property valuation and was supported by the Blaauwberg and South Peninsula MLC's. The ANC was in control of Cape Town, while the NNP was in majority in Blaauwberg and South Peninsula and so this level of co-operation illustrates aligned political will in terms of valuation and taxation. For this GV, a simple site-only valuation was favoured due to the high valuation cost per property and implementation time associated with the traditional valuation approach (in which professional valuers visit each property and in which both the site and improvements are valued). The PVO's allowed site only valuation and taxation, but the LGTA demanded market based valuations and taxation of all immovable property, which was taken to include improvements (van Ryneveld and Parker, 2002). Also, the LGTA demanded that all MLC's adopted a common valuation and taxation system. At this stage other MLC's were not in agreement with a move to site only valuation, and so the decision by a subset of MLC's to perform a site-only valuation was in contradiction of the provisions of the LGTA.

The LGTA had a specific time period and was due to expire in April 1999. By this time it was envisaged that new property tax legislation at national government level would be in force and that the site-only valuation would be acceptable in terms of this new legislation. As a result the provisions of the LGTA were ignored.

At about that time, the residential property market in Cape Town experienced rapid and substantial increases in value. Residential tax thus rose higher than commercial/industrial tax (Franzsen, 1999) resulting in property taxation based on outdated valuations favouring commercial/industrial properties. Regardless of this, and the fact that it was in conflict with the LGTA in force at the time, the site-only revaluation proceeded.

In 1998, the South Peninsula MLC's budget was challenged in court by a ratepayer group, called the Lotus River, Ottery, Grassy Park Residents Association (LOGRA), representing two former "coloured" areas. They initiated action against the South Peninsula MLC because of inequality in property taxation. LOGRA's court challenge (*Lotus River, Ottery, Grassy Park Residents Association and another v South Peninsula Municipality* 1999 (2) SA 817 I; [1999] 4 BCLR 440 I) was unsuccessful, but the court warned the South Peninsula to update its valuation roll. The opposite result would have been likely if the process of transformation of the fiscal cadastre had not been underway (judgment in the LOGRA case, 1999).

The LGTA's life was extended in 1998 by an amendment to the Constitution (Act No 65 of 1998) with the result that the site-only valuation, which was near completion, could not be implemented as it was in conflict with the provisions of the LGTA. The Cape Town, Blaauwberg and South Peninsula MLC's abandoned the site-only valuation approach and the old valuation rolls were again reinstated.

The Local Government: Municipal Structures Act (No 117 of 1998) defined the process for the new demarcation of local governments in order to address problems of accountability, distribution of resources, land use management and planning. This made provision to reduce the two-tier local government system in the six metropolitan areas in South Africa down to a single tier system which was to be the eventual outcome of local government restructuring. This future structure put further pressure on the need to form a common system of property taxation.

The White Paper on Local Government (1998) established the framework for further legislation. The local government finance objectives of relevance to the GV2000 Project are guided by the need for transparency and accountability, as well as equity and redistribution. This is required both within municipal structures and processes as well as between government structures (Bell and Bowman, 2002). Bell and Bowman (2002) sum up the relevance of the White Paper for property valuation as the need to include areas previously untaxed, defining the valuation cycle and developing a set of criteria for evaluating alternative property valuation systems from a pro-poor perspective. Measures of property tax relief should also be explicitly defined in terms of the White Paper (1998).

As stated previously, in the Cape Province, the property tax rate was uniform and capped at 2% (2 cents per Rand of property value) although, through the provision of the applicable PVO, this figure could be exceeded with provincial approval (Bell and Bowman, 2002). Thus the non-uniformity of property taxation in South Africa had, up until this time, been supported by legislation, and implemented by local authorities.

By 1999, differential increases in property values across the City resulted in widening the gap between entry level and high end property values with basic houses in Khayelitsha being worth 1% of houses in Clifton on the Atlantic seaboard. These differences were not reflected in the valuation rolls in existence, and hence were not translated into differences in property taxation, exacerbating inequalities across the City.

In July 1999 the Cape Town MLC decided to implement a differentiated rates policy. The property tax rate is the number of cents charged per South African Rand (ZAR) of property value. The differential rates in Cape Town were based on a price escalation calculated over the period 1979 – 1998 and were designed to provide greater equity within the MLC to counter the effects of using the outdated 1979 valuation roll (GVSC, 2000a).

Differential rating was accommodated in the provisions of the LGTA which allows different categories of properties to be rated differently. In the new Property Rates Act No.

6 of 2004, categories do not include geographical location, which was the basis of differentiation in this instance, and in the Act implies differences in use, zoning etc. (e.g. commercial, residential, industrial categories). Although the goal of improved equity was realized by applying differential rates on the 1979 valuation roll, it is doubtful whether this decision based on geographical categorization would stand up to a court challenge. It was fortunate for the City that this was not tested as legal action is costly, time consuming and the outcomes are uncertain.

The threat of court action along the lines of the LOGRA case should the alternative of a flat increase across the City be implemented was deemed greater than the risks of differential rating, and the move to greater equity was a political imperative. Differentiated rates increases ranged between -7% and +9% of the standard increase. This was determined using 10 bands of property value increases between 1979 and 1999. The lowest band reflected property values which had increased less than three times while properties in the highest band experienced increases of greater than 30 times in the 1979-1999 period (Van Rynveld and Parker, 2002).

Along with the Cape Town MLC, the South Peninsula MLC also agreed on a differentiated rates policy driven largely by the LOGRA challenge (GVSC, 2000a). The basis for the differential rates calculations was the land only valuation roll performed in 1997 which was completed but not implemented.

In pursuit of the unicity concept (merging of the MLC's as per the Municipal Structures Act), the UniCity Commission was established on 25th November 1999. It was a collective management structure representing the six MLC's and the CMC. This body was representative of the predominant political parties in the area: the ANC, the DP, and the New National Party (NNP). The ANC had, during the course of 1999, obtained a majority in the Tygerberg MLC during a period of floor crossing (from the NNP) bringing two MLC's under the control of the ANC while the rest remained dominated by the NNP, who also had a majority representation on the CMC.

In November 1999, the CMC, after consultation with the six MLC's, hired international CAMA consultant, Richard (Dick) Ward to monitor the tenderer appointed to implement a general valuation process using Computer Assisted Mass Appraisal (CAMA) technology.

Although significant change to municipal boundaries had taken place and the City was then unified, the valuation rolls were still those from the 18 previous administration areas within Cape Town. They were of varying ages, stages of completion, and degrees of correctness. The Cape Town MLC included the oldest roll which was based on a valuation conducted in 1979. There were about 40 valuation rolls in existence. Poorer suburbs thus carried more than their fair share of the rates burden, resulting in a "regressive" tax policy. This favoured higher valued properties and is contrasted with a so-called "progressive" tax which favours lower valued properties, and is generally preferred.

The MLC's of Tygerberg, Oostenberg, and Blaauwberg decided to follow a similar route to their sister MLC's in implementing a differentiated rates policy in July 2000. This had gone unchallenged in court, and was deemed a successful mechanism to effect change. A valuation roll was to be published for the Cape Metropolitan Area and would use a system of differentiated rates in order to provide an interim measure of equity across the City. This would also soften the blow of vastly increased property taxes in some areas (e.g. Atlantic seaboard) where market values of properties had risen over 30 times since their last valuation in 1979 (Lund, 1999a).

Dick Ward, the GV2000 Project Advisor, was to produce the required modelled market values and determine the applicable differentiated rates across the City. In a comparison between the 1979 valuations and 1998 market valuations in Cape Town (Ward, 2002a), it was evident that some properties had increased only three times their 1979 value. These were in poorer suburbs generally created during periods of forced removal. In contrast, other properties had escalated to levels 35 times above their 1979 value (e.g. parcels on the Atlantic seaboard) (van Ryneveld and Parker, 2002).

In order to phase in property tax increases, the current property tax bills were compared to what they would be under a new general valuation. This was taken into account in the determination of the differentiated rate, in order to phase in tax increases (GVSC, 2000a). A general inflation increase of 6% was advocated across the metropolitan area, which resulted in differential rates ranging from -1% in the lowest band to +15% in the highest band. The increases for properties which fell in the highest increase bands in 1999 and in 2000 was 32% over two years while those in the lowest bands in both years experienced zero increases in property taxes (Van Ryneveld and Parker, 2002). A communications strategy was part and parcel of the implementation of this differentiated rates policy.

ANC policies of redistribution were seen to be reflected in the new Property Rates Bill which was tabled mid 2000. The goal of the ANC national government was to deliver basic services including electricity, water, sanitation, refuse collection, and roads to all households regardless of their ability to pay for these (Williams, 2000). Such projects would largely be financed through property taxes. At the local level, the ANC had control of only two of the MLC's in the Cape Metropolitan Area – Tygerberg and Cape Town. The rest were controlled by the New National Party (Williams, 2000). The UniCity commissioner, a member of the opposition Democratic Party, favoured increased efficiency and outsourcing as a means to generate the required funds and create jobs. The UniCity spokesman, Dave Erleigh, a member of the NNP, supported cross-subsidization. The Property Rates Bill was viewed negatively by wealthy residents, along with the other major reform affecting property ownership such as the introduction of a Capital Gains Tax on real property (Williams, 2000).

In November 2000 local government elections were held again. The NNP and the DP merged to form a new party, the Democratic Alliance (DA). The DA won the majority of the seats in the new City of Cape Town with the ANC forming the main opposition.

Uniformity in valuation and taxation across the City became an urgent consequence of local government transformation. The need for fiscal cadastral reform to promote greater equity and efficiency was legislated by central government (through the Constitution of 1996), demanded by civil society (evidenced in civic action challenging previous valuation rolls), and acknowledged by local government politicians (councillors). The focus on these broadly desired policy objectives in the arena of the fiscal cadastral system was the laudable aim of the GV2000 Project.

8.7. THE BEGINNING STAGES OF THE GV2000 PROJECT

8.7.1. Initial directives

The MLC's asked the CMC to oversee the initial stages of the establishment of a new, common valuation roll for the Cape Metropolitan Area in anticipation of the creation of a unified city structure in December 2000. It was agreed that the Cape Metropolitan Council (CMC) would act as their agents with regards to the tender process and the appointment of a Project Management Team. Subsequently, this responsibility was handed over to the UniCity Commission. The MLC's were represented in the project on the Valuation Task Team and by the Client's Project Advisor, Dick Ward (GVPMT, 2000c, 2001a)

Also in July 2000, the UniCity Commission was asked to take over management of the creation of the new general valuation roll, and an agency agreement was concluded with the MLC's. The stated objective (which is believed not to be the primary objective (see Interview K, 2003)) was the need to generate income from property taxation based on an accurate valuation roll. The estimated income for the UniCity would be 26% of the total budgeted income. The parallel processes of reform of the electricity management and charges would necessitate the increased income generated in pursuit of the City's goal to be world class (GVPMT, 2001a). The stated secondary objectives were the problem of amalgamation of outdated and incompatible valuation rolls, the requirements of the 1993 PVO for regular valuations, and the judgment of Justice Dennis Davis in the LOGRA case.

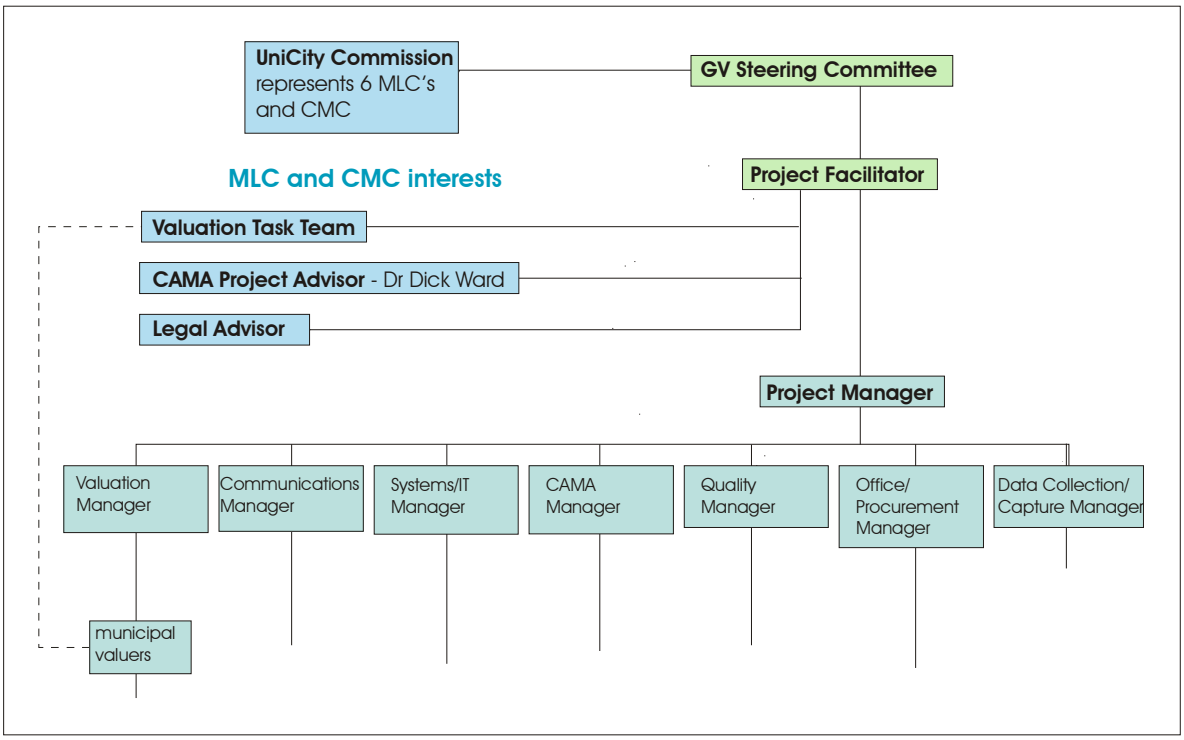


Figure 8.3 Project organigram June 2000

It is evident at this stage of the process of decision making, that all political parties were in agreement about the need for a common valuation roll for the City (Interview K, 2003). Although the decision itself was made at the political level, its political nature is masked by the agreement and co-operation between politicians whose aim was to work towards a common objective (Interview K, 2003). In an election climate, the GV2000 could have been used to drive political agendas, but this was, remarkably, not the case due to the high level of agreement between the parties (Interview K, 2003).

8.7.2. Technology decisions

A CAMA system was considered as a means to generate values for the residential properties in metropolitan Cape Town. It was acknowledged at the outset that this was not accommodated within the PVO 1993 legislation, but the City was looking to the future Property Rates Act (then a Bill) as a solution. CAMA was specified as an option in the Bill.

Despite the fact that many questions around the use of CAMA had not been adequately addressed, a decision to use the technology was made (Confidential Correspondence G, not dated). CAMA software designed by SIGMA was selected. The only information on the rationale behind this decision lies in its compatibility with ESRI products (GVPMT, 2000c). The SIGMA software required unforeseen customization which resulted in a backlog in data capture (GVSC, 2001b).

The use of CAMA was argued to be a necessary imperative driven by the need to use cutting-edge technology and conform to international best practice. It was also argued to be a suitable platform for future efficiency and accuracy of general valuations. It was overtly acknowledged to be an "IT-driven approach" (GVPMT, 2001c, 3) offering cost-efficiency and reducing time thus allowing for regular repeat processes. In addition, there was a focus on institutional capacity building through the training of municipal officials in CAMA processes.

The identified CAMA system consisted of CAMA software, a statistics package and a GIS package with spatial analysis functionality. The preferred statistical package was Number Cruncher Statistical Software (NCSS), assisted at times by SPSS Table Curve or Arc View Table Curve. The recommendation to purchase NCSS was motivated by its ability to conduct hybrid non-linear modelling at a "reasonable cost" (Epstein, 2000a, IPTI, 2002). However, it is reportedly not suitable for programming or batch interface (IPTI, 2002). Arc View was motivated for the project as it was already a standard in the City in terms of a GIS platform – mainly ESRI products are used by the MLC's. ArcView GIS was identified as the base package with Arc View Spatial Analyst for spatial analysis. Microsoft Access provided the functionality to download data and prepare files for use in NCSS (IPTI, 2002). Microsoft Excel was also used in data cleaning. Clarion tools and Oracle database software were employed (IPTI, 2002).

Office software for word processing and spreadsheet creation was assumed to be available. The computer hardware required was not specified prior to the start of the project, and costs

and suppliers were not identified upfront. It was not envisaged that these purchases would be performed by going to tender (competitive bidding) as the items were relatively low cost (Epstein, 2000a).

Costs of the main computer system, networking equipment and database software were not included in the initial budget estimate of R4 million (Epstein, 2000a).

8.7.3. Goals of the GV2000 Project

Formalized goals

Initial goals for the GV2000 were spelt out in the Project Plans (see 8.7.3) and were explicitly communicated in terms of the primary output of the process – the valuation roll, and the employment of CAMA for purposes of cost-effectiveness and efficiency (see 3.8.1 and 3.8.2).

The primary goals were:

- To conduct a general valuation process which could be seamlessly converted to a mass appraisal process once the legislative framework for this was in place.
- To develop and implement a CAMA system for the GV2000 which will "ensure cost effective future valuation processes" (GVPMT, 2000a, 1) with the goal being a shift in cost recovery for services (this eventually resulted in the court case of Rates Action Group v City of Cape Town (Rates Action Group v City of Cape Town: [2004] 3 All SA 368 I)).

Key performance indicators were identified at the start of the Project. These were:

- "A valuation roll by target date
- The project must be completed within budget
- There must be adequate quality control exercised throughout the course of the project
- Objections to the valuations must be minimized
- Total commitment to the project must be given by the project team

- Institutional capacity must be built during the course of the project" (GVPMT, 2000a, 1)

Further goals of the GV2000 Project are found in subsequent documentation and were:

- To use cutting-edge technology (GVPMT, 2001a, 2)
- To be in line with "best international practice" (GVPMT, 2001a, 2)
- To ensure efficiency of repeat processes (GVPMT, 2001a, 3)
- To generate "Sound and accurate" outcomes (GVPMT, 2001a, 2)
- To generate and maintain an up-to-date fiscal cadastre through technology implementation and institutional capacity building (GVPMT, 2001a)
- To ensure equity as demanded by the Constitution of 1996 - Section 10G6 (Richardson and James, 2001)

Actual goals

Despite the explicit goals listed above, the Property Valuations Interim Manager at the time is unequivocal that the primary underlying goal of the General Valuation itself was the need for equity in valuation and taxation across the UniCity. This is strongly linked to past civic action (LOGRA case, 1999) (Interview L, 2003). Inequities in the fiscal cadastral system were endemic and, by 1999 the regressive nature of taxation rooted in outdated valuation rolls had become unsustainable and a political "hot potato". There was growing agreement amongst elements of the newly configured governing structure and newly-enfranchised public that ensuring equity in taxation across the City required attention. Demand for a fair and equitable system is predicated on inclusiveness, completeness and correctness. Inclusion of former BLA areas, with an estimated 71 000 formal properties (Epstein, 2000a) into the tax base and, hence, into the system of service delivery, was a key aspect of local government transformation (White Paper on Local Government, 1998). In particular a non-regressive (not favouring the rich) system of valuation and taxation was demanded.

Here one can see a conflict between the overt goal of equity and the political/client demand for a progressive tax policy. Progressive taxation is not compatible with equity in its purest

form, as an equitable system should be neutral, favouring no particular sector of society. However, tax rebates, bottom bracketing and other pro-poor relief mechanisms were essential. This contradiction in overall goal/ethos and delivery was only appreciated by the most informed members of the public, such as the champions of the RAG.

The urgency of re-valuation, while recognizing the threat of popular rejection of the process, was stimulated by the LOGRA court case (*Lotus River, Ottery, Grassy Park Residents Association and another v South Peninsula Municipality*, 1999 (2) SA 817 I; 1999 (4) BCLR 440 I) (see Section 2.). Property tax was thus already contentious prior to reform, and legitimacy of the institution was in the balance. Property tax transformation was a socio-political imperative, but the overtly political nature of the reform process was not apparent largely due to the commonly agreed aims of all political role-players.

Improving cost effectiveness of property valuation was a long term aim of the GV2000 Project. It was not cost effective in its initial implementation as it had not been done before (Interview K, 2003). International consultants had to be used extensively, and systems had to be purchased and adapted. The infrastructure in terms of hard and software, personnel and knowledge, structures and processes, and information should contribute to reduced costs of repeat general valuations and additional valuations.

Non-residential areas were not valued using CAMA processes in the GV2000, and this will be an area in which costs can be further reduced in future. In particular, site visits to non-residential properties are expensive and need to be reduced through other data updating methods. Also, in Valuation Board hearings the valuers in general had to visit the properties in question. This was costly and was largely a requirement of the specification of market value rather than market related value. If market related value was to be used, one could make assumptions regarding leases etc. But with market value, valuers have to look at the specifics of each and every property and this is very costly and time-consuming, particularly with complex non-residential buildings (Interview K, 2003). In retrospect,

market related value should be used otherwise each general valuation will cost R6-7 million (Interview K, 2003).

8.7.4. Further local government restructuring

In a second phase of restructuring, the CMC and the six MLC's were disestablished on December 2000 and a new, inclusive metropolitan local government authority was established in their place in terms of the Local Government: Municipal Demarcation Act 27 of 1998 and the Local Government: Municipal Structures Act 117 of 1998 (as amended in 2000). The two-tier system was thus reduced to a single-tier system, ostensibly to address efficiency of service delivery through large-scale provision and resultant economies of scale, to address problems of accountability, land use planning and management, to improve equity in the distribution of resources, and to reduce the duplication of functions. The latter two goals involved amalgamation and co-ordination between the former MLC's (Khan and Maharaj, 1997).

The UniCity Commission was dissolved and replaced by Metropolitan City of Cape Town (hereafter referred to as the "City"). All decisions regarding the implementation of the GV2000 were no longer made by the UniCity Commission and, pending the appointment of a Municipal Manager, the Interim Municipal Manager would carry this responsibility, with powers of delegation. Similarly, the GV Steering Committee would be replaced, as this was a Committee of the previous UniCity Commission. An interim GV Steering Committee was formed and included prior members for the sake of continuity. The administration of the UniCity would continue operating until the end of February 2001, and that administration would continue until alternative arrangements were made in January 2001. A full report on the progress of the GV2000 would be presented to the new Council of the City of Cape Town in January 2001.

The Metropolitan structure of local government was partly inspired by the concept of "one city, one tax base" which was adopted by local civic forums in the early 1990's in their recognition that the inclusion of black residents in the municipal tax base had to be

addressed (Khan and Maharaj, 1997, White Paper on Local Government, 1998). It became impossible to continue with different valuation systems across the City as this option became indefensible under the new City structure.

8.8. FORMALIZING THE GV2000 PROJECT (UP TO END 2000)

8.8.1. Initial timelines

The GV2000 Project Plan was accepted by the UniCity Commission in July 2000 (GVPMT, 2000c) and the valuation roll was to be used for property tax billing from July 2002. It was envisaged that a preliminary roll should have been completed by February 2002. The base date for the valuation was January 2000 and sales data up to one year prior to and six months after this date were used in the modelling. The data collection process for the valuation began in August 2000.

Property sales data was to be collected, reviewed and analyzed between Aug-Nov 2000. The property characteristics data collection period was originally to last 3 to 5 months (Epstein, 2000b) but this time period was extended in Revision 2 of the Project Plan to extend from September 2000 to October 2001 (GVPMT, 2000a). The decision as to whether to adopt a CAMA approach was to be made by November 2000 (GVPMT, 2000a). Residential value field review was to run over the period from Jan 2001 – Feb 2002. As planned, by February of 2002 the CAMA modelling was complete. This was followed by a process of informal review from March – May 2002 (GVPMT, 2000a). The provisional valuation roll was handed to the City in April, after which rates could be calculated. Final hand-over of the project to the City took place in June 2002. Formal review processes began in June 2002. Only after the process of formal review conducted by the Valuation Boards was concluded could the provisional valuation roll be adopted, thus losing its provisional status. The new provisional valuation roll was used to calculate property rates starting in July 2002.

8.8.2. Identification of risks

Many reform projects involving information technology are classified as partial or total failures rather than as successes (Heeks and Bhatnagar, 1999). Since reform of fiscal cadastral systems is generally facilitated through implementation of information systems, it thus carries a high level of risk. Strategies geared at ensuring success are highly desirable. An essential aspect is an understanding of the risks prior to reform, as well as sensitivity to emerging risks and their interrelations during the project. In considering long term sustainability of reform initiatives, risks which threaten the effected change after project completion should also be considered.

Risks are a negative subset of a group of key variants (or uncertainties) which influences the outcomes of a particular change process. In order to minimize the effects of risk factors it is important to identify their source, operation, and potential as early as possible and to design a strategy to counter them. Risks will increase the gap between outcomes and goals, and may also increase negative outcomes (obviously not in the stated goals, unless stated in the negative e.g. to reduce formal objections and litigation).

The identification and management of risk is a critical factor in change management projects (see section 2.4.6, 3.6). Early on in the process of considering using CAMA for a new general valuation, the risks inherent in such a process were acknowledged. The following key risk factors were identified in the preliminary stages of the GV2000 project:

- Legislation facilitating legal implementation of CAMA was required and, if this was not effected in a timely fashion, the entire process could be challenged in court (Epstein, 2000a).
- Changes to many aspects of the fiscal cadastral system were required while the final legislation governing it was uncertain (van Ryneveld and Parker, 2002). The draft Property Tax Bill was published for the first time in August 2000, and had not yet been passed by Parliament; this only occurred (in May 2004) after the provisional valuation roll was published and new property rates levied.

- Political will needed to be secured and retained in order to maintain the mandate through the upcoming local government election process (Epstein, 2000a). The local government elections were held during the data collection phase of the project in December 2000 and presented significant political risk to the project (GVPMT, 2000c).
- Public opinion could be turned against the project (Epstein, 2000a).
- Timely resource provision (human, software, hardware) was required (Epstein, 2000a). Whether permanent staff would be prepared to work overtime as the project timeframe required, was an identified uncertainty.
- The existence of data misalignment between the billing systems and the valuation systems impacting on equity needed to be addressed.
- Human and technical resources were not sufficient to address the issues stemming from misaligned data. MLC's take too long to research and correct misaligned data.
- Management and/or political decisions may not be made in time in order to inform the project planning process.
- Computer system amendments may take longer than estimated (City of Cape Town (South Africa), Property Valuation Office, 2001a).

In the successive Project Plans, the following additional risks were noted:

- The uncertainty in the legislative framework could result in uncertainty in the resource requirements and business processes. This would complicate planning and preparation (GVPMT, 2000c).
- Valuation of many properties was to be conducted for the first time. In these areas individuals and representative structures are not familiar with the process and its outcomes, presenting risk to the project if communications efforts are not successful (GVPMT, 2000c).
- Creation of institutional capacity is a key performance indicator. It is reliant on the availability of municipal valuers and their active participation in all valuation

functions in the GV2000 Project (GVPMT, 2000c). The availability of valuers was an unknown quantity, as well as the uncertainty around their scope of work.

- The project success depended on the availability and co-operation of council officials from the MLC's in supplying data.
- The project deadlines necessitated the concurrent (parallel) performance of operations which would naturally be performed in series. This could affect the available human resources and infrastructure.
- With respect to the information system:
  - "The continual changing of requirements.
  - The difficulty of obtaining appropriate data for the task required.
  - The lack of overall IT strategy for the UniCity.
  - The implementation and operation of a valuation system as well as billing systems for the UniCity will be cleared out with the IT Task team during the project.
  - The lack of a single strategy within the UniCity on the way forward regarding the CAMA approach.
  - The lack of full User Definition Document for the general valuation project.
  - The lack of a full project definition workshop document, defining roles and responsibilities.
  - The lack of a user requirements documentation in respect of General Valuation system requirement, thereby creating an environment where no GAP analysis can be conducted for the match to any possible obtained CAMA software.
  - The dependency on two American consultants regarding the CAMA approach.
  - Disparate systems, poor data integrity and data formats in the different MLC's is causing extraction difficulties that could delay the implementation of the Sales Review and full Data Collection results." (GVPMT, 2000c, p 27). The poor data could also cause key information to be incorrect affecting planning and preparation (GVPMT, 2000c).

The following risk factors were also identified from observation of the process:

- The security situation (i.e. high violent crime rates) made homeowners cautious about allowing personnel onto their properties and especially into their homes. Many of the data collectors were unemployed, and not from the same ethnic group, class, and residential area as the areas they operated in. This was particularly true of the middle/upper class areas, leading to extra caution in planning for these areas.
- General resistance to change, wariness of the process and lack of support for local government may have lead to the deliberate decision by certain ratepayer associations not to allow data collectors access to their properties.
- The newly created municipal structure of the City of Cape Town was not referred to directly in the existing laws relating to property valuation and taxation, creating confusion over the powers and responsibilities of administrative personnel.
- The CAMA system may not deliver according to specifications; this is known as a conception-reality gap and is categorized as a risk factor (Heeks and Bhatnagar, 1999).
- A history of failed valuations resulted in a low level of trust in the City's ability to deliver a legal and acceptable general valuation.
- GIS technology was not available for previous valuations, and had not been used in this context historically.
- There was not local CAMA expertise, and minimal expertise in the necessary fields of statistics and programming within the Valuation Section. Local training was required (Confidential correspondence G, not dated).
- The definition of property for valuation purposes needed to be resolved (Confidential correspondence G, not dated).
- Interface with the billing system had to be resolved (Confidential correspondence G, not dated).
- Would interim evaluations be possible with the proposed system? (Confidential correspondence G, not dated).

- Bandwidth requirements had not been established adequately (Confidential correspondence G, not dated).
- Security of the data is a risk (Confidential correspondence G, not dated).
- Restructuring of the municipal valuation function was noted as a necessity in parallel with the implementation of the GV2000. This adds an additional element of complexity and risk.

8.8.3. Initial management of risk

Use of CAMA and legislation lacuna

CAMA was identified by the City as the only available means of generating a new, market value-based, valuation roll at the large scale required, within a reasonable time period, and with the limited resources available. However, the (PVO 1993) did not accommodate the use of CAMA techniques (Epstein, 2000a), resulting in delays and an extension to the project planning phase of GV2000 (GVPMT, 2000c). At the end of June 2000, the UniCity adopted the following recommendations (GVPMT, 2000c) which resolved the impasse (City of Cape Town Property Valuation Office, 2000), but carried with it the risk that the entire valuation would be overturned in a court of law (Epstein, 2000a):

- "That the General Valuation Process proceed in terms of the *PVO* (1993) in such a manner that a seamless transfer to mass appraisal valuation process is enabled once an appropriate legislative framework is in place;" and
- "That a CAMA system be developed and implemented as an integral part of the general valuation to ensure cost effective future valuation processes." (GVPMT, 2000c, page i)

This decision, however, entailed palpable risks and highlights the uncertain environment in which fiscal cadastral reform was to take place.

Continued use of market valuations

The Chairman of the Rates Action Group (RAG), Robin Bosomworth, highlighted that the broader socio-economic impact of employing a market value comparative-sales based

system had not been fully considered by the City or national government. He refuted claims that this system was fair. A further concern was the implementation of a system which had not been adequately debated, nor brought into the public domain – processes which are built into the passing of national legislation. He claimed that the approach was narrow and unsustainable and would lead to costly failure (Bosomworth, 2000).

Legal opinion and legislative interventions

Senior Council was solicited for opinion as to how to proceed. An assumption was made initially that advice to proceed with CAMA would be obtained (Epstein, 2000a). The City conducted a legal audit which found that:

- The interim Constitution (Act No. 200 of 1993) came into effect on April 27, 1994 and provided that all laws in force immediately before its commencement would continue in force. Since the PVO 1993 came into operation only on July 1, 1994 it was not treated as law "in force";
- Section one of the *PVO* defined a local authority as "a local council, a metropolitan local council, a representative council, a rural council and a district council". This was deemed to include the City, established under the Local Government: Municipal Structures Act 117 of 1998 (Schroeder and SAPA, 2004).

The City approached the National Assembly Portfolio Committee on Provincial and Local Government in order to legalize the use of CAMA in GV2000 through an amendment to the Local Government: Municipal Structures Act 117 of 1998 by means of section 21 of the Local Government Laws Amendment Act (No. 51 of 2002) (Schroeder and SAPA, 2004). The City believed that this amendment created the necessary legislative framework for the GV2000 to proceed. It should be noted that this law was only passed on the 5th December 2002, after property taxes had been charged based on the GV2000 valuation roll.

Data procurement and quality assessment risk management

A data audit was performed early on in the planning stages so that the data requirements and data availability could be ascertained. The MLC's and the Systems Manager worked

together to clean data. This was a slow process as the data quality was poor and the process painstaking (GVPMT, 2000c).

Security issues and interventions

Security issues were addressed from the communications perspective by providing adequate means of identification of data collectors and a phone-in service to verify a data collector's identification prior to a resident allowing entry (GVPMT, 2001b).

Communication

A number of communications consulting companies were sub-contracted to the project to assist in developing, executing and overseeing the communications strategy at all levels outside of the project team (GVPMT, 2000a,b,c,d). This included communication with all stakeholders outside of the local government structures, as well as communication within the City (i.e. Councillors and the UniCity Commission). Buy-in from councillors was seen as a key risk management intervention, as well as keeping the GV Steering Committee and VTT members informed of progress (Interview B, 2002 and Interview G, 2002).

Infrastructure

The procurement of the required infrastructure for the project was expedited through the delegation of authority to the UniCity Commission Chairperson and his staff. This was conducted through the CMC procurement channels and included hardware and software (GVPMT, 2000a)

Municipal valuers

A pre-qualification exercise revealed that sufficient numbers of municipal valuers could be appointed. However, the cost of appointing these was an unknown variable as the fees to be charged were not known upfront. All contract staff was appointed by, and responsible to, the Project Manager (GVPMT, 2000a, GVSC, 2001b).

8.8.4. The complex nature of the GV2000 Project

Fiscal cadastral reform is considered to occur when one or more aspects of the fiscal cadastre or its immediate environment are subject to substantial change in any one valuation cycle. In the GV2000 Project this included (but is not limited to) the changes in:

- The property tax base (boundaries of taxed area, inclusion of previously excluded and new properties).
- The use of land and/or improvements to define value.
- The definition of value (market value, adjusted sales price, highest and best use etc).
- The selection of the specific property characteristics used for the valuation.
- The processes used to assess value (e.g. single property appraisal, mass appraisal (non-CAMA, and CAMA systems).
- The processes of taxation and definition of the tax exemptions (for example inclusion/exclusion of government properties, religious buildings (e.g. churches), exemptions and rebates).
- The property tax rate (what proportion of value is the tax, tax banding).
- Billing/collection and enforcement methods.
- The valuation cycle (time between successive valuations).

The revaluation of properties in Cape Town using CAMA was acknowledged early on to be highly complex. "It's a minefield in Cape Town – you are treading where alligators themselves wouldn't go" said Dick Ward, the appointed CAMA advisor early on in the preliminary investigations (Lund, 1999b). There were many complicating factors; the diversity in dwellings, there are many different stages in the process of arriving at market value, and there are many different ways of conducting the process. However, Ward was convinced that using CAMA technology, the deadline of the July 2001 implementation of the GV2000 could be met (Lund, 1999b).

Additional complexity was created by the necessity for the restructuring (internal reform) of the Municipal valuation function within the CMC (GVPMT, 2000c).

"During discussions with the UniCity Commission Chairperson and the planning of the project with Municipal Local Council (MLC) Valuation Task Team (VTT) members, it has become apparent that there is a pressing need to rapidly implement the restructuring of the Municipal valuation function along with its supporting data components. It has been assumed that any such restructuring will not adversely affect the implementation of the project, but that it will promote the support and co-operation required by the MLC's for the successful completion of the project" (GVPMT, 2000d, 4).

The IPTI Report on the GV2000 summed up the complexity of the GV2000 Project in the following statement "municipal restructuring, substantial legislative change, and systems re-engineering" (IPTI, 2002, 6).

8.8.5. Development of the management structure

In April 2000 the UniCity Commission entered into a public-private partnership in order to execute its mandate to manage the GV2000 Project. A public-private organizational model was adopted in order to address lack of resource issues within the City.

The organigram in Figure 8.4 illustrates the hierarchy of management in various task system management streams and linear lines of reporting and communication.

Four levels of project control and execution were identified – political, policy, senior executive, and coordination. The UniCity Commission (Unicom) is the highest authority in the Project and represents the six MLC's within the Cape Metropolitan Area (CMA). This Commission appointed a General Valuations Steering Committee (GVSC) to deal with the Project and make recommendations to the UniCity Commission. The GVSC and Unicom have control of the political direction of the project (GVPMT, 2000c).

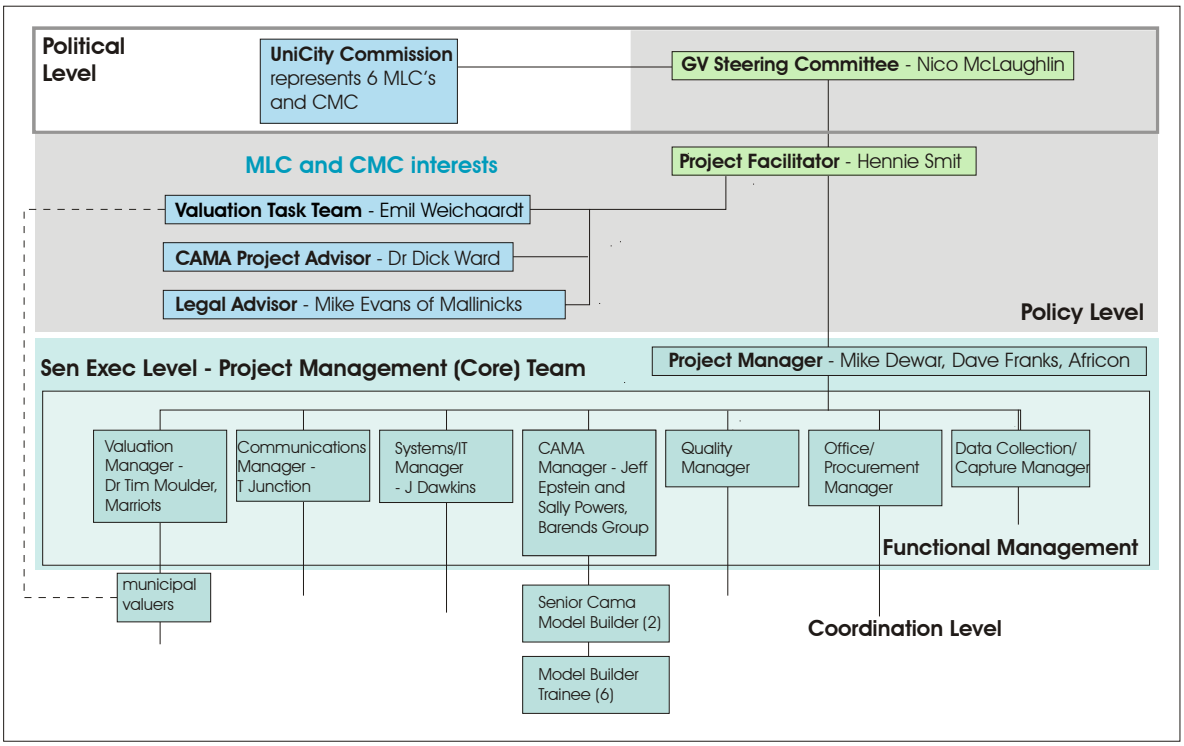


Figure 8.4 Organigram of initial project management structure illustrating four main levels

A senior executive management function was performed by Hennie Smit from CMC administration as Project Facilitator. The Project Facilitator reports to the GV Steering Committee (Chaired by Nico McLaughlin), and manages the Project Advisor (Dick Ward) and the Legal Advisor (Mike Evans from Mallinicks). These advisors and the Valuations Task Team (VTT) represented the interests of the MLC's. The Valuation Task Team was headed by Emil Weichardt from the Cape Town MLC administration (GVPMT, 2001a). The Project Facilitator also managed the Project Managers (Dave Franks and Mike Dewar from Africon). The GVSC, Project Facilitator, VTT, Legal Advisor, and Project Advisor represent the policy making level for the GV2000 (GVPMT, 2000c).

The appointment of the CAMA Manager and CAMA Project Advisor both from overseas, required the scheduling of their visits to Cape Town to be coincident. Their combined presence in Cape Town was for three weeks in each month with a "suitable overlap" in their visits (GVPMT, 2000d, 3).

The organigram illustrates that reporting to the Project Manager were the *Functional Managers* consisting of the Marriott Property Services (Tim Moulder) as Project Valuation Managers, consortium T-Junction Communications as Communications Managers (Katharine MacKenzie), PQ Africa as Systems/IT Managers (Jimmy Dawkins), Barends Group from Boston, a subsidiary of KPMG, as CAMA Manager (Jeff Epstein) for the planning stage, as well as a quality manager, an office/procurement manager, and the data capture manager. The Project Manager and Functional Managers formed the senior executive for the GV2000 Project. They were often referred to as the Core Team, and were contracted by the UniCity Commission (Unicom) (GVPMT, 2000c).

Coordinators reported to the managers, and valuers, data collectors, administrators, model builders, data capturers etc were at the bottom of the hierarchy of management and responsibility. The Co-ordinators were employees of the companies which constituted the Project Management Team (GVPMT, 2000c).

The project's internal operations staff and contracted service providers formed the last of the four levels within the management structure (GVPMT, 2000c). The operations staff contracts were for the duration of the project only. If suitable staff within the Municipalities could be found to occupy these positions, they were seconded to the project to fill these roles (GVPMT, 2000c). Contract service providers made up the balance of the required human resources for the Project and were contracted to the Project Management Team companies (GVPMT, 2000c). Reporting on Project performance was to be regular and through progress reports.

Municipal valuers were the only entities linked non-hierarchically. They were linked directly to the VTT. The purpose of this was largely to facilitate assistance by the VTT in the valuation of complex non-residential cases. The Municipal Valuers were able to approach a committee of members of the VTT and the Project Valuation Manager to advise them.

An important element of the change management structure was the Change Control Committee. This consisted of the Project Facilitator, the Project Manager, and the Valuation Task Team convenor (GVPMT, 2000c). Any changes required by functional managers to their budgets, scope of work, or time frame for completion of tasks were handled firstly by the Change Control Committee. This Committee viewed the requested changes holistically taking into account the entire project and contingencies in other areas in order to facilitate the meeting of project deadlines. If project cost and time parameters required adjustment, a change request was presented to the UniCity Commission for approval. Such changes, if approved, formed part of revised project plans (GVPMT, 2000c). Budget amendments of R30 000 to R5 million required Steering Committee approval, while amendments >R5 million required approval from a full meeting of the UniCity Commission.

The delegated authority of the UniCity Commission terminated on the 5th Dec 2000. Prior to the creation of a new Council for the amalgamated metropolitan city structure, an Interim Executive Management Team governed the GV2000 Project (GVPMT, 2001a). The Interim Municipal Manager had decision making authority in the interim, with powers of delegation (Smit, 2000).

8.8.6. Project design

Phased/staged approach

The business processes were built around the core goal of the generation of a new valuation roll. It was acknowledged that the valuation process was the driving process, and the processes of project management, systems management, and communications management were secondary to that primary process, and to a large extent, driven by it (GVPMT, 2000c).

The project was divided into five broad phases (GVPMT, 2000a and c):

- Project Planning Phase: planning of the project in detail and undertaking of certain tasks;
- Preparation Phase: project team undertakes necessary preparations in order to commence the data collection and valuation activities;
- Sales and Market Review Phase: contracted valuers and municipal valuers conduct market review, data gathering, and analyze sales;
- Valuation Phase and Value Review: valuation of properties, review of valuations before publication, informal review of interim valuation roll by the property-owning public;
- Close-out Phase: administrative closure of the project.

These phases were envisioned to be conducted in a linear fashion, with some overlap between phases. Key planning assumptions were detailed in the project plan. Any deviations on these assumptions were documented as possible sources of change, which would require redefinition of the overall budget, time frame and quality, established for the project. The detailed work requirements and scope, as well as the work processes required were also documented in the Project Plan and its Revision documents.

The other major decision of the Project Team was the order in which the six MLC's were to be tackled. It was known that the available data in all six MLC's was not of the same quality, completeness, and age. It was decided to start with the data collection and valuation of Cape Town and Tygerberg in which the data was of known quality. In this manner, problems in the process could be identified and rectified to streamline the future processes. Various milestones centring around the valuation tasks were prepared in order to track the progress of the project (GVPMT, 2000c).

The core processes of the Project's work were (GVPMT, 2000c):

- Valuation of non-residential properties in terms of the PVO: 1993;
- The collection of residential value forming attributes and population of a database with the attributes collected;
- A statistical data analysis of recent property sales of residential properties;
- Ensuring that the final valuation roll complies with all relevant legislative and other legal requirements.

These were amended in Revision 4 of the Project Plan in order to incorporate the use of CAMA.

Budget

The Project budget was initially defined in Project Plan Revision 3, but this was subject to a process of review. By Project Plan 4 in November 2000, the budget was over R114 million reflecting a R25.5 million increase in the previous approved budget (GVPMT, 2000c). This was reduced to R109 million in Revision 5 of the Project Plan.

Performance measurement

The process was monitored (called performance measurement) by comparing budgeted cost of work performed against budgeted cost of work scheduled (GVPMT, 2000c).

8.9. VALUATION POLICY FORMULATION

8.9.1. Valuation of land and improvements

There are various options in terms of what should be valued. As property valuations serve the purposes of property taxation, policies of valuation are inextricably linked to policies of taxation.

Land only valuations

Valuation and taxation of land only is termed site rating in South Africa and was used at least in Gauteng, Northern Province and Mpumalanga in accordance with the previous municipal ordinances prior to the Property Rates Act No. 6 of 2004 (Franzsen, 2000).

Peter Meakin, a valuer and international consultant on local government finance advocated a land only approach to property taxation (Bosch, 2001). He doubted that any but the G8 countries could afford the costs of valuing improvements and the negative consequences of restricting development. He noted that only international consultants from the US had been used in the GV2000 Project, and that a composite approach would be in line with their thinking, and not necessarily best for the City (Bosch, 2001).

The Property Rates Act no longer allows for site rating.

Land and improvements valued

Rating of land and improvements together is termed flat rating in South Africa and was dominant in the Western Cape in accordance with the PVO 1993 and its predecessors. However, the PVO 1993 demanded that separate values of improved property, land only and value of improvements be stated on the valuation roll. Historically, land and improvements were valued for 5 out of 6 (all except Helderberg) of the former MLC's (IPTI, 2002) – land was assessed at market value, while improvements were assessed using replacement cost minus depreciation.

In the GV2000, the provisions of the PVO 1993 were complied with. The land value model generated using CAMA was deducted from the land plus improvements model (also generated from CAMA) to leave the value of the improvements. Thus each property shows a land valuation and an improvements valuation (Interview C, 2002).

Using different tax rates for land and improvements is termed composite rating in South Africa and was common in KwaZulu-Natal prior to the Property Tax Act (Franzsen, 2000).

Composite rating, introduced in phases, was recommended as property tax policy as part of the process of the Billing Interface Project (BIP) with a ratio of 10:1 in favour of land against improvements (Richardson and James, 2001).

At that time the Property Rates Act was in Bill form and informed decision making for the GV2000 project. It does not permit composite rating on residential properties, it only permits site rating (land only) or flat rating (improved market value of property). The improved value of land was therefore taxed using one rate based on the GV2000 valuation roll.

8.9.2. Market valuation approach – issues and decisions

As shown above, market value as a basis for property valuation and taxation was already policy in the PVO 1993 and in itself posed no new policy decision. However, the range of market values of properties in the City had spread dramatically in years prior to the GV2000. This led to discontent with a property valuations and taxation system based on market value, particularly in the wealthy locations for which a new market valuation was likely to spell large increases in property taxes. Also, the definition of market value and how to determine it was highly contentious and ill-defined at the outset of the GV2000 Project which is revealed in correspondence within the Project team, by the legal advice sought, and by the opinions of property tax payers. Furthermore, the use of market value by the GV2000 further entrenched this policy at a time when changing legislation could have brought into effect alternatives. An opportunity to address the issues of the philosophy underpinning the property tax policy in a consultative and considered process was lost.

Market value definition

The concept of market value as applied in the GV2000 Project was investigated by a group of lawyers (Confidential correspondence A, 2001). The following extracts are from the collective opinion of these advocates.

4. "The first question on which our advice is sought is whether the term "the improved value of land", as used in section 14(1)a of the Property Valuation Ordinance, 1993

(Cape) ("the Ordinance"), encompasses certain constituents of "market value", which, we are instructed, are internationally accepted."

5. "Section 14(1)a of the Ordinance defines "the improved value of land" to mean "the amount which such land would have realized if sold on the date of valuation in the open market by a willing seller to a willing buyer". This resembles the description of "market value" in section 12(1)(a)(i) of the Expropriation Act, 63 of 1975."
6. "Consultant wishes to know whether what is envisaged by this term includes an arms length transaction in which the parties acted knowledgeably, without compulsion and following proper marketing, with the purchase price being paid in cash and without a premium of any special interest which the purchaser might have in the land in question."
7. "In our view, there can be no doubt that the notion of a sale in the open market by a willing seller to a willing buyer includes most of the aspects referred to in the preceding paragraph. Thus for example it has been held that the market value is determined by the most likely behaviour of a willing seller and a willing buyer with full knowledge of all the relevant circumstances (Bekker v RSA Factors 1983 (4) SA 568 (T) at 547F). …. The concept of an 'open market' presupposes that proper steps were taken to advertise the property and let all likely purchasers know that the land is in the market for sale….".
8. "We would, however, point out as regards the reference to a "special interest" in paragraph 6 above that the hypothetical willing seller will take into account the possibility of selling to a particular purchaser who has special need for the property, …, and will fix the price at which he is willing to sell with such a buyer in mind. All possible purchasers must be considered, including scarce or exceptional purchasers (……). On the other hand a special value which does not result from an attribute of the property itself, but from the particular circumstances of the seller or the buyer, must be disregarded(….)."

One source of debate within the GV Project Team was the definition of market value as opposed to market related value (Confidential correspondence A, 2001), and linked to this

debate, whether model generated values should override sale prices used in the determination of the model. It was decided that CAMA model values should override the sales values. Sales prices are generally not exactly at the base date, and are also taken to be indications of market value and are not market value itself. In order to ensure fairness, the CAMA generated values should be used in preference to the sales prices, even for properties sold on the base date. However, in order to minimize objections, and ensure public acceptance, some of these CAMA generated values could be adjusted to their sale values (Interview A, 2001).

The definition of market value remained a mystery even to informed property owners. The definition based on an actual transaction between a willing seller – willing buyer reduced to the base date, irrespective of the age of the sale, appeared to be the most legally definitive (Interview J, 2002). However, the relationship between this and the market value as determined for calculation of capital gains tax, CAMA generated values, market value of land plus cost of improvements seems to be unclear to many (Interview J, 2002). The calculation of market value of non-residential properties seems to be even less clear, and possibly inconsistent with each other (horizontal and vertical equity) (Interview J, 2002).

Market value in South Africa is linked unequivocally to a sales comparison approach. The City of Calgary, in Canada, was one of the few North American cities to implement the comprehensive market value and CAMA processes (Confidential correspondence F, 2003). Calgary has also moved to a market value approach and considers that the income, cost, and sales comparison approaches can all be used to arrive at market value within their legal framework. However, in South Africa, market value of sales of the land and its improvements has been adopted as the chosen approach to valuation, and local government valuers are locked into a sale comparison approach. However, in valuing non-residential properties, other aspects have been considered and further investigation is likely to reveal that a combination of the sales comparison, income and cost approaches has been used, depending on the availability of data. This mix of market value types has probably occurred outside the legal provisions of both the PVO 1993 and the Property Rates Act in South

Africa, raising issues of equity, as well as legality. The sales comparison approach is used for residential areas, and the income approach is generally used for commercial areas. In the case of insufficient data, the cost approach is reverted to (Confidential correspondence F, 2003).

Justifying market value as the basis for taxation

Market value as a philosophical concept is ill defined and its use as a basis for property taxation is highly contentious. The property tax should be applied as a "means to distribute the cost of general local government activities (community services), among tax payers, in accordance with their ability to pay, as measured by the market value of property." (Bell and Bowman, 2002). There is a fundamental flaw in measuring the ability to pay by the determined market value of the property owned. There are many instances in which this is not the case: retired owners who purchased years ago and are now on a fixed income, persons who inherited property, properties in areas that have seen growth in property prices above the inflation rate, etc. It is only a good estimate for recent purchasers who are in the minority of property owners as determined by the number of property sales used in the general valuation process. Capping property tax at a maximum percentage of household income is a mechanism which can be used to link the tax more effectively to the ability to pay. This is termed a circuit breaker in the US (Bell and Bowman, 2002). This was, however, not contemplated in the GV2000 and its implementation.

Perceptions of market value and the sales comparison approach

Perceptions of market value and its determination have been gauged through interviews and letters to the press.

One influential key informant (Interview J, 2002) argues persuasively against market value as a basis for property taxation, and at the least asks for an open process of public participation and consultation in the making of such decisions. This should be accompanied by a process of rigorous research into the design and implementation of a sustainable solution. He argues against importing a concept and technology applicable to the property

market in the USA which has not been investigated in terms of the consequences of its application in South African cities. He claims that New Zealand and Australia are in fact moving away from market value as a basis for property taxation in favour of the Capital Improvement Value and differential rating and that this is advocated by a world renowned researcher from the USA (Interview J, 2002). A high-road, low-road scenario is painted by Interviewee J and is tabulated below (see Table 8.1). It illustrates that the issues of market value as a basis for property taxation in Cape Town had not been adequately discussed in the public domain.

HIGH ROAD (integrity)	LOW ROAD (dishonesty)
Credibility	Ends justify means
Commissions, white paper to explore philosophical basis and define the tax, as well as to explore viability	Secretive Committees and caucus decisions
Open and objective analysis and debate, transparency, public participation	Hidden agenda, narrow perspectives, disregard for true public participation at all levels/ stages, loss of accountability to tax payer
Define issues	Hazy and subjective – rhetoric
Sophisticated analysis	Superficial reasoning, half-truths
Intelligent taxation	Contradictory and silly
Contextualise to SA	No context – import concepts from the USA and Canada without interrogating the effects
Benefit and ability to pay, sustainable principles	Simply a tax
Published and understood	Pre-empt definition of market value and the tax
Follow due process	Pre-empt national legislation, change the law

Face public scrutiny, public support	High handed administration
RESULT	RESULT
Good diagnosis (understanding)	Confusion, chaos, conflict
Good law	Poor law
Acceptability	Non-acceptance, remains crudely political
Political success	Political failure
Economic success	Economic failure

Table 8.1 High road, low road scenario from documentation presented in Interview J (2002) (unaltered)

Bosomworth, R (RAG) 15 March 2002, Cape Times (Bosomworth, 2002a)

Bosomworth claims that achieving equity in taxation is a misnomer. Furthermore, property tax reform is required when moving onto a wealth tax system and should include consideration of service charges in order to recover costs, and also the ability of owners to pay taxes. The City embarked on the move to a market value based approach without such a comprehensive property tax reform process. This was "not clever". Raising revenue for a political purpose is a poor motivation for the wealth tax, and if that is the aim, an income approach would have had a higher yield.

Stephan, B, 12 March 2002, Cape Times (Stephan, 2002)

Stephan (2002) claims that the market value based system is flawed in that it is highly variable and subjective.

Derek Sparks, 12 March 2002 Cape Times The Debate (Sparks, 2002)

Sparks (2002) compares the property tax policies under debate with the Californian system of purchase price plus escalation as a basis for property tax. He claims that there is no relation between the market value of a property and the value added by the City in terms of services. Furthermore, he claims that an income approach would generate more income for the City.

Trevor Robertson, 11 April 2002, letter to the City

Robertson (2002a) was eventually, with the assistance of the Rates Action Group, to take the City to court. However, in the final stages of the determination of the new valuation roll he was engaging with the City via written correspondence. One of his complaints was that the City was not engaging with the Rates Action Group (RAG) at any level, and was choosing to ignore them.

Gershon Isaacson, 16 May 2002, Cape Times

Isaacson (Isaacson, 2002) has been conducting valuations since 1988. His main objection is to the choice of valuing improvements which is costly, time consuming and less certain than land-only valuations. He maintains that land area and location are easier to measure and would not result in unintended consequences of disinvestment in property.

Ray Jensen, 22 May 2002, Cape Times

Ray Jensen (Jensen, 2002a) performed some calculations based on data in his immediate neighbourhood in order to determine the causes of widely varying property values. He was not able to understand these from some simple comparative analyses, nor did he understand the parameters and mechanism to arrive at a valuation from either the call centre's Sean Leonard or from the interim property valuations manager, Emil Weichardt. He expressed frustration in the level of trust expected by the City for their data collectors and the process, and hoped that he would see justice in the valuation courts.

This sample of public opinions provides a summary of the general perceptions of the GV2000 Project and its application of market value and sales comparison concepts. The sample is skewed towards the wealthy and informed, as well as those who respond in the public press. Other sectors of society (such as the middle and low income population) stood to gain from the GV2000 Project which would assure a more progressive tax. They are probably less well informed of the mechanics of the property tax (Interview B, 2002 and G). The ability to reflect public opinion from these sectors is limited by their lack of public

engagement (see 9.2.10 for elegance, empowerment and emancipatory aspects of performance).

8.10. PROPERTY TAXATION AND THE BILLING INTERFACE PROJECT (BPI) OF THE CITY OF CAPE TOWN

8.10.1. Introduction

The Billing Interface Project (BIP) was a project run con-currently with the GV2000 in order to facilitate transfer of information between the valuations functional units and the property taxation functional units within the City. This interface is at the output end of the GV2000 Project data flow.

The billing of property tax is the responsibility of the Billing System of the City (and previously the UniCity) and not of the GV2000 Project. The Project undertakes to supply the Valuation database to the City, whose responsibility it is to design the interface between the systems (Richardson and James, 2001). However, a directive was obtained from the GV2000 Steering Committee to include the progress on the BIP interface in meeting agendas. This would be in effect from August 2001 (GVSC, 2001b).

The design of the valuation database-property tax interface system was undertaken using the framework of the BIP. The billing systems needed to be capable of obtaining the valuation information from the valuation database and applying the property tax tariff and rating structures to the data (Richardson and James, 2001).

A Project Initial Document (PID) was drawn up to ensure that the billing systems met the requirements of the project. The project was specified in terms of management, staff and other resources, as well as budgets and timeframes. Risks and constraints were identified (Richardson and James, 2001).

The legislative framework for the system had been amended and rates and tariffs were legislated in terms of the Local Government: Municipal Systems Act No. 32 of 2000 (service tariffs), the Property Rating Bill 2003 (property taxes), the Local Government Transition Act No. 209 of 1993 (property tax rates), and the Local Government: Municipal Structures Act No. 117 of 1998 (property tax rates) (Richardson and James, 2001).

An important new legislative requirement concerned the process – it was required that community consultation (public participation) be conducted. This presented an increased risk to the BIP as it could cause the implementation to be protracted. In addition, various lobby groups and activists were very interested in the process. The implementation of taxation reform alongside valuation reform was seen to complicate the management of the BIP, as the issues at hand could not easily be separated in the public mind (Richardson and James, 2001).

The BIP was begun in August 2001. A target date of December 2001 was set for the modelling of proposed rates and tariffs. The BIP would be finalized in June 2002 in time for implementation in July 2002 based on the new general valuation produced by the GV2000 Project.

8.10.2. Goals of the BIP

The main goal of the BIP was to ensure that the amended rates and tariff structures could be implemented using an interface with the GV2000 valuations for property tax assessment purposes (Richardson and James, 2001). It was essential that all properties included in the GV2000 could be assessed for property tax, and billed. Failure to ensure both of these outcomes would result in inequity in the resulting property tax (Richardson and James, 2001).

A secondary goal was to be able to use the billing system as a simulation of the effect of changes to property tax policy (rates and tariffs) on individual debtors quickly and efficiently.

8.10.3. Risk assessment and management for the BIP

Identified risks involved the interface with the GV2000 and the ability of that project to feed the correct data to the BIP, the cooperation of the individual staff in the MLC administrations and their supply of skilled personnel to cope with data issues, and that the planning and political processes are effected timeously. A further risk was that overtime would be required from permanent staff, which would require their agreement and co-operation (a similar risk is evident in the GV2000 Project – see 8.8.2). In addition to this, contract staff would be required to complete the BIP within the required timeframe. A key output of the BIP was the creation of system and management processes which would facilitate the centralization of the City's property management.

8.11. GV2000 PROJECT EXECUTION (2001-2002)

8.11.1. Changes in Project management

In interviews B and E there is substantial evidence of conflict between senior members of the Project Team. This cannot be reported further for fear of prejudicing the individuals concerned. In January 2001, the resignation of Jeff Epstein from the Barends Group was reported (GVSC, 2001b). Sally Powers, also of Barends Group, was appointed to take over the role of CAMA Manager for the GV2000. There were financial implications associated with this change – Barends did not want to lose out on their share of the project. Also, the knowledge of the Cape Town property market is vital to CAMA, knowledge which Dick Ward ostensibly had (GVSC, 2001a). He is a proven trainer, and Barends was assured that they would not lose out financially should he be appointed to train (GVSC, 2001a). It was resolved that Dick Ward would be more involved that originally envisaged and was to provide training and evaluation and would also be involved in the non-residential valuations modelling (GVSC, 2001a). Sally Powers was to perform the CAMA modelling (GVSC, 2001a). The models would be reviewed by Sally Powers and Dick Ward (GVSC, 2001a).

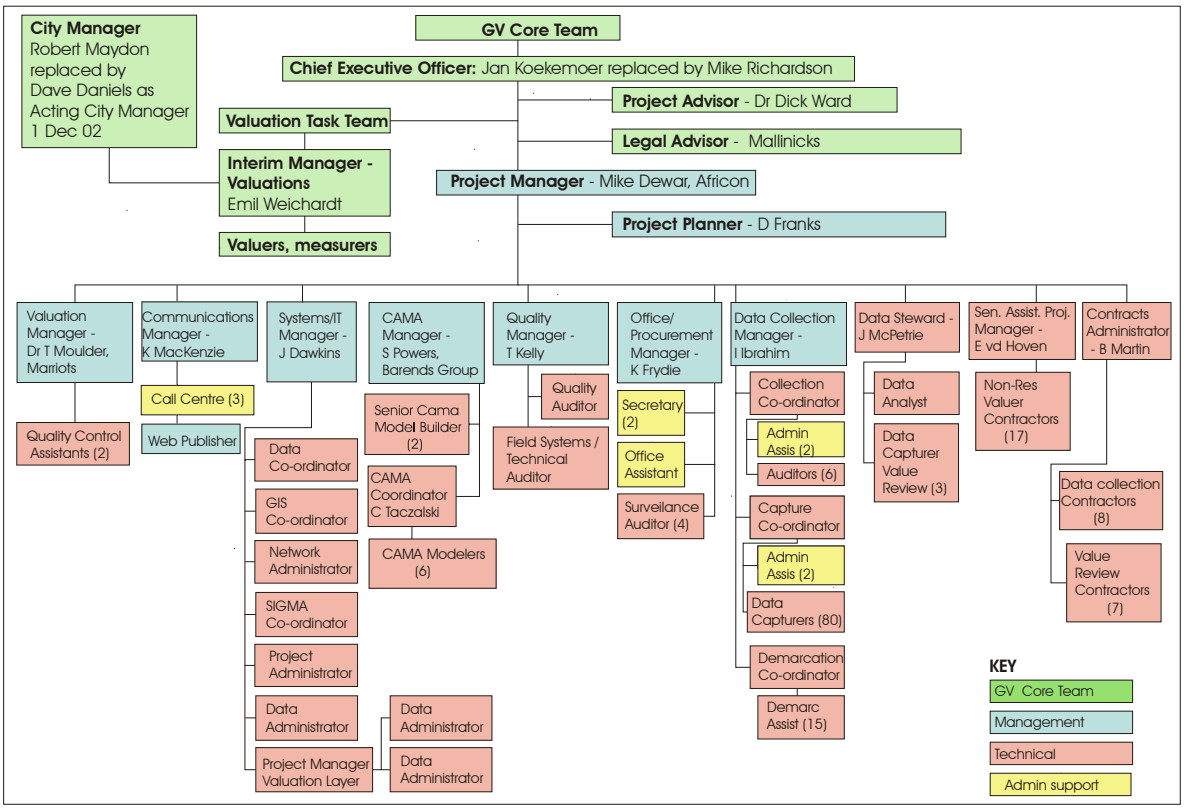


Figure 8.5 Project organigram mid 2001 (GVPMT, 2001b)

At the same time, Sarah Hetherington replaced Katharine MacKenzie as representative of T-Junction Communications, and as the Communications Manager of the GV2000 Project.

The project organigram evolved and was finalised by mid 2001 with the main changes being at the senior management / policy level (see Figure 8.5).

8.11.2. Physical space

The provision and cost of office space for the GV2000 project was not included in the initial budget estimate as it was assumed that this would be provided by the City (Epstein, 2000a). This was an additional budget item added into the project cost at the start of the project.

Integration of the Project office with the functioning of the valuations department of the

City of Cape Town was addressed in Project Plan Revision 4 (GVPMT, 2000c). A Project Office was established on the 4th Floor of the Paul Sauer building, strategically chosen as it is adjacent to the Cape Town MLC offices in downtown Cape Town. This office accommodated the Project Management Team (Africon), the Project Advisor (Dick Ward), the Call Centre (T-Junction Consortium), the CAMA Training Facility, Data Collection Form (DCF) and Sketch Batching Team, Data Capturing Team, IT Infrastructure and Support Team. Project integration was thus promoted by the establishment of a Project Office and its proximity to the Civic Centre of the Cape Town MLC. In total over 100 people were based in the Project Office.

In order to facilitate administrative integration, a Project Office Manager position was established as part of the Project Manager's team (Africon). Frydie Kamaar was appointed to this position. The main functions of this Office Manager were financial control and administrative support. The Office Manager established office procedures.

8.11.3. Communication aspects

Communication was noted at an early stage in the process to be necessary both within the Project Team, and also coordinated with role-players outside, such as ratepayers, whose co-operation was critical. The importance of effective communication is evidenced by the communications team receiving its mandate from the most senior structure in the Project - the UniCity Commission.

Legal requirements

Public participation is mainly specified in the Municipal Systems Act No 32 of 2000. Involvement of the community and community representatives was legislated. A culture of inclusive participative governance was the aim, facilitated by giving appropriate and timely notices, invitations for comment, and feedback. The legislation is progressive in its explicit inclusion of women, disadvantaged groups, illiterate, and disabled people in communication efforts. Language preferences should be considered, as well as

communication in mass media which is accessible. Local radio and local and City-wide press are such media.

Stakeholders identified for targeted communication efforts

It was necessary for effective communication to identify the major stakeholders in the GV2000 project. These stakeholders were identified as (GVPMT, 2000c):

- The project sponsor: the UniCity Commissions General Valuations Steering Committee and its representatives;
- Council Officials: all officials who have direct involvement in the process and an interest in its success – valuations team, project facilitator etc;
- Other Council Officials: officials who are required to assist in the acquisition of data – finance, survey, data management etc;
- Special Interest Groups: civil society individuals and groups – ratepayers bodies, street committees, and Civic Associations (e.g SANCO, RDP forums), also business groups such as Wesgrow and the Chamber of Commerce etc;
- The General Public: residents of the Cape Metropolitan Area including owners and occupants who will be affected by the project outcomes;
- Project Team Members: individual specialist contractors and seconded council officials making up the project team; and
- Project Contractors: individuals and groups contracted to supply specific services to the project.

Stakeholders are both internal and external. External communication was conducted through a designed communications strategy. This strategy involved (GVPMT, 2000c):

- Public/media launch of GV2000 and introduction of the role of data collectors in August to October 2000.
- Publication of an information brochure in plain language, and in the three official languages of the area.
- Preparation of bibs and ID cards for data collectors.
- Call back card for data collectors to leave if the owner was not present.

- Updating and maintenance of the website. Inclusion of photographs of data collectors on the website for confirmation of identification (GVPMT, 2001a).
- Operation of a call centre staffed by a three person team fluent in English, Afrikaans and Xhosa (GVPMT, 2001a). By the end of June, about 3 000 calls had been fielded by the call centre (na, 2001), and by August the number of calls had risen to around 5000 (GVSC, 2001b). From the inception of the call centre in October 2000 until January 2002, the call centre had fielded about 10 500 calls (na, 2002a).
- Distribution of pamphlets before data collection process in an area.
- Placing of adverts in community newspapers at strategic times.
- Media and business briefings (GVPMT, 2001a).
- Media releases and posters prior to data collection in an area (GVPMT, 2001a).
- Participative involvement with community organizations particularly in the areas which have not been previously valued and taxed.
- Monitoring the articles and letters in print and electronic media.
- Liaising with media including radio to get airtime on the GV project.
- Newsletters on progress for stakeholder representative bodies.
- Liaison with stakeholder representative bodies including business bodies; supply of information to these bodies.
- Preparing and conducting business briefings.
- Preparation and distribution of the information package for all councillors.
- Information briefings aimed at councillors throughout the project duration.
- Participation in training of the data collectors.
- Gauge success of the communications efforts through a questionnaire to be used by data collectors.
- A specific campaign to address the communications needs of non-residential property stakeholders.

Communications within the Project team

Formal lines of communication were structured according to the organizational organigram (GVPMT, 2000a). However, the Project Management Team had weekly meetings in order to further facilitate effective communication between functional groups and also to encourage internal lines of communication, both of a formal and informal nature. It was recognized that a culture of co-operation needed to be fostered and communication was geared towards this outcome. A participative management style was also encouraged (GVPMT, 2000a).

Formal communication included regular reporting by functional managers as specified in the project plan (GVPMT, 2000a). These reports were collated and presented in summary form in the monthly project report prepared for the GV Steering Committee. Performance was reported by exception i.e. if scope and quality deviated from the project plan, and by variance in the case of time and cost reporting deviations from the project plan (GVPMT, 2000a).

External communication focus

The overall emphasis of the communication process was the fairness of the assessment process, rather than the ability of property owners to pay the resulting rates. A major part of this was the aim of separating the process of valuation and the process of taxation in the mind of the tax payer. T-Junction, an external firm, was contracted to design and execute the public relations programme for the GV2000. It was noted that this would have to be active prior to any field data collection (Epstein, 2000a) and also should extend to the valuation field review stage (Epstein, 2000b).

A media launch took place on the 5 October 2000. This was attended by major daily newspapers, both local and national, radio journalists, local community newspapers, and electronic media personnel. This launch was followed by letters by the Rates Action Group (RAG) and private individuals in newspapers countering the launch and arguing against the

process. These were replied to using the same medium by the Project Team (GVPMT, 2000b).

Existing communication structures

There was no pre-existing web presence for property valuations which could be used by the City in communicating with its electorate.

Communication with councillors

Special information meetings with councillors were held. Councillors also received a ring bound information file which was updated regularly with additional information. These were distributed through the local councils (GVPMT, 2000b).

Communication with property owner groups

The Chamber of Commerce was involved from the beginning in representing its members interested in terms of the valuation and taxation of business properties. Initially, a questionnaire was sent to all such property owners and this generated a great deal of interest and over 200 calls per day to the project's call centre. However, there was a complaint of lack of information about the questionnaire laid by the Chamber of Commerce. This resulted in a business briefing session on the 6 November 2000 (GVPMT, 2000b).

A briefing meeting with business representative groups such as Wesgrow, Chambers of Commerce, and the South African Property Owners Association (SAPOA) was held in November 2000.

Language issues raised their head early on in the communication process, with objections being raised to communications efforts being dominated by the English language medium spearheaded by the Chamber of Commerce (Interview G, 2002). Cape Town has three main languages in common use – English, Afrikaans, and Xhosa. Prior to resolution of the legal requirements for the use of different languages, the Project Team added footnotes to all

communications stating that forms, articles etc could be obtained in other languages than English upon request (Interview G, 2002).

Mass communication with individual property owners

All areas were targeted with information brochures a few days in advance of data collectors visiting an area. Data collectors carried additional brochures with them and full page advertisements were placed in newspapers relevant to the areas to be visited by data collectors.

In Langa and Guguletu, previous BLA's, communications meetings were held with councillors and civic associations such as SANCO, the RDP forum, street committees etc. A community meeting was held to communicate the process of data collection and valuation to about 80-90 local residents (Interview G, 2002).

Electronic communication

An email address and project website were established. Unfortunately the email address was not operational by the time the data collectors began their fieldwork (in Oct 2000) and the web page was not able to display the images of the data collectors as required (Field notes, 2000). These functions were an integral part of the process of identification of authentic data collectors. The Project Team was very mindful of the reluctance of residents to allow unidentified or possibly bogus people onto their properties in the light of the high rate of violent crime in South Africa.

Communication and public participation in Xhosa areas

Jacobs (2002) was appointed to handle communication with the Xhosa-speaking population within metropolitan Cape Town. Her brief thus covered the previous BLA's which have many problems historically regarding their local governance and the payment of local government taxes and service charges (see section 8.3). Jacobs (2002) had the task not only of explaining the need for a general valuation and the valuation process, but also the concept of rates and service charges, as many of these areas had not been rated before. In areas such as Gugulethu, a previous BLA, Interim Community Service Charges were levied

to homeowners. These were broken down into specific service charges such as electricity, water, sewerage, refuse removal and "rates". Water, refuse, sewerage and "rates" were a flat monthly charge, whereas electricity was charged on consumption (Jacobs, 2002).

In many Xhosa-speaking communities there is a well-organised local structure of community governance beginning with street committees and local representatives leading through to local councillors representing the people at municipal level. It must be mentioned that the community structures in Xhosa-speaking communities are well established and had been active throughout the apartheid era. It is a strength that made the task of communication much easier for the team. Residents in these areas do not have Ratepayers Associations as are found in other communities who have previously been paying rates. Jacobs targeted the Councillors in her efforts to communicate these concepts, and believed that this process was successful and that the concepts were effectively communicated to the people affected (Jacobs, 2002).

Initially, Jacobs (2002) concentrated on communicating the valuation process as the data collection was the first contact many property owners had at that stage. It was only at the beginning of 2002 that it became necessary to include the concept of rates as property owners became aware that the valuation would lead to rates being charged based on this valuation.

The concept of market value and the link between this and the rates ("cents in the Rand") property tax were communication challenges. Many property owners in Cape Town still have strong familial ties to the former homelands of the Transkei and Ciskei and parallels can be drawn with the payment to local chiefs or headmen once a year for the land used in the communication of property taxes (Jacobs, 2002).

Jacobs (2002) identified that many people in these areas are illiterate, and many literate property owners do not regularly read the press. In addition, the level of education is low. She identified that community radio stations would be an effective method of information

dissemination and these were used a great deal. The local radio station, Radio Zibonele (meaning "see for yourself") covers most of the main Xhosa-speaking areas in the City such as Masipumelele and Imizamo Yethu. Phone-in programmes were used as well as interviews and advertorials.

The questions posed were used in the design of the information pamphlet, which was distributed in the "knock and drop" method to each household. This pamphlet was the same as was used throughout the area of the GV2000 Project but was translated into Xhosa. In addition to the pamphlet there were a number of community meetings at various levels.

Community structures which were targeted in the communications effort were the civic structures of the South African National Civic Organization (SANCO's), the Reconstrution and Development Forums (RDP Forums) and the Councillors. Initially meetings were held with these bodies so that the community leaders were informed first and then general meetings were held with the communities they represented.

Special information meetings were held for Councillors and they were given more documentation than others. This was the case for all Councillors across the City, not only those in the Xhosa-speaking areas. An A5 folder, or "information pack" was presented to them and kept updated with new material when required throughout the project.

The Call Centre was a key element in the communication process in Xhosa-speaking areas and its multilingual set up was very helpful. Jacobs (2002) preferred to keep a personal relationship with the Councillors and community representatives and have an open door policy when it came to communication with them. When representatives were conducting information sessions with their constituents (such as Ward meetings), Jacobs would supply any additional information, and would possibly attend the meetings. The efforts of the communication team were thus matched proactively by the community representatives.

The data collection teams for the previous BLA areas and other Xhosa-speaking areas were made up of members of those communities. This contributed to the feeling of participation in the process and facilitated understanding, as the data collectors could also help to explain the process as they visited each property. Jacobs (2002) confirmed that the data collectors were sufficiently informed in order to answer queries. The communication team worked with the training of the data collectors and concentrated on how to conduct interviews, the process of valuation and its rationale etc.

Many misperceptions needed to be overcome in the Xhosa areas. Some of these were:

- The concept of market value led property owners to conclude that the municipality was going to sell their houses. In rural tribal areas, the concept of individual ownership of land is not traditional. The communication that the land and dwelling have value has been a spin-off of this project. In many instances property owners were pleasantly surprised at the value of their properties as they had previously only considered the dwelling to have value. For informal dwellings such as shacks, the valuation process attaches no value to the dwelling, whereas in sales, the converse is true.
- The perception that a bank was conducting the valuation, or that the processes were the same. Only banks had previously been involved in property valuation in these areas for the purposes of determining valuations for mortgaging the property.

Communication regarding rates began once the GV2000 Project was completed. This concentrated in the areas that had not previously paid rates. An easy-to-read comic booklet was designed explaining the rates rebate, the use of funds generated from rates etc. In addition, in the middle of July, as people were receiving their first rates accounts, two field workers from each Ward were to hold meetings in their wards about the rates structure, the R50 000 rebate, the sanitation etc. It was raised by property owners in Khayelitsha that they would appreciate their accounts being printed in Xhosa to facilitate maximum understanding.

Communication and public participation in former coloured areas

Jacobs (2002) was asked about the "coloured" community, as no particular person was allocated these areas specifically. In former coloured areas rates have been charged, and so the process of communication is similar to the former white areas. A great number of the data collectors were from these communities and that helped with acceptance and communication of the process. The history of the LOGRA court case, in which some former coloured areas were the complainants, had increased awareness of processes and rights with respect to property valuation and taxation.

There was also a higher literacy ratio in these areas than in Xhosa-speaking areas, as well as a higher employment and income base, all of which reduce the problems of communication. Community radio stations were also used with phone-in programmes which were very informative. In addition there are many active Ratepayers Associations or Residents Associations which were proactive in requesting information and participation at their meetings.

Mass media

From about November 1999, local Cape Town newspapers reported the proposal to use CAMA for a new general valuation of the properties within the metropolitan area. Property taxes were inequitable and that this required correction (Ward, 2001a).

Upon the release of the first draft of the Property Rates Bill in August 2000, media reports focusing on the impact of rates increases became common. Reports focused on the role of the Bill in the bundle of local government legislative reforms, and its goal to ensure equity in property taxation. There was a clear expectation of greatly increased property taxes in some areas which for up to twenty years had what was perceived to be a tax holiday (The Star, 2000a). The new property tax was interpreted as a "Robin Hood" style of wealth tax, and clearly progressive – to subsidize poorer areas at the expense of the wealthy areas (Williams, 2000).

Conclusion

In the opinion of Jacobs (2002), the collaboration between the different members of the communication team was vital for its success. The communication team liaised well with the project managers and concerns that became apparent during the process could be addressed.

The communications team was of the opinion that relevant bodies and individuals were well consulted on the whole. The efforts of the communications team to address language, illiteracy and poverty issues which may affect communication was adequate as a first attempt. Marginalization of the poor and illiterate however, resulted from inadequate and poorly situated venues for the informal review. The informal review can be seen as a component of communication, but it is included in the next section on dispute resolution, as an initial mechanism employed by the City in the GV2000.

8.11.4. Sourcing fiscal cadastral data

The fiscal cadastre primarily consists of information from the juridical cadastre, and property characteristics data. From this, the valuation roll, or record of values in land and improvements at a certain "base date", is produced. A valuation roll, as specified by the PVO 1993, should contain information about the name of the property owner, a unique reference of the valued property, the physical extent of the property, the value of the land, and the value of the improvements. This was amended by the Property Rates Act, to include the category of the property (e.g. residential, industrial), and the physical address. The requirement for the land value and the value of improvements was dropped in the Act, which only requires the improved value of the property. Obviously if there are no improvements, this is equivalent to the land value. However, the Property Rates Act was not in force at the time of the GV2000, and so the requirements of the PVO 1993 were adhered to.

Juridical cadastral information

The juridical cadastre in South Africa is of a high standard in terms of completeness, currency and accuracy. It is maintained by the Offices of the Surveyors-General which fall under the Department of Land Affairs, part of the Ministry of Agriculture and Land Affairs of the National Government. The system of land registration in South Africa relies on evidence in the juridical cadastre. The boundaries between land parcels are defined by beacons. The position of these is reflected mathematically on survey diagrams. Their terminals are given a numerical value relative to a national co-ordinate system. This has the advantage of providing very reliable data as to the areal extent of each property. As this is a major component in the determination of value, this is a significant advantage in favour of the use of modelling to predict market value. Each property in a municipal area is supposed to be accurately surveyed, thus yielding a database of property location and extent information, as well as having a unique identifier in the Erf (local term for plot) number.

All formal property transactions are recorded in the Deeds Office, also within that Department, and are based on land parcels approved for transfer by the Surveyor-General's Office. Details of land transfers are recorded, including seller and buyer, as well as sale date and price for the purposes of collection of property transfer tax (called transfer duty).

Although this information appears to be complete and up to date, subdivisions and consolidations of land take place with often some delay between approval of the diagrams and the transfer of the portions to new owners. The cadastral property layer of the Offices of the Surveyors-General are thus not in 100% agreement with the transfer and ownership records in the Deeds Office. There is also the issue of split land parcels, overlaps and gaps and other data consistency problems. Additional problems arise when building commences on an unregistered subdivision. Since property tax is a personal tax on real property, the link between the property and the owner is critical. The best mechanism to guarantee this is to link the property tax cadastre to the registered cadastre, rather than to the surveyed cadastre. In addition, information in the Deeds Office is also not 100% correct and Erf extents are at times erroneous (IPTI, 2002).

Each local authority is obliged to keep records of all land parcels within its jurisdiction. This requires continual updating with reference to land subdivisions, transfers and developments. In many cases these databases were not kept complete and up to date. Data was also held in different formats in the former MLC's. These data issues presented many challenges to the Project. It is suggested that in future the Rates Clearance Certificate is used as it is required for property transfer to take place, and provides an existing process link between the Deeds Office and the City (IPTI, 2002). This would improve the juridical cadastre, but sales prices would still be required from the Deeds Office records. Additional proxy sales could be generated in areas with insufficient sales (IPTI, 2002). These are sales figures ascertained by expert professional valuers for a set of properties.

Issues of concern around existing property information

The completeness and quality of the data acquired from the local government administrations prior to their amalgamation was a problem. There were a large number of discrepancies and miscorrelations (GVSC, 2001b). There were also duplications of records (GVPMT, 2000b). The issue of a unique property reference number to be used in the geographical information system (GIS), the SIGMA system and linked to the property billing (taxation) system required resolution (Core Team, nd). By August 2001 there were still major problems with the data obtained from the various former MLC administrations. The completeness and quality were poor.

The floor areas of many buildings were not available or were uncertain at the date of sale of the property. The floor area may therefore have been incorrect on the valuation sketch, while property value is highly correlated with this variable. Many pre-1925 building plans are not in the possession of the City due to a fire (Core Team, nd).

There was no accurate estimate of the number of single dwelling residential properties within the City prior to the start of the project, and estimates ranged from 450 000 to over 600 000 (Epstein, 2000a, GVPMT, 2000a). Included in the combined existing valuation

rolls of the MLC's were 564 949 properties (GVPMT, 2000c). Some 3470 of these represent blocks of flats owned under sectional title (form of ownership of units in a scheme in South Africa). The split of these into units and not valuation as a unit will be the subject of the GV following the GV2000 (GVPMT, 2000c).

The PVO 1993 required separate valuations for land and improvements. This would be effected by modelling vacant land zoned for residential use.

Data was noted as having problems of accuracy, completeness and correctness (GVSC, 2001a). The number of unzoned properties was about 9000, and the number of duplicated records about 6000 (GVSC, 2001b). An estimated 50 000 properties would be added to the property tax base in the course of the GV2000 (GVPMT, 2001a).

Co-operation from the MLC's in the compilation of data for the UniCity was reported to be good in the Progress Report 4 (GVPMT, 2000b). However, this was noted as a problem in Project Plan Revision 4. Cooperation was not always forthcoming (Interview A, 2001) and in many cases the Project Team was required to approach more senior officials in the MLC structures in order to clear bottlenecks (GVPMT, 2000c).

At the end of the GV2000 Project, there was still a great deal of work to be done in order to facilitate smooth data transfer from various other functional units of the City to the valuations unit. Of importance is the information link from the building inspection and land use management units (Interview K, 2003).

Collection of information on property characteristics

The data capture was contracted to iCE (Information Consulting and Engineering). The manual produced to guide data collection was deemed suitable for the quantitative data collection, but required revision for the collection of subjective data variables. In particular, market value was identified as highly sensitive to the subjective quality and view characteristics. These were identified as requiring more attention at the data collection

phase in order to reduce subjective influences (IPTI, 2002). This recommendation led to further research in the automation of view modelling using GIS conducted under the supervision of this researcher between 2004 and 2006. Aspects of quality and location were also thought to be insufficiently collected for higher valued properties (IPTI, 2002). A recommendation was made to use additional technology such as Global Positioning System receivers (GPS) for tracking data collectors and digital images in future data collection processes (IPTI, 2002).

The International Association of Assessing Officers (IAAO) advocates the creation of a field data collection manual to guide this process. This was produced (by the CAMA manager) and amended (by the Data Collection Manager) during the course of the data collection phase, finally reaching its 13th draft (IPTI, 2002).

A "Single Residential Field Data Collection Form" (DCF) was drawn up to be used by the data collectors in visits to properties. A sample of this can be seen in Appendix C. If a sketch of the property was available, this was included on the form. Sketches were to be provided by the MLC's. Already printed on the form for the data collectors was the property identification information which included a unique ID number for each DCF. The City's Property Reference Number, a legal description of the property, a sale price (if sold), the map reference, and Surveyor General's reference number, were also printed on the form if these data were available (IPTI, 2002). Unfortunately the DCF's were designed prior to knowledge of the data capture format required by the CAMA system.

Data collection contractors and data capturers were to be appointed to the Project Team in order to execute the tasks of field data collection and entering these data into the computer system. These data collectors required extensive training involving larger numbers of trainers and mentors than originally planned for. Training of the trainers had also been underestimated in Revisions 3, 2 and 1 of the Project Plan (GVPMT, 2000c). An additional complication was the reluctance of municipal valuers from the Cape Town MLC to train the data collection trainers.

Training began on 4 October 2000 for about 5 weeks. The training included classroom sessions, fieldwork, and mentoring. The data collectors were in many cases unemployed people with low levels of education and training, and came from all over the Cape Town area. Data collection was conducted by MLC's in a phased approach and was envisaged to be completed by the end of January 2001. Within an MLC, work was split into contract areas, or Work Packages. One of the problems encountered was the appointment of data capturers in areas they were not familiar with, which had an implication in terms of use of public transport, coverage of the area, and assessment of subjective elements.

Data collectors who were denied access to properties were to request the resident to supply the information required to complete the form. If the resident refused to do this, the consequences of refusal were to be explained. A 60% access target (obtain entry to at least 60% of properties visited) was set for data collection contractors within their Work Package area. At least two visits per property were required if a resident was not home on the first visit, but most properties were visited at least three times before an estimate of property characteristics was made from outside the property. An access rate of 70% was reported by January 2001 (GVPMT, 2001a) which increased to 80% for the overall data collection effort (Sylvester, 2002a). In some areas, such as Constantia and Bishopscourt, the access rates stayed as low as 70% (Interview B, 2002). This was mainly due to lack of political buy-in by the residents of these up market areas, as well as trust issues with allowing data collectors access to private property. Errors in data quality appeared to be worse in these areas where data collectors were forced often to use information only available from a street view of the property. Socio-political factors thus played an important role in data collection quality in these areas.

Data collectors were paid on the basis of commission averaging 4-5 inspections per hour. This structure led to a high rate of fraudulently produced information not based on an actual property inspection. This was reduced by ad hoc checks on data (IPTI, 2002).

In the former BLA areas there were very few recorded sales as revealed on sale maps of these areas (Interview, H). In the case of the GV2000 Project, data collectors were tasked to collect data specifically to increase the amount of "good" sales data available in former BLA's. Properties in which the bond amounts were way higher than expected were identified and data collectors were requested to source as much of the following information as possible (Powers, 2002):

- Amount of down payment (deposit), which the buyer is likely to remember.
- Allowing the data collector to look at the developer-buyer contract in order to record:
- Total purchase price.
- Land value.
- Council subsidy (if any).
- VAT.
- Developer fees.

The strategy for creating proxy sales data was as follows:

- Add the down payment to the bond amount.
- Calculate a typical bond/sale price ratio and apply that to obtain an indicator of sale price.
- Deduct Council subsidy from the sale price as this is not available in the retail market.
- Deduct VAT.
- Deduct developer fees.

Data collection in non-residential areas was performed by registered valuers and included about 300 000 properties. Roughly 50 000 properties were identified which had never been included on a valuation roll. This had the effect of increasing the property tax base which is further linked to improvement in equity of valuation and taxation as those who should pay their share of the tax burden are included.

Quality control collection of information on property characteristics

Absolute objectivity is impossible to achieve when relying on human data collectors from different cultures and with different experiences. This was particularly relevant for the collection of qualitative data such as quality, condition and view (Interview F, 2002).

Sales verification was undertaken to check whether the property sale price seemed reasonable. This was performed by valuers based on their knowledge of the area (Epstein, 2000a). The physical characteristics of sale properties should also be similar to what they were at the base date.

Checks on the collected data were performed in accordance with ISO9000 sampling standards (IPTI, 2002).

Data capture

The data capture was also contracted to iCE. Once the DCF's were returned to the Project Office, they were entered into the SIGMA system by data capturers. This aspect of the project was delayed by customization of the SIGMA software, and additional data capture resources were provided by the Cape Town MLC administration. By August 2001 there were 7 data capturers on the team (GVSC, 2001b).

Data capture checks were performed to ensure the quality of the data entered into the CAMA system. An ISO9000 requirements for validation were used (IPTI, 2002).

Information management

A new GIS layer was required for property valuations called the "Valuation Layer". This was necessitated by the need to manage properties for valuation. Such complexities were split remainders – in which the original property is subdivided and forms two geographical parcels but one legal parcel of land with a single owner. Such parcels are required to be valued separately. The need for this additional layer presented a scope change to the project which was approved by the GV Steering Committee in August 2001 (GVSC, 2001b) at an

additional cost of R1.4 million. However, as the project was well within its budget, this was not a cause for concern (GVSC, 2001b). The creation of the valuation layer revealed further problems in the property tax base with properties missing from the valuation roll. There were 4000 properties missing from the South Peninsula area alone (GVSC, 2001b). In addition, some of the properties identified on the valuation layer did not have information such as property owner or address and hence interfacing with the billing systems was an issue. About 4000 properties per MLC area had no addresses for billing. The main process of obtaining owner addresses was the subdivisional process. The responsibility for obtaining owner addresses was outside the project scope for the GV2000, but was an issue which had serious consequences for delivering equity in taxation.

Property sales information

Sales in formal, established and active land markets

In South Africa, a tax is imposed on the transfer of properties between owners (transfer duty). This tax is determined as a proportion of the sale price of the property and this data is readily accessible on a computerized database. In addition, the identities of the buyer and seller are available (unique personal identity numbers), as well as the date of transfer. For the GV2000, sales 1 year before the base date of 1 January 2000 and one year after this date were included in the sales data. In Calgary, which also employs CAMA, revaluation is performed annually, and sales data from two years prior to the base date is used (Confidential correspondence F, 2003). There is thus an overlap of sales data between successive valuations, which promotes continuity of assessment. The sales collection time period was too small given that it resulted in a number of areas with insufficient sales for reliable modelling. This was a particular problem around Table Mountain (IPTI, 2002).

Property sales data was not accessed from the Deed Office records as there would have been a substantial charge for this data. Sales data was also recorded by the MLC's, but this data was incomplete, in various different formats, poor quality, and outdated. This data source was, however, chosen (IPTI, 2002).

Informal land market sales

Problems occur in previous BLA areas where property transfers are often non-legal (informal). Even in cases of legal transfer of ownership the sales price may not reflect market value as many other non-monetary payments may occur as part of the sale (Interview F, 2002). In some cases this can be in the form of part payment over a specified time period, transfer of other possessions such as furnishings, and other types of "in kind" payment (Interview F, 2002). In some cases, the true price paid for a property is not revealed in order to reduce transfer tax (Interview F, 2002).

In other cases, lack of knowledge of the property market resulted in buyers paying only for the improvements and not the land. It was found that in the BLA areas the Deeds Office records for sales always agreed with the mortgage amount, but not always with the total purchase price. The use of this data for the purposes of market valuation becomes problematic as the sales data is not a true reflection of this value. The number of good sales in the BLA areas was about 464 (Powers, 2002). In some cases the mortgage price was three times the sales price. Mortgage prices were then used rather than recorded sales prices, as it was likely that the sales price was not a true reflection of property value.

In order to obtain more sales data, data collectors were tasked with determining the amount of down-payment paid (relying on the memory of the owner), and information from the contract between the developer and the buyer if available. This would include the total purchase price, land value, council subsidy, Value Added Tax (VAT) and any developer fees. There were 279 such properties. Generally, the sale price could be estimated by adding the deposit to the bond amount. The subsidy, VAT, and developer fees would then be deducted from the sale price. Vacant land sales in the BLA areas amounted to 421. (Powers, 2002)

Sales of old properties in emerging markets

Many former BLA's were not "proclaimed" areas and had thus not been surveyed and parcel data was not available such as is required for efficient property taxation. Once these

areas were included into the newly restructured local authorities, they become proclaimed. Properties in the former BLA areas had not been a commodity which could be bought or sold under apartheid laws. This was due to a number of factors, but mainly that the land was not owned by the occupants, it had little commercial value and such property was in very short supply and occupants would seldom move. There was thus no active informal market either. Land markets in these areas are still developing, but remain largely informal and sales data is scarce presenting huge problems in a CAMA process as sales data is fundamental to the modelling process.

8.11.5. CAMA modelling

Training of CAMA modellers

The CAMA Manager and two senior CAMA Model Builders were to train up to six CAMA Model Builder Trainees. Training consisted of workshops, shadowing and on-the-job experience.

CAMA modelling

Initial modelling was performed by Jeff Epstein and then Sally Powers. They developed four hybrid models for the Cape Town MLC area while for each of the other MLC areas and for the BLA areas one hybrid model was produced for each. Dick Ward, the CAMA Advisor, was never happy with the decision to develop more than one model for Cape Town as it had the potential to create discontinuities in value across the model boundaries. In so doing, the goal of equity is compromised, and the ability to understand the models and their variables and mathematical transformations is more difficult for modellers and valuers. In addition, a global model appeared to perform better statistically. All of these issues were addressed by Sally Powers in further modelling. However, after this it was noted that some micro-suburbs required valuation adjustment, there were cross-suburb inequities, and very high valued properties were undervalued.

In Calgary in Canada, 23 single dwelling linear residential models were used, with additional models for condominiums and for apartments (Field notes, 2003, Confidential

correspondence F, 2003). This was deemed to be far too many and they were in the process of reducing the number of models for single dwelling residential areas to 10 in 2003 (Field notes, 2003). By comparison, the number of models in Cape Town, which has a far greater diversity of dwellings, appears conservative.

Analysis of the results of the modelling in the Cape Town MLC area showed that 60% of the properties did not require a field valuation review, while 30% could benefit from a review. However, 10% of the properties (15 000 properties) were problematic and required a field review. It was noted that data collection capture errors could be blamed for many of the problem cases (Ward, 2001b).

Further into the project, and after the resignation of Jeff Epstein and his replacement by Sally Powers, Joe Eckert of Barends requested that the neighbourhood location adjustments be simplified using a response surface technique using the statistical NCSS software for determining the effect of location on property values (see also Musekiwa, 2004). This was checked by a global response surface model produced by Dick Ward which would reveal properties which required review (Ward, 2001c).

Due to the paucity of vacant land sales in Cape Town and South Peninsula MLC's, land values from the 1997 revaluation were used for the determination of their market value. Recent vacant land sales data, mainly from the West Strandfontein area, was compared to the 1997 land only valuation data and a 13% increase was determined. This data was insufficient to be able to determine a defensible adjustment, and so no adjustment was made.

By June 2001 there was still no plan to perform modelling on the former BLA areas of Nyanga, Langa, Gugulethu, Khayelitsha, Mufeleni, Llwandle, and Crossroads (Ward, 2001b). These would have their own model, despite their geographical discontinuity (interview with S Powers and C Taczalsky, 2001). The land model for these areas was developed using global response surface modelling.

Models for the MLC areas of Tygerberg, Blaauwberg and Oostenberg were underway by June 2001, while those of Helderberg and South Peninsula were not yet started. Each MLC area except Cape Town was modelled using one functional model. Collection and capture of sales data was too slow and a great deal of data cleaning was required.

Sectional Title properties were not valued separately, but each scheme was valued as a unit. A global model was used to model the market value of these properties.

In summary, there were four single dwelling residential models for Cape Town, one for each of the other MLC's (5 of these), one for the BLA's, as well as a vacant land model for Cape Town, vacant land models for each of the 5 MLC's, and another vacant land model for the BLA's (IPTI, 2002).

CAMA modelling problems

CAMA modelling was not without its problems and there were some disagreements as to its ability to deliver. The model for Quartile 4 in the Cape Town MLC was particularly problematic as it covered properties flanking Table Mountain. These properties are generally high in value and also highly variable in terms of age, view, condition, and value.

The CAMA process was not fully supported by the private sector Valuations Manager for the GV2000. Others interpreted his warnings as cynicism and consequently ignored them (Field notes, 2002). Another senior member of the Project Team had commented to the Project CEO that the values were far out and that there were big problems with the CAMA modelling of values in quartile 4 (Field notes, 2002). This was realized two weeks prior to the publishing of the Draft Provisional Valuation Roll at the end of February 2002 for the Interim Review process.

It was suggested to remove the property values from the Roll and allow residents to check only their property characteristics. However, the communications team vetoed this as

impractical and not advisable. This view was supported by the Interim Manager – Valuations for the City, and a last minute attempt was made to rectify that modelling of that area. There was a fundamental lack of sales in that area, and this, combined with conducting the valuation review in this area last, led to the crisis. (Interview B, 2002).

A criticism levelled in the external audit was that the complexity of the models and the response surface adjustments could result in instability when new sales data is added (IPTI, 2002). This instability will not be revealed in one pass of CAMA based general valuation, but would surely yield widely different property values in a subsequent GV process.

A further criticism is in the use of sales data in the response surface modelling, while these same sales data are the dependent variables in the valuation modelling. This leads effectively to models with a better fit to the data, but is questionable practice and circular logic. It cannot be easily defended from a mathematical/statistical point of view (IPTI, 2002). This also resulted in multiple/overlapping location modelling (IPTI, 2002). These issues were only raised in the external audit of the GV2000, and not at any stage of the project, although it would undoubtedly have raised concerns from the public if this process was more transparently communicated. It was suggested that a subset of the sales data be used only as an independent check on the goodness-of-fit of the modelling to actual data (IPTI, 2002).

Public perceptions and opinions of CAMA

Public opinions vary on the applicability of CAMA in Cape Town. There is a perception that the non-homogeneity of the properties in close proximity to one another, and the short time period during which sales data were collected, have lead to poor modelling. In addition, data obtained from the City reveals that in a number of cases sales data were not reduced to the base date (Interview J, 2002). In fact, investigations allied to this research revealed possible logical errors in the correction formula applied to reduce sales to base date. Interviewee J goes as far as to state that “statistically we can prove that what Dick Ward has done is actually mumbo-jumbo” (Interview J, 2002, 13).

CAMA model defence

The defence of the CAMA models in court was a matter for disagreement in the CAMA team. The communications consultants advocated transparency and necessity of defending processes, including CAMA models in court, if necessary. The Project Advisor, Dick Ward, was adamant that this would be opening up a can of worms and that only comparable sales should be argued in court on the basis of fairness (Interview B, 2002). This aspect was reported on in the external audit of the CAMA system. It was concluded that it was even impossible for a valuer to understand such things as the effect of location in an area (IPTI, 2002) – this seriously impacts the transparency of the process, and CAMA modellers simply expected the public to trust that they had done a good job. The difference in the methods of determination of market value (by CAMA) and the methods of defence of market value (by comparable sales) posed a risk. In many cases this risk was reduced by mediation between the owner and valuation officials of the City resulting from appeals, and reduction of CAMA generated values to ones which were reasonable from a comparable sales perspective. CAMA models were not released to the public (Field notes, 2002).

8.11.6. Tax policy about turn

In a highly controversial decision in May 2001, the City announced that it would abandon the differentiated rates system in favour of a flat rates increase of 7%. Some poor suburbs in the City had had zero increase in rates for the past two years, while others had been hit with increases of 32%. This was effected in order to bring about equity in property taxation in a phased approach prior to the implementation of the common valuation roll in July 2002.

The opposition political party at City level maintained that this decision increased the exposure of the City to the risk of litigation with the LOGRA case as a precedent. This was refuted by the Mayor, Peter Marais of the DP, who claimed that legal advice had indicated the reverse (Smith, 2001a). By the end of June a consortium of civic and resident associations from the poorer suburbs threatened to take the City to court over the abandonment of the differentiated rates policy. They demanded that this policy be applied

to the 2001-2 property rates, as well as extending rates rebates to pensioners and disabled residents across the city as this was not applied in all MLC's. They also demanded a guarantee of the implementation of the new common valuation roll in July 2002 (Smith, 2001b).

In July, a counter proposal was made by Jan Koekemoer, Financial Strategy and Services interim manager, and CEO of the GV2000 project. The proposal involved a rates exemption for all properties with a combined land and improvements value of up to R20 000. This proposal was greeted with enthusiasm, but there was doubt as to whether the threshold was high enough.

8.11.7. International exploratory visit

Also in 2001, the Portfolio Committee of the Department of Provincial and Local Government authorized a visit to the US to explore property tax systems in the US and elsewhere in order to inform the process of drafting of the Property Rates Bill. A market value principle underpins property taxation in the US. It should be noted that decisions to move ahead with a market value approach using CAMA technology had already been made prior to this trip.

8.11.8. Shifting timeframes

There was concern throughout the project that the timeframe for the implementation of the GV2000 be maintained. Critical path issues were raised in August 2001 (GVSC, 2001b) as a serious concern. There was a great deal of uncertainty as to whether the project would be delivered on time (end June 2002), and as to whether the BIP would be completed in time for increasing property taxes in July 2002 (GVSC, 2001b). There was particular concern over the completion of the non-residential valuations which were not performed using CAMA.

8.11.9. Valuation staff resources

Property valuers in South Africa are registered with the South African Institute of Valuers. They are required to have an approved Diploma or Degree. The capacity of valuer

resources was a problem (Ward and Smoothey, 2002). Additionally, training of the valuers was a concern, since they had no experience of CAMA and would have to defend the CAMA generated values in court (Core Team, nd). Valuation contractors would be sourced to augment the in-house City valuers (GVPMT, 2000a). This approach was brought into question by Councillor Les Rencontre in the light of the institutional capacity building goal of the GV2000. He advocated a restructuring of the valuation office with contracts extending beyond the closure of the GV2000 project. Councillor Belinda Walker advocated that the Interim Transformation Manager be brought in to discuss the matter (GVPMT, 2000a).

Staff compliance

MLC data management personnel provide a critical service to the project in the communication of the state of the data under their control and their ability to supply the required data within the time constraints of the project, and in the required format. The responsiveness of these staff to data queries was a concern (GVSC, 2000a). Additional time, effort, and expense were incurred to address the situation of problems with various MLC administrations (GVSC, 2001a).

Valuers, and financial and information/data analysis personnel had limited input at the stage of decision making to use CAMA in the GV2000. However, users were generally in agreement that the SIGMA system was the most suitable for data management, and the users were deemed to be committed to the process of making it work (Core Team, nd)

Procurement of contract valuation staff

The valuation of non-residential properties was conducted in terms of the PVO 1993, and involved determining the capitalized net income of the property, or replacement cost. Comparable sales were used in the final analyses of the property values. These processes require skilled professional valuers who are a scarce resource in South Africa.

Competitive bidding by private contract valuers for non-residential properties resulted in prices double those budgeted for (GVPMT, 2000c). In addition, the initial plan to appoint contract valuers to attend to all tasks within a geographical area proved not feasible. This was amended to contract valuations staff to perform certain functions. By May 2001 120 contract valuers had been appointed to deal with the valuation of about 35 000 non-residential properties. However, by August 2001 it was still noted that capacity in terms of valuer resources was a problem (GVSC, 2001b).

8.11.10. Restructuring of the City valuations function

During July and August 2001 the structure of valuations in the City was workshopped and a draft organigram reporting to the GV Steering Committee was drawn up. In August 2001, Emil Weichardt, of the former Cape Town MLC property valuations department, was appointed as Interim Valuations Manager (GVSC, 2001b). He would retain this post until an appointment could be made for a permanent Valuations Manager at the functional head level.

Weichardt headed up the unified valuations office for the City, but was based in the offices of the Cape Town MLC administration. He reported to Mike Richardson in terms of his leadership of the VTT, but in terms of his position in the City, which included many functions outside of the GV2000, he reported to the City Manager (Interview A, 2001). His relationship with the valuations offices of the six MLC's was problematic as he had authority on paper, but not in practice. He could not give instructions, or take disciplinary action for non-performance. In theory all the offices should have been cooperating fully, but in practice, across all City departments, this was not a reality (Interview A, 2001).

8.11.11. Management changes

Jan Koekemoer resigned as the Project Sponsor (CEO) on the 31 August 2001. The City Manager, Mike Richardson, agreed to take over this position himself.

8.11.12. Public perceptions of valuation processes and property tax policy

By the 28 May 2002, the day on which the UniCity approved its property tax policy, the Opinion column in the Cape Times (no author) summed up the general impression that the GV2000 Project had created – that the process had "been meticulously transparent" and that "the important thing now is for a new, equitable and fair rates policy to be implemented." This perception was clearly not shared by many rate payer organizations represented by RAG who had the day before lodged papers with the Cape High Court to overturn the process (na, 2002g).

In order to address concerns regarding transparency, a public meeting was scheduled for the 30 May 2002. In this meeting Dick Ward explained the processes of determining values of property using CAMA. This was advertised in the press alongside the new property tax policy information, and was held in the Podium Hall of the Civic Centre in central Cape Town.

Public perceptions continued to be communicated through letters published in the local press:

GT Robertson, 4 June 2002, Cape Argus

Robertson objected to the reports that the valuation process was open and transparent. He called the tax a "municipal capital gains wealth tax" and stated that it would achieve the end result of expropriation. (Robertson, 2002b, 11)

Nelson Bronte, 6 June 2002, Cape Times

Nelson Bronte challenged the process of property valuation in that the mechanisms for calculation are based on American techniques which were simply transplanted here without due consideration. His main objection was that there was no consideration for outdated dwelling designs. These were considered in previous valuations which took into account a depreciation factor. (Bronte, 2002a)

Nelson Bronte, 11 June 2002, Cape Times

Nelson Bronte noticed discontinuities across neighbourhood boundaries of up to 20% and queries how these came about. Some are evident on opposite sides of the same road – e.g. Kloofnek Road (Bronte, 2002b).

Confidential correspondence C, 2002:

On 12 June 2002 there was a ratepayers' protest meeting in the South Peninsula to express concern over the process of valuations and rates determination (Confidential correspondence C, 2002). There were many anomalies and inconsistencies in the data which were corrected in the interim review process, and thereafter repeated in the final provisional valuation roll. Objections to the valuation and rating system were in the form of a petition signed by hundreds of property owners and submitted to the South Peninsula MLC.

"Concerned Ratepayer", Business Report, 13 Jun 2002

"Concerned Ratepayer" interrogated the market value based system of property taxation in the light of its use as capital gains tax and/or a form of wealth tax. As a capital gains tax, it is flawed in its taxation of unrealized capital. As a wealth tax it is flawed in its target of one asset class only (unfair), its recovery during the lifetime of the taxpayer whereas the only other form of wealth tax is applicable at death which appropriately is at a point when unseen eventualities of life are over. Furthermore, it only takes into account assets and not liabilities. A further basic tenet of taxation is a link to the ability to pay and thus are linked to income or consumption. Market value of property is linked to neither of these, unless the property has been recently purchased. Tax on property consumption is already in place in the form of the transfer duty. National tax policy is geared towards the lowering of individual taxation. The market value based property tax is out of line with this policy. It is, furthermore, out of line with basic economic theory. Price is determined by the intersection of the supply-demand curve (Concerned Ratepayer, 2002). Sales price is the best indicator of market value, and yet the number of sales is an uncontrolled variable in the determination of value. Modelling with CAMA is improved when the sales data set is large,

yet this factor alone would depress the very same sales prices used to determine market value. Overall, "Concerned Ratepayer" maintains that a bad tax remains just that, and as such is not more equitable. It should not be used to undo the wrongs of the past – that is the task of national government, with just and equitable taxes (Concerned Ratepayer, 2002).

Steg Strasser, 24 June 2002, Cape Times

Steg Strasser (2002), comments that from his investigations the property valuations were not fair, not equitable, and not market values at the base date. He attributes these errors to the use of the CAMA modelling process, which cannot take into account very different properties next to each other. He claims that the valuation is "unrealistic and flawed".

Interviewee I

A member of the Rates Action Group (RAG) maintains that property tax based on market value of property is a wealth and not a consumption tax, but that property value is a poor indicator of wealth. Ability to pay should have been gauged prior to the implementation of the costly GV2000 Project (Interview I, 2002). He also condemned the process which proceeded prior to the required legislation being in place. He claimed that the City "manages by crisis" and that property and valuation officials do not have a good understanding of the property tax, while the finance section has no understanding of property. Legislative amendments have been hurried through the formal processes and are to be tagged onto the Structures Act. ANC representatives involved in managing the valuation and taxation of property are using these processes as a "political football" (Interview I, 2002).

In terms of the banding (R50 000 rebate) and differential rating, RAG maintains that there is no precedent in the world for these policies (Interview I, 2002). An additional concern is the apparent lack of open access to the press. There are some letters to the press written by RAG members which simply will not get published (Interview I, 2002).

The Rates Action Group (RAG) contends that the tax was not a "rates for services rendered" but rather a "wealth tax" and that the term "rates" should be dropped in communication with the public. From the municipality's standpoint, the tax is still termed "rates" as it is obtained by charging a certain rate of "cents in the Rand" of property value as published in the valuation roll (Interview I, 2002).

Robin Bosomworth, RAG, 28 June 2002

This letter was in response to the appeal of Mike Richardson in the press that owners use the official channels for communication, and that the press refrain from sensational reporting. Bosomworth (2002c) points to this as an example of the gulf between the authorities and the public. He refers to efforts of the RAG to have issues addressed openly, and to research the implications of the market value based taxation, as having been shunned by the City. Bosomworth goes so far as to call the fiscal cadastral reform a "moral, legal and financial mess".

The Confidential Correspondent B

The extent of the problems in conducting the GV2000 and subsequent taxation on property are summarized as a good case study of how not to conduct the process (Confidential correspondence B, 2002).

The concerns expressed above are symptomatic of one of the main issues with the GV2000 and previous valuations. This is the lack of understanding of the philosophy of property taxation. Valuations professionals prefer not to enter this debate, and see their job as technical and divorced from the political aspects of determination of the property tax (Interview J, 2002). However, the term "rates" is understood to relate to the recovery of service costs and consumption. Its meaning, derived from its history, does not include non-consumptive taxation on personal wealth/assets (Interview J, 2002). The marketing of the GV2000 is seen to be propaganda and loaded with political rhetoric (Interview J, 2002), and is not entirely truthful. Officials are prepared to state that the new property taxes are a wealth tax off the record, but communications are geared towards payment for services

received, as well as the principles of equity and fairness (Interview J, 2002). Essentially there is a "hidden agenda" which puts usually honest officials in a predicament in public meetings (Interview J, 2002). An equitable tax is understood to mean "paying your fair share" for equal services received. Neither the market value based taxation, nor the services received, are perceived to be equitable (Interview J, 2002).

Another issue is the lack of clarity between the responsibilities of the three tier government structure of national, provincial and local government in terms of economic growth, poverty relief and service provision. With the reform of the property tax to a non-consumptive tax on wealth of one asset class, the boundary of responsibility and purpose of the various taxes (income, capital gains, VAT, property) becomes blurred (Interview J, 2002).

The equity of the valuation approaches used in the GV2000 Project is also questioned. Non-residential property valuations involved determining the capitalized net income of the property, or replacement cost. If the former, this is essentially an income (or rental) approach, which was not applied to residential properties instead of the market value of the property as it would have been if sold on the base date. This is essentially inequitable (Interview J, 2002). The different methods of valuation would have yielded completely different valuations and also valuation ranges.

The contentions expressed in Interview J (2002) with regard to the lack of transparency of the GV2000 CAMA process are endorsed in correspondence between James McPetrie (GV2000 Project Data Steward), GT Robertson (ratepayer) and Fairbridges and partners, the legal consultants to the City. Robertson was informed that he would not be able to obtain any data with respect to valuations on the computer system, and no data regarding valuations. He was referred to the City's legal advisors (Confidential Correspondence D, 2002).

Annual interim valuations/additional valuations

Apart from the GV2000, annual additional valuations are carried out to take into account changes in property characteristics between general valuations. These include changes such as subdivisions and consolidations of the land, and changes to the improvements on the property. The former information is obtained from the Deeds Office of the Department of Land Affairs, while the latter is obtained from the building plans approval process.

The first round of additional valuations were conducted concurrently with the final stages of the GV2000 project and sent to Council for approval late in July 2002. This valuation roll updated the GV2000 roll and was the mechanism through which properties omitted from the GV2000 provisional valuation roll were added to the property tax base (about 5500 properties were added, while about 4500 were still not included (Gophe, 2002)), as well as the mechanism through which incorrectly valued properties were amended. As the City Council did not meet in July, there was no approval for a communication of the new rates calculated using the amended roll to property owners. The first these owners knew about the amended valuations and increased rates was in the rates bill. In some cases these were 100% higher than previously published, and about 20 000 property owners were affected by amendments to inaccurate valuations (Van Zilla, 2002). Formal notices of changes in valuations would be sent once Council had approved the additional valuation in its next meeting, thereafter, residents would have an opportunity to object.

A further cause for concern was incomplete billing – some property owners whose properties had been valued in the GV2000 had not been billed and would receive back-dated accounts (Van Zilla, 2002).

Various concerns were raised about the constitutionality of the retrospective amendments to legislation to legalize the use of CAMA in the GV2000 Project. The process was interpreted as “rubber stamping” in order to secure its position with respect to the pending court cases (Bosomworth, 2002d). Public participation was ignored in the process, and the contentious Property Rates Bill has been pre-empted without consideration for the impact

of property tax reform motivated as a simple technical amendment to legislation. Hugely contentious is the retrospective application of the amendments to the Local Government Laws Amendment Act (No. 51 of 2002), which then applied to cases already before the courts.

8.11.13. Closure of the project office

The final report from The Project Managers, Africon, to the City was presented on the 19 September 2002 once the final meeting of the GV Steering Committee had taken place. The project manager, Mike Dewar, deemed the project a success as it was completed within time and budget and had produced a quality product (Gophe, 2002).

8.11.14. Issues of equity

Micro neighbourhoods exhibited instances of over and under valuation due to local influences of location, which cannot be modelled at the "suburb" level (Ward, 2001b). Four models were used in the MLC of Cape Town. At the boundaries of these four models anomalies existed due to the location variable "suburb" (Ward, 2001b).

The number of sales of very high valued properties in the Cape Town MLC is too small and not sufficient to accurately model the sales data. This has yielded modelled market values which are under valued. In addition, the modelling of vacant land using unadjusted 1997 land only valuations yields inequality between land values and improved values.

Statistics and morality

In the GV2000 Project, the Project Office and the CCC (the client) had very close ties, and similar objectives in determining the valuation roll. In order to meet the stated requirement of a sales ratio analysis which meets the 10% market value target, there is sometimes opportunity to increase the assessment, or eliminate outlier sales on the basis of non-validity (Reavey, 2001). By manipulating the data it is thus possible to avert a mandatory revaluation. In addition, the Coefficient of Dispersion (COD) and Coefficient of Concentration (COC) statistics can also be manipulated to appear better than they actually are (Reavey, 2001). There is no evidence for or against this as manipulation of the data is

part of the process of validating sales. However, the use of sales data in the process of response surface analysis and again the CAMA modelling, could corrupt results and yield better than actual statistical output.

8.11.15. Quality control

Initially, quality control was to consist of the following (Epstein, 2000a) (statistical terms are not explained, but are universal and documented in Eckert *et al* (1990):

- Verification of sales data as good.
- Valuer to check that each sale was arms-length – judged on the basis of knowledge of the local market. Only outliers will be detected.
- Check that physical characteristics of the property at the base date are substantially the same as at the time of sale.
- Accurate collection of property characteristics information.
- Critical review of valuation model – both during its establishment, and once applied.
- Model structure should be reasonable and rational (the reasonableness and rationality of the model is in line with transparency and simplicity – goals of a valuation process, and yet this model was never revealed to the public).
- Variables and their mathematical manipulation (eg. transformations) must be logical to valuers.
- Model coefficients should have a logically correct sign and a magnitude which is rational and reasonable.
- The contribution of each term to market value will be measured using their T values and excluded if these are less than two.
- Calculation and review of market value model statistics:
- R^2 of > 0.8 should be achieved; goal of > 0.9
- Sales Ratios will be calculated with mean and medians, and measures of uniformity. A sales ratio of > 90% of market value will be acceptable.
- Average sales ratios groups according to: location (MLC and neighbourhood), condition, grade, age of improvements, and sale price will be calculated and should fall within 5 basis points of the overall average.

- COD to test for uniformity: <10.0 for homogenous areas, < 15.0 for less homogenous areas, <20.0 for vacant land sales.
- PRD to test vertical equity. Should be between 0.98 and 1.03
- Sales ratio studies.
- Field review of preliminary valuations, both on improved and vacant residential land, as well as sectional title (see Glossary for a definition of sectional title) properties.

Quality management

Quality assurance and control regarding the valuation roll is vitally important, as the valuation must meet international standards as defined by the International Association of Assessing Officers. This is not a legislative, but a political imperative. Any valuation roll, in order to be acceptable to the rate paying public, must be defensible in terms of what was understood in the project to be "international best practice". The task of quality management was devolved to each member of the project team, whose task it was to put in place a quality management plan, which would be integrated into the overall project quality plan (GVPMT, 2000c).

The overall project quality plan was designed in accordance with the ISO 9002:1994 principles (GVPMT, 2000c). As part of this process, internal quality audits were scheduled and were conducted by quality auditors. This was supplemented by external auditing conducted by the South African Bureau of Standards (SABS) and selected project stakeholders: SABS lead auditor, the Cape Metropolitan Council, and one representative selected from relevant civil society interest groups. (GVPMT, 2000c) The SABS conducted biannual audits of the data collection process and produced reports on its findings (MacKenzie, 2001).

This approach is aimed at (GVPMT, 2000c, 34):

- "Providing a document management system that will be available for all staff to be trained in the execution of the project;

- Applying the internal management norms to all functions and sectors of the project to achieve uniform and consistent standards in project execution;
- Facilitation of external auditing of the project as all critical processes will be defined and documented;
- The transparent execution of the project".

Management reviews were conducted on a six monthly basis in order to document the lessons learnt and provide a reference for "the continuous improvement cycle" (GVPMT, 2000c). There is no evidence of deep understanding of the meaning and application of such a cycle.

Valuation office and field reviews

A full valuation field review was planned for single dwelling residential areas. (Epstein, 2000b). Time and budget constraints led to the decision that only the higher valued properties such as those in Bishopscourt and Camps Bay receive a valuation field review. This would amount to some 15 000 properties (GVPMT, 2000c).

The sectional title properties would not have been assessed using CAMA, but by conventional methods using comparative sales. These would be mostly subjected to an office review with only more complicated sectional title properties being subject to a field review (Epstein, 2000b).

The estimated time to complete the field review was 3-5 months, using 50 valuers. It was assumed that this number of valuers could be appointed. In addition, each valuer was to have an assistant (Epstein, 2000b). Both valuers and assistants would require training. Any adjustments to value would be performed during the valuation review stage (Epstein, 2000b). No adjustments would be made to value review which fell within 10% of the CAMA produced market value. Later in the GV2000 Project, the completion of the valuation review stage was set at the 15th February 2002 (721).

A further point related to the 10% sales ratio margin of acceptability. A 10% margin was applicable both upwards and downwards, and hence is actually a 20% band of uncertainty in market value. This is noted to be too large in lower valued properties and would not reflect normal market allowances in sale prices (Du Toit, 2001).

The valuation review stage allowed for pockets of residential properties which were not within the 10% margin of acceptability to be reviewed. This occurred in some areas including a 30% adjustment in Manenberg and a 5% adjustment in Rondebosch.

A valuation field review was undertaken by Dick Ward and Pieter Le Roux (valuer) in January 2002. This revealed that the model was satisfactory and that a desktop review of values for these areas would be required rather than a full field review. It was to be completed by 22 February 2002.

Approximately 20% of the values from the office and field reviews showed more than a 10% change from the modelled values and were amended. Most of these corrected incorrect values for entire geographical areas and involved applying a percentage change to the modelled values. The worst cases changed by up to 50%, while the areas requiring the highest percentage of amendments were Bishopscourt and Constantia in which 90% of the modelled values were amended (IPTI, 2002).

8.11.16. Process of informal review

The informal review process was designed to allow property owners an opportunity to view their property value as well as the quantitative data for their property as contained on the Draft Provisional Valuation Roll. Members of the public could access property characteristics and valuations for any property in the City, not only their own, and simply needed to know the street address.

This process of public participation at the stage of the draft property valuation roll was probably conducted for the first time in the history of property valuation in South Africa

(Saffer quoting Weichardt, 2002c). Informal review processes are not specifically legislated, but are necessary in terms of legislation relating to public participation in local government.

The venue manager was a trained valuer, and was assisted by other staff, some of whom had been data collectors during that phase of the project. Quantifiable property characteristics only were published in the draft provisional valuation roll (not subjective qualitative characteristics).

Corrections or objections could be made using a form with the main aim to reduce the number of formal objections at a later stage (GVPMT, 2002). These would be passed on to valuers for review and adjustment.

The informal review process began on 28 February 2002 and ran for three weeks in 10 different venues each week throughout the UniCity. The emphasis was on whether the valuation of properties was fair in comparison to other similar properties in the same area (PVP, 2002). This process was conducted for residential areas only, while a separate process of review was conducted for non-residential properties.

Xhosa-speaking areas

The researcher conducted personal observations of the informal review process in Langa (1 venue), Khayelitsha (2 venues) and Lentegeur (1 venue). The following communication problems were noted after informal discussions with staff and property owners at the informal review venues (Field notes, 2002):

- Property owners often extended or improved the value of their properties subsequent to obtaining ownership of the property and did not consider the payment of property tax on the improved value to be fair.
- Property owners often argued for a higher valuation, obviously not understanding that this would lead to a higher property tax.

- Many property owners used to rent from the BLA's and were given their houses as part of the RDP process. There was confusion between the concept of municipal rent and municipal property tax, both of which are monthly charges. There was a lack of understanding as to why, now that they owned the properties, they continue to have to pay a monthly charge as before.
- Property owners who purchase a property through a bank mortgage and were paying this off monthly, saw no connection between their property and central or local government, and why they should pay property tax.
- Property owners understood the concept of payment for consumables such as water and electricity, but the concept of payment for wider community services such as roads, clinics, libraries etc. which it is not convenient to charge for on the basis of use, needed to be conveyed. An attempt was made to communicate the right of the community to demand delivery of services if rates are paid.
- The government grant for housing was, and still is, not enough to build a house large enough for the occupants. Owners therefore often source some of their own materials in order to construct a bigger dwelling with the capital available. Second-hand materials are often used. This was not taken into account in the valuation process, and was probably only reflected in the quality of construction of the property which is a property characteristic used in CAMA modelling. Owners contended that the valuations were thus too high – higher than the actual cost of land and construction.

In addition the following was observed by the researcher on site visits to the informal review venues (Field notes, 2002):

- Venues were not well enough marked – the only posters and banners etc. were outside the venue and not at nearby transport termini, shopping precincts etc. There were no signs in the surrounding main roads indicating the direction to the venues. One really had to know where the venue was in order to locate it.
- Few municipal information technology staff were prepared to enter Xhosa-speaking communities to set up the computers required to run the valuation databases, and as a result, these centres had no access to the databases for much of the first day.

- In Langa there were many properties which had no noted owner, no street address, and many properties which owners could not locate on the roll. Even if they knew their erf numbers, these were not in order in the valuation roll printouts. Some entries had no property characteristics other than extent and value. In Langa the draft provisional valuation rolls only arrived at the site 15 minutes after the scheduled opening. Computers were only delivered many hours later. The venues were well advertised with banners outside etc, and inside the walls were decorated with valuation venue maps and cadastral maps. Owners were advised to complete a feedback form so that errors could be rectified.
- Khayelitsha had been through a process of renaming of streets, and many residents could not remember the names of their streets in order to look up their property values.
- On the other hand, the venues themselves which dealt with the Xhosa-speaking areas were on the whole clean and spacious and well laid-out, well manned and multilingual, and contained enough information in terms of pamphlets and posters.

Jacobs (2002) identified the informal review process as needing some revision:

- The duration was too short.
- Advertisement of the informal review venues and dates was poor and conducted through the papers, which has the effect of marginalizing the poor and illiterate.
- The communication of the need for property owners to participate in the informal review was lacking. This resulted in very low turnout for the informal reviews.
- The venues for informal review were far too few. This had the effect of excluding poor owners who would not be able to pay for transport to the venues. Phillipi owners had to go to Lentegeur Hospital in Mitchell's Plein. The Gugulethu venue catered for Gugulethu, KTC, Nyanga and Crossroads etc., which is far too big an area, and too far for most people to travel.
- Some venues were poorly chosen, such as Lentegeur Mental Hospital. With the low level of acceptance and understanding regarding mental health, this was most unfortunate. The researcher had her car searched in order to leave the premises.

- The databases at the venues were mostly used for owners who arrived at the wrong venue – often the closest venue was not the venue allocated to the property. The hard copy interim rolls supplied to the venues were only those for that venue and none for the adjacent venues. Without the full database up and running, property owners could not be helped. Even with the computers set up correctly, sometimes the required valuation could not be found. The size of the entire database apparently could not fit onto the computers used, and so often the databases only contained data for the area covered by the venue i.e. the database added no value to the hard copy rolls available at the venues. The databases also only ever included properties which were simultaneously catered for in a valuation review venue. As these times were staggered over the three week period, only parts of the database were running at any one time (Jacobs, 2002).
- There may have been, say, 30 venues published for the BLA's, but these were not all operating simultaneously, and were staggered over the three week period.

Jacobs (2002) attempted to address some of these problems as they emerged through facilitating addition communication channels for the interim valuations. She obtained the hardcopy rolls and supplied them to the Councillors so that they could be used in Ward meetings to inform the public. Unfortunately, this process was thus held after the informal review process was complete and any objections were then carried over to the formal review process. However, it went a long way towards increasing the accessibility of the data.

<u>Informal review process in former coloured and white areas</u>

- Venues were not well enough marked.
- Some venues were poorly chosen, such as Stikland and Lentegeur Mental Hospital.
- In Portlands, Mitchells Plain, there were a great deal of entries in the roll with "no data" valued at R9 000 – R10 000. Other properties generally had values between R35 000 and R48 000.

Personal observations of the informal review centres revealed that:

- Hard copies of the valuation roll were only supplied for those properties inside the designated area covered by the particular venue for informal review. One could look up a property on the computers, but these had often not arrived by the time the venue was opened.
- Some people had to travel to a nearby suburb to visit their valuation review venue – they were therefore not readily accessible to those without private transport e.g. Rosebank residents had to travel to Pinelands which is poorly linked via public transport and Rondebosch residents had to travel to Athlone. As Rondebosch is an upmarket area, and Athlone not, many residents were unfamiliar with Athlone and would not have ventured there.
- Constantia had long queues, no chairs for residents to use, and not enough computers.

Letters to the press mentioned the following problems:

- Registered owner information was incorrect (McShane, 2002).
- Property characteristics were incorrect (McShane, 2002, "Goon2002", 2002).
- Erf extent was grossly incorrect (McShane, 2002, "Goon2002", 2002).
- Values were inconsistent with other properties in the area ("Goon2002", 2002).
- Establishing meetings with data collectors repeatedly failed (McShane, 2002, "Goon2002", 2002, van der Spuy, 2002). This was part of the problem in Constantia where there were poor access rates.
- Roll indicates "no access" to whole neighbourhoods which apparently were not visited ("Goon2002", 2002).
- Data collectors were under-trained and incompetent (van der Spuy, 2002).
- The personnel at the informal review venues were not able to answer questions and could only look up properties on the roll and recommend the feedback form (McShane, 2002).

The data on property value and property characteristics was also available on the website for the GV2000 Project. Unfortunately the access to this website was delayed for 1½ weeks due to more than 62 000 hits on 28 February 2002 and the inability of the system to cope (Weaver, 2002). It was thought that many residents had accessed the site hoping that their property values would be published there prior to their release at the informal review venues which were staggered. This was not the case, and the full draft valuation roll was not available on the website on the 28 February. However, by the 7 March many areas had been added, and the entire draft valuation roll was accessible on the web within two weeks of the start of the informal review process.

A measure of the success of the informal review process is the attendance at the informal review venues. The highest attendance was recorded in Khayelitsha East with 21.3% of property owners in that area attending, second highest at Hout Bay with 18.7% and third highest in Muizenberg with 17.6%. Lentegeur, Portlands and Eerste River had poor turnout of residents (Saffer, 2002c). A further measure of the public acceptability of the draft valuation roll was the number of comments/corrections/objections by residents – there were less than 5000 informal review comment forms completed. This is roughly 1% of residents. The use of the website to check valuations revealed that more than 2 million people accessed the website. This resulted in a further 2500 comments/corrections/objections. (Saffer, 2002c). An additional 250 residents provided corrections to the roll through the call centre and Project Office email address, while another 250 calls/emails provided positive feedback to the team and the project (Saffer, 2002c).

The publication of the property values on the web page, at the informal review sites, and on paper in the notices to residents were often very different. Particularly in the South Peninsula, the informal review process was scheduled to begin two weeks into the informal review process to allow for a review of the values in that area. This did not happen, and the South Peninsula values were posted as they were. The City admitted that thousands of properties in the City had been incorrectly valued and that this would be dealt with through the objections process (na, 2002h).

8.11.17. Property taxation in Cape Town – policy issues

It was acknowledged that the driving force of ensuring equity in property taxation was subjective, and that property taxes in general were not popular, but accepted with resignation (Richardson and James, 2001). A process of public participation, as well as involvement of councillors (political officials) and strategic officials was followed between 21 March and 12 April 2002.

Written communications with the City regarding the rates policy totalled 178 submissions. These included phasing in, rebates, differential rates based on property category (residential, commercial, agricultural), pro-poor exemption for the first R30 000 to R80 000 of value, and rebates on new constructions (na, 2002). Phasing in was strongly supported by ratepayer groups from Constantia and Helderberg, while Khayelitsha and the Constantia Property Owners Association asked for implementation to be delayed until 2003 to allow for adjustments and corrections.

This last request from residents of Khayelitsha, which is a predominantly poor area, is surprising as they were set to benefit from redistribution of resources from property taxation. It was not supported by the dominant political party in that area, the ANC (Smith, 2002b), which was quick to remind property owners that the DA had obtained a court order against the ANC-led general valuation of 1992, which had exacerbated increases which would now be felt by wealthier suburbs (Gabriel, 2002). ANC representative, Max Ozinsky, expected 450 neighbourhoods to experience property tax decreases, while 150 suburbs would increase by 15% and 100 suburbs would experience increases of between 5 and 15%. He contended that a normalization of the regressive tax situation should not be phased in (Smith, 2002b). In the meantime, the Khayelitsha community representatives withdrew their request for a delay in the implementation of the new valuation roll and property tax.

Another aspect of the policy was whether refuse and sewerage charges should be included in the property tax or separately charged. The ANC advocated strongly for inclusion of the

charges in the property tax as this would be a pro-poor decision and would benefit about 400 000 households. If the charges were separated only 100 000 households would benefit from reduced property taxes, and these would include those in wealthy neighbourhoods (Gabriel, Mowzer and Rencontre, 2002)

Ostensibly the rates policy was based on equity, affordability, poverty alleviation, social and economic development, financial stability, and cost efficiency (Ntabazalila, 2002a).

At the final stages of the determination of the rate to be used to calculate property taxes, the ANC and DA were at loggerheads, with the ANC opposition accusing the DA, who at the time controlled the City, of "bulldozing the public participation process" (Sylvester, 2002b, 1). Representatives from the two parties on the Council's Executive Committee failed to reach agreement on the policies for inclusion/exclusion of sewerage and refuse removal charges as well as the upper limit of the value banding which would be excluded from property taxation (pro-poor exemption for the first R 25 000 was under discussion as well as rebates for properties between an upper limit of between R50 000 and R100 000). A UniCity special executive meeting was held on 28 May 2002 and the recommendations were then tabled at a full meeting of Council on 29 May 2002.

User charges, rebates, and differential rating

User charges are based on consumption or linked to property value, or a combination of these. It was recommended that service charges for refuse and sewerage should be separate from the general property tax based on property value (Richardson and James, 2001). Rebates would be used to balance the tax burden between commercial and residential properties. Other rebates should be geared towards poverty alleviation.

Impacts of tax policy

The existing billing system was to be used to simulate short term impacts of property tax reforms (Richardson and James, 2001).

Public input and perceptions regarding the processes of determining property tax policy

The draft rates policy was drawn up by a multi-party working group (MPWG) with two councillors from the DA, two from the ANC, and the African Christian Democratic Party Councillor, David Price, who was the only person with any knowledge of property tax or valuations, being a registered valuer. It was claimed that credibility of the decisions of the working group was a farce as decisions were made by a clique of the DA and officials (Interview J, 2002).

Public perceptions are gauged by letters written to the press and comments after the public hearings on rates policy formulation.

Mike Nicol, 11 March 2002 Cape Times Opinion

Nicol (2002), a journalist, not a City official, summarized the decisions regarding property tax policy. The issues were whether the tax should be phased in or introduced in *toto* on 1 July 2002, whether sewerage and refuse charges should be separate service charges, whether differential rating should be applied to different categories of properties such as industrial and residential, whether rebates should be applied to pensioners, the disabled, and single parents, and also to determine the effect of the property tax on the poor. This is confirmed by Saffer (2002b) in PVP News.

Derek Sparks, 12 March 2002 Cape Times The Debate

Derek Sparks (2002) suggests that VAT should be applied and devolved through the provinces to the local government coffers. An interesting comment relates to transparency of cross-subsidization which would be facilitated should a federation of smaller local councils be used. Over all, Sparks comments that the determination of the budget precedes the determination of the property tax policy, and that there is no incentive for expenditure to be capped at a predetermined income.

Robin Bosomworth, 15 March 2002, letter to the Cape Times (Bosomworth, 2002b)

Robin Bosomworth identified that failure to pay residential property taxes is seldom due to the prior culture of non-payment, but has more to do with poverty and inability to pay. It

should be seen in the context of a system which has not been rigorously approached from a property tax reform perspective with a result that poor policies are in place. The sustainability of the tax has not been determined or demonstrated. Furthermore, redistribution should not be the primary aim of the property tax. Non-payment of business property taxes is also not due to a culture of non-payment, but rather due to disputes, and lack of clarity.

Property Tax Policy Hearings

Public participation in the drafting of the property tax policy was requested on 21 March 2002, with a deadline date for submissions by 12 April 2002. Public hearings took place in Khayelitsha, Parow and in Cape Town in front of a multi-party panel of councillors which formed the policy working group. Members of the public were given an opportunity to present their cases within 20 minutes to councillors and members of the public. Councillors were then able to question the proposal for 10 minutes (na, 2002b). The hearings were attended by individuals and representative groups ranging from sporting clubs to retirement villages, and heritage organizations. They were hailed by the City to have been transparent, informative and inclusive (na, 2002b).

Trevor Robertson, 19 April 2002 Cape Times

Robertson claimed that councillor Mowzer left the discussions when he presented his 35 point argument at the rates policy hearing on 11 April 2002. He claimed that the hearings were a communications “farce”. (Robertson, 2002a)

Mike Sampson, 16 May 2002, Cape Times

Mike Sampson objected to the basis for property taxation – its market value. He also comments on the use of the property tax for cross-subsidization of the poor in that it was not intended for this purpose. (Sampson, 2002)

DBM White, RAG, 16 May 2002, Cape Times

The RAG contends that the property tax policy has not been researched adequately, nor has the City embarked on a full public participation process, which was requested in 1998. The

public hearing was laden with political dogma and a verbal submission to five non-experts was inadequate. Requests to delay implementation had been ignored, and court action was seen as a possible recourse. (White, 2002a)

Approved property tax policy

In the Special Executive Meeting of the UniCity held on 28 May 2002 the policies for property taxation for the financial year 2002-2003 were decided and were to be based on the new common valuation roll produced by the GV2000 Project. Of utmost significance is that the new policy would not be phased in, but would come into effect on 1 July 2002.

Residential property owners would be charged property tax on 1.4%, less a 30% rebate, which would bring this rate down to 0.98% of the market value of the property. Business property owners would also be charged 1.4% from which they obtain a 30% tax rebate, and hence also pay an effective 0.98% of the market value of the property. It was estimated that 33% of property owners would face increased property taxes. (Yeld, 2002)

A bottom-bracket banding (see 3.7.3) of 0% tax on the first R50 000 of property value was approved. All properties would thus only pay taxes on their market value from the provisional valuation roll less R50 000. To all intents and purposes, the City of Cape Town, through its rebate of 100% for properties valued at R50 000 and less, introduced a form of banding. This form of property tax relief was proposed by Bowman in his analysis of South African Property taxes with Bell (Bell and Bowman, 2002, 155). This is termed a property tax valuation credit approach. Bowman (Bell and Bowman, 2002) advises that the circuit breaker approach in which property tax is capped at a percentage of household income should be preferred in the long term, but it requires accurate records of income which are not currently available across the board.

Rebates would apply to retired and disabled property owners, although application of this policy was only decided in June. A sliding scale was approved for the elderly and disability pensioners. They should own and occupy their own property, not own other properties, and

have a combined monthly income of less than R2500. Agricultural land would receive a rebate of up to 90% depending on the services available (Yeld, 2002).

With respect to refuse removal charges, these would be separately charged with a portion of the charge based on market value. Sewerage would be calculated using a basic charge and a variable charge linked to water consumption. The ANC did not agree with this policy. (Yeld, 2002). Subsidies of 100% for properties of R50 000 or less were approved, as well as a 50% subsidy for properties valued between R50 000 – R100 000.

In some areas such as Khayelitsha, Macassar, and Delft South, the property tax policy would result in zero billing, while in depressed areas such as Bishop Lavis property taxes would decrease by about 80%. Upmarket areas such as Sea Point, Camps Bay, Scarborough and Constantia would experience 100-160% increases in property tax.

All in all, 100 000 properties – about $1/5^{th}$ – will pay no property taxes at all. This was due to 19.68% of the valued properties being less than R50 000 (Smith, 2002d, quoting Weichardt)

Objections to the property tax policy

Objections to the draft property tax policy were invited to be submitted to the City Manager before 12:00 on 18 June 2002. (City of Cape Town, 2002c). Objections to the combination of a new valuation system, combined with a rating system which in effect resulted in large increases in property taxes was not accommodated (Confidential correspondence C, 2002). Objections to property taxes were not accommodated in the formal Valuations Board hearings, and objections to the valuations could not be included in the process of objecting to the draft property tax policy. The effective splitting of the objection processes into an ostensibly mechanistic process of valuation and a political process of determination of property tax policy disempowered integrated objections through the formal processes.

Further public input and perceptions regarding the property tax policy

B Keane 4 June 2002, Cape Times

Property taxes are arbitrary and unrelated to ability to pay, nor to services delivered. Only 4% of the property owners will pay 28% of the property tax, while 13% will pay 54% of the property tax (Keane, 2002).

Maxwell (2002), Joss (2002) and O'Neill (2002)

Maxwell (2002) was the first to raise the issue of the unfairness of the application of the R50 000 rebate to flats in share block and sectional title schemes. It is applied only to the entire block, and not to individual units, even though these are owned individually (Maxwell, 2002). This issue was also taken up by Joss (2002), in which the transparency of this debate was in question. O'Neill (2002) pointed out that elderly tenants would receive no relief from the property tax rebates – this was unfair.

Amendments to the property tax policy

This issue was addressed on 24 June, when a decision was taken by the DA, despite cautions of the multiparty rates policy committee chairman, Mike Richardson, to extend the R50 000 valuation rebate to sectional title owners immediately. A decision as to the extension of this to flat tenants was held over, although the ANC opposition motivated successfully to include flats rented from the council in the policy amendment.

After the extension of the R50 000 valuation rebate to individually owned flats and council flats, various RAG representatives commented that this would benefit elderly flat owners (Ntabazalila, 2002b). It would also provide some relief for those renting flats within sectional title and share block schemes. Jensen (2002b) noted that most flat owners would now be billed 50% less than previously due to the R50 000 rebate on valuations. However, this amendment to the property tax policy took place after the closing date of 18 June for objections, and only three days prior to the closing date for objections to valuations.

This decision had a R24.5 million effect on the City's income which had not been foreseen or planned for (Ntabazalila, 2002b), which was escalated to R63 million by 15 July 2002 (Smith, 2002e). Whether the City could afford this rebate would be discussed at the next meeting of the Executive Committee, but a decision was likely only in August (Smith, 2002e). Some 51 750 sectional title units would be affected by this change in tax policy, which accounted for the R25 million financial impact. However, an additional 50 000 blocks of flats would benefit from the rebate, doubling this figure, which would be further increased by applying the 30% rebate for residential properties. Issues around billing system were also impediments to its implementation – individual sectional title property owners were not billed, but only their body corporates. The decision to apply the R50 000 rebate on property value to individual units was reversed and placed on the agenda for discussion after the winter recess. Rebates for disabled owners and pensioners, as well as for rural and agricultural land, had still to be formally approved.

Further comments from the public

Des White (White, 2002b) of the RAG challenged the City on the rebates debacle and lack of transparency and public participation. He furthermore requested that the R50 000 rebate on valuations should not be applied to all properties, but rather that relief could be sought if property tax bills were greater than 10% of a household's income. He also requested a cap on property taxes at R2500 per month for properties of high value.

Further amendments to the property tax policy

At the Executive Committee meeting of Council in the week of 27 July 2002, it was decided that extending the valuations rebate of R50 000 to sectional title units and flats was fair and equitable, and hence approved (Metro Correspondent, 2002). On 31 July, the Council deliberated as to whether the implementation of this policy should be delayed for a year due to the unbudgeted cost, but decided against this.

Included in the Property Rates Act was that property tax policy should be decided annually with input from the community in a transparent process.

8.11.18. Dispute resolution

One of the main indicators of the success of fiscal cadastral reform is the use of, and outcomes from, dispute resolution processes. These can play a role in reflectively ascertaining whether the context in which reform takes place has been adequately assessed and managed, as successful reform depends on this. The following section details the dispute resolution mechanisms, as well as the processes and outcomes of disputes resulting from the GV2000 in the City of Cape Town.

Access to properties

A property owner has the power to disallow a data collector to enter their property. This form of disputing the process was exercised in the upmarket suburb of Constantia which had an access rate of 70% compared to the average for other areas of 80% (Interview B, 2002). A mechanism to deal with this is to use registered property valuers who have a legal right of access onto a property for valuation purposes. This would require a court order which is costly to obtain. Another route would be to estimate a high value for properties in such an area to force property owners into court action with the City. It was thought that unreasonable behaviour of residents would result in the City gaining access through the valuation board hearings objection process (Interview A, 2001). The City did not consider alternatives such as aerial photography, since the data required would not be revealed by this method. Building plans were also not considered as these were an unreliable and incomplete source: a number of plans had been lost in a fire many years previously, and illegal buildings would not be captured by relying on this method (Field notes, 2000).

Informal review process

The informal review process allowed for a form of objection, although this was predominantly on the property characteristics and not on the valuations themselves. This process has already been reported (section 8.11.3).

Formal objection process

Residents were sent their property valuations on 21 May 2002, after which the formal processes of objection began. Formal objections are required by law to be allowed up to 21

days after publication of the valuation roll however, the City allowed six weeks for this purpose (Saffer, 2002c). The final provisional valuation roll was available for inspection at six venues in the City for three weeks, and thereafter at the six municipal offices until 28 June 2002 (na, 2002e) by which formal objections were required to be lodged. Objections lodged after this date could be liable for costs, should their valuation not be amended. The Valuation Board for the area in which the subject property is located may extend the date for late objections on individual request for a period of 7 days (Interview H, 2002). By the end of July 13 000 objections had been received.

Municipal valuers were present at the venues for the first three weeks to field queries from residents. The venues were generally in operation during working hours from Monday to Friday, and on Saturday mornings until 1pm. Only one venue was open on Saturday afternoons. Formal objections were to be submitted by 28 June 2002.

All formal objections received were coded in accordance with their nature: trivial objections, administrative data changes, property characteristics which affect value, high and low market valuation etc. Once coded, the objections were scanned, and letters of acknowledgement were sent to the owners. In July a valuer from each administration (MLC) was appointed to address the objections within a certain category.

A formal valuation objection results in a hearing which is heard at tribunal level by a Valuation Board. These Boards deal with issues of individual valuation and each objection must be related to a specific property. Legal proceedings may be instituted by or against a valuation board. All decisions of the Valuations Boards are required to be published in newspapers and communicated in writing to the property owner.

Issues of the legality of the processes of valuation and taxation, which are at a more general level than those of individual properties, are not governed by the PVO's or the Property Rates Act 6 of 2004. Such disputes are decided in the ordinary courts (i.e. the Cape High Court and the Constitutional Court). Only aspects pertaining to an individual property's

value may be the subject of an objection. Objections must also be based on comparative sales, and not on comparative property valuations in accordance with the provisions of the PVO 1993 (Confidential correspondence C, 2002). This is in contrast to the stated basis for the interim reviews in which comparisons with other valuations were allowed and encouraged through the accessibility to this data, which was subsequently withdrawn at the close of the interim process.

In Constantia, the draft provisional valuation roll was an accurate reflection of the property data obtained by the City, but somehow errors crept into the final posting of the roll. This resulted in about 5500 property owners giving feedback about errors in the data (Interview D, 2002). In addition, the valuation rolls could only be used with street addresses and not with erf numbers.

Some general problems were noted:

- The time period between the informal review and the formal review process was too short and there ended up being an overlap in the processes (Interview D, 2002).
- This short time period should be extended to the two years allowed for in the capital gains tax process, which is similar. The access to professional assistance in compiling an objection was problematic due to the short time period, and due to the fact that 90% of the valuation professionals were appointed to the City and could not be used (Confidential correspondence C, 2002).
- Informal review feedback could not be converted into a formal objection – there was confusion in the double process with some property owners (Interview D, 2002).
- Objection forms had to be collected from a valuation venue – this raised issues of accessibility as there was only one centre per MLC – the venues were not as dense as for the informal review process. This was mainly due to staffing issues as valuers had to be present at these venues (Interview D, 2002). The times of opening were difficult for those who work Monday to Friday and Saturday mornings.
- The website was useful and one could obtain information for any property enabling a comparative analysis. However, access was removed in early April and only restored

late in May to coincide with the notices of property valuations to owners (Kelly, 2002). The new website only allowed access to ones own property, and numbers were rounded up/down. The only information that was contained on the website was that contained in the valuation notice received in the mail – there was no added value in the website. The website stated that an objection must relate to the market valuation, and yet the comparative data was no longer available in order to perform a comparative analysis, which is the way valuations are done (Kelly, 2002). Lack of information supplied by the City on which to base an objection is unacceptable. This should have been made readily available on the website (Confidential correspondence C, 2002).

- There were many properties which had not been valued (Interview H, 2002).
- Inadequate notice had been given regarding the entire process, their rights to request reasons behind a market value determination, their rights to appeal, and their right to be represented by a lawyer (Confidential correspondence C, 2002).

Valuation Boards

The Valuation Board personnel are appointed by the Member of the Executive Council (MEC) for Local Government in the respective province. Each board is chaired by a legal professional such as a retired magistrate or advocate with experience in the administration of justice. The Board consists of two to four individuals who have extensive experience in the property market, including realtors and at least one Professional Valuer (not subcontracted to the City for the initial valuations of the GV2000 Project). Each former MLC has its own board. Board members are appointed with the aim of ensuring representivity in terms of race and gender.

A snapshot of the process of objections and hearings in August 2004 revealed that the GV2000 provisional valuation roll had generated a total of 36 741 objections (about 7% of properties valued). Some 764 of these were rejected as invalid in the light of legal grounds for objection. The majority of 30 669 objections had been resolved, and 3 276 had been withdrawn. Of these, 2 665 of the withdrawn cases were Council objections. A true

reflection of the valid and standing objections is thus a total of 33 465 objections. At that time 183 private objections were still not resolved, while 1 745 Council objections and 104 late Council objections were outstanding.

The objections to the additional valuations conducted in July 2002 amounted to 555 of which 29 private objections were withdrawn. Council objections constituted 17 of the total. Nine objections were determined to be invalid. The additional valuation in 2003 resulted in 789 objections of which 80 private objections were withdrawn. Council objections amounted to 26 objections in total. Four objections were discarded as invalid.

In March 2005, 2¾ years after the introduction of tax based on the GV2000's provisional valuation roll, there had been 37 162 formal objections associated with valuations pursuant to the GV2000; of these, 760 had been rejected as invalid in light of the legal grounds for objection, while 31 899 objections had been resolved at valuation board hearings. There were 438 objections outstanding which included 350 timely City objections and 45 late City objections. 4 064 objections had been withdrawn, of which 3 269 were City objections. A City objection is an objection by the city itself against a valuation. As a property owner, the City is entitled to dispute its own property valuations and to have equal access to the dispute resolution processes (Confidential correspondence H, 2004).

Additional valuations were undertaken by the City in order to include previously excluded and new properties in the valuation roll (and, hence, into the fiscal cadastral system), as well as to correct anomalies in the GV2000 valuation roll. Objections to the additional valuations were processed through the same formal mechanism.

Very few objections were lodged from the former BLA and "coloured" areas – less than 100 from the "coloured" areas of what is known as the "Cape Flats". It was thought that a generally poor capacity to file objections in these areas was evident – poor education and resources. There was a reliance on community representatives and property owners were not willing to stand up for their rights individually (Field notes, 2002). Many community

leaders had climbed the social ladder and moved out of the areas they represented (Field notes, 2002).

Fairness in objections and hearings

There was a moral restriction on valuers and valuation boards to ensure fairness through the objection process. There was no evidence of a reduction in a contested value to make a "contested objection go away", or that valuers and the valuation board may have become stubborn and not objective when assessing an objection. However, the lack of hard evidence of such occurrences does not indicate that they were not possible and did not occur. Tighter controls on site valuations in the case of objections are advocated (Field notes, 2002).

Process of hearings

The Valuations Board hearings began in late September 2002 with about 13 000 objections on the table. In the first hearings, some property values were reduced to 40% of the value on the provisional valuation roll. In some cases errors such as the property value including a building where there was none, were rectified (Smith, 2002f).

Comments on hearings

The following observations were made of the valuation board hearings (Field notes, 2002)

- The Boards were loath to increase property valuations, even if the General Valuation was too low by more than 10%.
- Property values were generally decreased.
- Objectors did not differentiate between the City and the Boards, and did not see them as independent. Language such as "you people", "this place" etc clearly showed a lack of trust in the Board's independence. The South Peninsula Board Chairman at one time stated that "The Board is perceived as part of the big City infrastructure" (Field notes, 2002).
- If the property data is correct and a value is revised due to reasons not reflected in the property characteristics, then the same properties are likely to be overvalued in

subsequent GV processes, and the same property owners will need to appeal each time.

- The owners were given as much time as they needed to present their case. It was important for the owner to feel heard in order for a degree of trust to be established, and for legitimacy.
- In the CAMA process, values were back/forward dated to the base date using 12% pa. Valuation Boards used 8-12%.
- Valuers did not use other CAMA valuations in their defence of the City valuation. They only look at comparable sales.
- There were some areas in which there were known problems with the CAMA valuations. An example was in Bishopscourt where a linear factor for land extent was used instead of a non-linear square root factor. As a result there was no accounting for economies of scale. There was a debate between whether Boards should aim for equity or market value. Only some property owners may have objected to their value on the basis of equity, or on the basis of market value from comparable sales. The legislation explicitly demands market value (Interview L, 2003). If all properties have a correct market value, then equity across the City is ensured, and not simply in a neighbourhood. The South Peninsula Valuation Board appeared to understand and execute their decisions in line with this principle. The Cape Town Board did not, and preferred an equity over market value approach. There was no evidence of this from other Boards, as they were not attended.
- Land and improvements were valued together with CAMA, thereafter a site only value was deducted to leave an improved value. Boards had different methods of arriving at values. In Cape Town, when the Board calculated a valuation they started with the site value applicable to that location, then added a value for the cost of improvements. This was then compared to the valuer's property valuation derived from comparable sales. The former was usually lower than the City valuer's estimate. In the South Peninsula, the Board listened to the argument of comparable sales presented by the valuer and did not appear to perform calculations of their own. Once a combined value was agreed, this was split into separate values for land and

improvements. The land value was obtained by comparing land-only sales in the area. If these were unavailable, then land-only sales in a nearby area were used and adjusted using a factor calculated by comparing improved properties. The land-only value was subtracted from the total to yield the value of the improvements. On handling some contentious cases, the Board was advised (Interview L, 2003) not to assume the role of a valuer, and only make decisions on the evidence led (South Peninsula Valuations Board, 4 Dec 2002). Dick Ward stated that Boards should not simply take the middle value of the objector and valuer – they should apply their minds (South Peninsula Valuations Board, 4 Dec 2002).

- Valuations took into account actual, even if illegal use; taxation takes into account zoned use only.
- Competencies of the Board as a collective varied – some had more valuation experience, while some had more property administration experience.
- From the cases observed, reductions in value varied from 0% to 79%. No properties were increased in value. The average adjustment for the cases observed was a 31% reduction.
- Improvements (developments) which detract from the market value were considered in the assessment of property value.
- It is unclear whether the courts were calculating reductions in value for old buildings which are likely to be demolished, especially in upmarket areas such as the Atlantic seaboard. It was observed that the cost of land and improvements was first ascertained and then the cost of demolition was subtracted from that total. The value of the property was subsequently invariably more than the cost of the land alone. Many owners claimed that their properties had a value equal to the land value minus the cost of demolition. This was in keeping with the landmark case Durban Corporation vs Lincoln (1940 AD 3642) that determined that the value of a developed property might be less than the value of the site alone. This case further determined that residual approach to valuation of land should not be used (improved valuation – building cost of improvements). The case determined that the value of the site, whether improved or vacant, should be determined by the same manner. A negative

value for improvements that detract from the market value of a property should be allowed.

- Many objections related to the unaffordability of the taxes which would be based on the valuations. These objections were not entertained as they related to property tax policy and not to the fairness of the valuations.

Appeals against the findings of the Valuation Boards

If a property owner was unhappy about the decision of a Valuations Board, he/she could appeal against the decision. Oral evidence would then be given at an Appeal Board. The Board can order that costs are borne by the Council or the property owner. Appeals would be handled by Carl Liebenberg of Fairbridges for the City.

Higher courts

Access to civil courts was only available if the process of formal objection and then appeal had been followed. It was only at this stage of the process that the dispute process could entertain issues of unfairness in valuation (i.e. not based on comparative sales but on comparative valuations). This was in line with general laws such as Section 36 of the Constitution. A class action would have been possible if enough aggrieved property owners could have combine resources.

Cape High Court and the Constitutional Court

Two cases against the City of Cape Town relating to the processes of the GV2000 have been brought before in the Cape High Court. The first of these was filed in the Cape High Court by RAG on 27 May 2002 a day before the determination of the property tax policy. RAG claimed to represent 12 ratepayers' organizations. It opposed the new property valuation system in that the PVO 1993 applied only to interim municipalities and not to the UniCity, and if the PVO 1993 does apply, that 40 000 properties were not included and that valuations were conducted incorrectly, particularly for sectional title properties (Smith, 2002c). The City had a week to respond to the challenge.

On 20 June 2002 it was reported that the loophole in legislation relating to property taxes would be closed by amending the Local Government Laws Amendment Bill. This Bill was scheduled to be tabled in parliament in August. The PVO's administration had not been legally assigned to the provinces in terms of the interim Constitution. This resulted in the case of the RAG which was scheduled to be heard in October.

The cases of Robertson v the City of Cape Town and the Minister of Provincial and Local Government (4995/02) and that of Truman-Baker v City of Cape Town (9507/02) were heard in the same proceedings (Robertson and another v City of Cape Town and another, and Truman-Baker v City of Cape Town [2004] 3 All SA 53 (C)). Judgement was delivered for both cases by J Bozalek in May 2004. The Court found that the City was not a local authority as contemplated in the PVO 1993, and could therefore not invoke the Ordinance. Bozalek ruled in favour of the applicants, arguing that the use of the interim property valuation roll (the interim roll is still in place as it can become final only once all objections have been processed) to effect property taxation was unconstitutional and invalid, as was an element of the enabling legislation (Section 21 of the Local Government Laws Amendment Act No. 51 of 2002). He found that due process requiring the Financial and Fiscal Commission to be informed had not been undertaken in the publication of the Bill, and particularly its amendments, which were motivated by the process of revaluation already underway. The City of Cape Town was interdicted and restrained from levying property taxes based on the provisional valuation roll of 21 May 2002. A challenge to the constitutionality of the legislation was referred to the Constitutional Court. In order not to incur undue disruption of City operations, the public confidence in the fiscal cadastral system, and the reform of the fiscal cadastre – which would occur should the City be forced to re-tax properties based on the multitude of former valuation rolls from July 2002 – J Bozalek ordered a suspension of these orders for one year from the date of the conclusion of the Constitutional Court proceedings, to allow the competent authorities to correct the defects that led to these litigations (Robertson and another v City of Cape Town and another, and Truman-Baker v City of Cape Town; [2004] 3 All SA 53 (C)).

In May 2004, the Property Rates Act 6 of 2004 (which replaced the Provincial Valuation Ordinances) was passed. This effectively standardized and modernized the property tax legislation at the national level. All properties now fall within a local government area and hence the property tax net. Taxes on at least the first R15 000 of property value have a zero rate. Properties included for the first time should be phased in over a three year period. Taxation of land only, and taxation of land and improvements at a different rate, was now disallowed, and the market value principle of valuation was entrenched in the legislation, and the use of CAMA legalized.

8.11.19. Change of political power in the City

During the course of the GV2000, the ANC party, in coalition with the New National Party (NNP), took over control of the City during a period of "floor crossing" in October 2002 in which elected representatives were able to change political party. A new Mayor and Council were then appointed and City operations were redirected in line with national government policies (Confidential correspondence E, 2006). This was reflected in the determination of the budget and allocation of expenditure, with a focus on poverty relief and basic service provision. All projects of the City at that time were required to not conflict with the policies of the new ANC-led Council and there was a need for the endorsement of the GV2000 Project by the new City leaders.

In addition, many strategic appointments in the management of the City were changed as a result of the change of political power of the City. City Manager, Robert Maydon, was replaced in December 2002 with Dave Daniels as Acting City Manager. This management position was in authority over the GV2000 project, and directly affected its management of the project.

8.12. THE YEARS AFTER THE GV2000 AND PRIOR TO THE NEW GV2006

During the course of 2003, the valuations boards continued to meet to clear the cases of formal objection.

8.12.1. Additional valuation 2003

An additional valuation was, as usual, calculated annually in order to correct errors in the GV2000 and to add new land parcels and correct property characteristics in cases where improvements to the property had been changed. This was implemented in mid-2003.

As the City Council missed its July 2003 meeting, notification to residents of the new valuations had not been approved and posted. Residents were shocked when about 20 000 property valuations increased by 100% without notification or a chance to object to the new valuations. These properties were located across the City, but in Hout Bay, a group of properties in one area all experienced valuation and hence rates increases as there had been an error in their area in the GV2000. These residents lodged objections and agreed to only pay the annual property tax increase as based on their previous property valuations (Johns, 2003). A belated objections process was implemented after the Council meeting in August 2003. In his response to criticism in the press as to the mishandling of the additional valuations process, Alderman Ellman (Ellman, 2003) states categorically that it is a myth that the wealthy are being taxed to pay for the upliftment of the poor, and that this is propagated by certain political parties, as everyone is taxed using the same rate of 1.07 cents per rand of property value less R50 000.

There is often the perception that the City is targeting affluent areas in their general and additional valuations. There is more development happening in these areas, and so changes in valuations are more likely to be concentrated in more affluent areas. Due to the relatively fewer changes to property characteristics in poorer areas, the valuations team may not get to check these as regularly, also, the effect on property valuations in these areas is less as developments or improvements are of less value. This of course introduces inequities in the valuation roll. (Interview K, 2003).

8.12.2. Property tax policy 2003

At this time, property taxes were subject to a 9% increase. This was conservative given that the property market had experienced unprecedented growth over the last year, in many cases by 30%. About 50-60% of the buyers were estimated to be foreigners (Smith, 2003).

Also included in this round of property tax changes was a decision to increase the percentage of the sewerage charge based on property value from 28% (Mowzer, 2003) to 50%, despite the fact that the 28% charge was already a matter of contention. It was claimed by Mowzer (2003) that this decision was a result of listening to public complaints regarding the fact that the link between the sewerage rate and water use was too high. The policy was slated by the DA opposition party in the City, for the first time using the phrase "wealth tax" by a political party or Council official. In some cases this policy increased sewerage charges by 500% (Van Zilla, 2003) and was a blatant move away from a tariff based charge for measured consumption. Again, there was no notice of this change in policy apart from a technical advertisement in a newspaper which did not spell out the impact, and there was no provision made for public participation in decision-making (Van Zilla, 2003). The goal of transparency and legal requirement for public participation had not been served.

Criticism was levelled at the ANC-NNP City Council regarding the non-inclusive process of decision making and the property tax policy, as well as directed at the lack of explanation of the mechanisms of redistribution of wealth resulting from the amended sewerage tax policy (Farrow, 2003). In addition, the R50 000 rebate on taxable value was not included in the calculation of the sewerage charge, but owners of properties with a value less than R50 000 would receive a 100% rebate. A further issue was the charge of general sales tax called Value Added Tax (VAT), which is a tax on consumption, on the portion of the sewerage bill calculated from property value (Farrow, 2003). This is patently incorrect use of the tax as property value is non-consumptive, and amounts to double taxation.

Councillor Saleem Mowzer, in his reply in the press to comments on the sewerage charge, maintained that the new structure was more equitable and affordable. Furthermore, it guaranteed that all users contribute to the bulk waste water infrastructure in accordance with their property value.

Court challenge

This contentious issue was the subject of a challenge in the Cape High Court by the RAG (*Rates Action Group v City of Cape Town* [2004] 3 All SA 368 (C)). This was the third time the City found itself in court over aspects of the fiscal cadastral system since the GV2000. This case involved the use of taxes based on property value for the purpose of recovering the costs of sewerage and refuse services, in addition to measured-use charges.

The Court mainly examined whether property rates could be used for services which can be directly attributable to individual property owners, and for which the usage could be measured. J. Budlender determined that the legislation does not prohibit this method of raising income for the purposes of financing service delivery. He argued that the legislative framework displayed gaps and overlaps, and ordered that the relevant legislation be harmonized so that the intention of the legislation could be given effect.

J. Budlender further concluded that, because the legacy of apartheid with respect to the racial settlement patterns was largely consistent with wealth patterns in the City, differentiation – and, hence, indirect discrimination – took place in the taxation approach based on property value. This was, however, not deemed to be unfair discrimination. The contention that property value is not a good indicator of wealth was acknowledged, but did not result in any order, as there appears to be little viable alternative for local government income generation, and none within the existing legislative framework. The application was dismissed with costs in June 2004 (*Rates Action Group v City of Cape Town*: [2004] 3 All SA 368 (C)).

8.12.3. A new property valuation cycle

General valuations should be conducted at least every four years. The next valuation was to be implemented in July 2005 using a base date of January 2005. This was only performed in July 2006 to a base date of January 2006. As the process of generating property values is still time consuming, by the time the valuation roll is published it is already out of date. In the future the valuations will be projected in order to reduce changes in property value in successive valuation cycles.

8.13. MEASURING EFFECTIVENESS OF THE GV2000

8.13.1. Project specified measures of performance

Key performance indicators were identified at the start of the Project. These are:

- "A valuation roll by target date;
- The project must be completed within budget;
- There must be adequate quality control exercised throughout the course of the project;
- Objections to the valuations must be minimized;
- Total commitment to the project must be given by the project team; and
- Institutional capacity must be built during the course of the project" (GVPMT, 2000a).

8.13.2. Reported performance of the GV2000 Project.

External audit

Part of the GV2000 Project was an external audit by the International Property Tax Institute (IPTI) (GVSC, 2001c). The IPTI was tasked to assess whether the GV2000 Project

- "Conforms to best international practice in the context of computer assisted mass appraisal;
- Was uniformly applied with respect to data collection, market data analysis, quality control, and model calibration; and

- Is the process or system sustainable for the future" (GVSC, 2001c, 1).

Not included in the review were:

- "Interfacing with various billing systems;
- Consolidation of the various databases into one common system; and
- Conformity of the CAMA process with current and projected South African legislation" (GVSC, 2001c, 1).

Included in the review were

"Data Maintenance:

- Were the appropriate property characteristics (for sales and universe) collected and maintained?
- Was the data collection and processing procedure adequate?
- Are there edit checks for integrity and consistency?
- Is sales information adequate?
- How were sales obtained and screened?
- What adjustments to sales were considered?

Algorithms and Processes:

- Do the algorithms conform to IAAO and Uniform Standards for Professional Appraisal Practice (USPAP) standards?
- Are the valuation algorithms reasonable, understandable and effective?
- Do the algorithms promote stability?
- What provisions were there for reviewing values, ensuring consistency and handling outliers?

Software and IT Systems Issues:

- How were the models applied to the universe of properties?
- Does the CAMA system reflect modern technology and is it easily upgraded?
- Is it flexible and user friendly?
- Is training and documentation adequate?

Results:

- Were the models pilot tested and was a holdout group used?
- Have preliminary models been run and what are the results?
- Have values been checked for reasonableness by staff and/or private sector valuers?
- What quality control process and reports are in place?
- Do the quality control reports meet the IAAO and USPAP standards?" (GVSC, 2001c, 1)

The aim of this evaluation was to assess the resulting system as suitable for future use, rather than to provide a critique of the GV2000 Project itself. It therefore concentrated on the structure, processes and outputs of the final system, rather than critique the actual process of change to that system.

A report was requested from the GVSC (2001c) which should include the following:

- "Opinion respecting the level of conformity with the 'best international practices' for CAMA.
- Any inadequacies observed in the data and data management processes.
- Any inadequacies in the valuation process or models.
- Inequities observed in the resultant total valuations or land values." (GVSC, 2001c, 1).

The IPTI sent two people to review the process of the GV2000 Project and a report was produced. It highlights problems and successes in the process of the GV2000 project, which are already built into the narrative. It rightly highlights that the success of any such project can be judged by these, as well as the statistical analysis of the valuation and property taxation. There are three published standards, the IAAO *Standard on Mass Appraisal of Real Property* (2001), the IAAO *Standard on Ratio Studies* (1999), and the Uniform Standards for Professional Appraisal Practice (USPAP) *Standard No. 6 on Mass Appraisal Development and Reporting*. The latter has been amended and the newer version is

applicable from 2008. The IPTI External Audit (IPTI, 2002) states that the GV2000 Project satisfied, for the most part, all the above-mentioned criteria. Variations from these were not considered significant in terms of their effect on the overall quality of the GV2000 outputs. On the whole, the GV2000 Project was approved as a success. As a first pass mass appraisal, it overcame significant hurdles. Equity was greatly improved, while international standards on equity (largely judged statistically) have been met (IPTI, 2002). The property tax (rates) base was thus also of improved equity, and sustainability of the system as a whole was greatly improved (IPTI, 2002).

Recommendations from the IPTI (2002) for future valuation cycles were that the valuation cycle time be reduced to improve consistency of budget requirements, staff activity and hence retention of professional staff, as well as to avoid regression in equity between cycles and consequent significant changes in valuations at each subsequent cycle. Such changes present unnecessary political difficulties (IPTI, 2002). The continued development of in-house competency was recommended (IPTI, 2002). The issue of the necessity to report a land value and a value of improvements rather than an approved land value was noted to be artificial and not easily modelled or defended (IPTI, 2002). It was furthermore an "impediment to valuation transparency and efficiency" (IPTI, 2002, 31).

The issue of the South African interpretation of sale price as a proxy for market value was commented upon. The preferred interpretation is of sale price as an indicator for market value – even properties which sold on the base date, should report market valuations as generated by the model, and not actual sale prices. These are overly influenced by subjective factors, and sale price should be recognized as falling within a range of values, of which market value is the most probable of these (IPTI, 2002). The City's approach conforms to the recommendation of the IPTI, rather than with the interpretation of SA law favouring sale price, this reveals an inconsistency between the law in force at the time, and the application of the GV2000 Project at that time. This is resolved with the new Property Rates Act.

Qualitative measures of performance used

All of the usual statistical measures of performance of CAMA were used in the process of modelling (see 3.8 and Eckert *et al*, 1990). For heterogeneous areas the Coefficient of Dispersion (COD) should be 10-15% (Ward, 2002b). Of the four Cape Town MLC models, three fell in this range, while one was larger than this at 18% (Ward, 2002b). This model covered properties around the Table Mountain National Park which are highly variable in property characteristics and market value, and presented a modelling challenge. No data was available for the models for each of the other MLC's nor for the BLA model.

For the GV2000 the property tax revenue (T) was R1.866 billion while the cost of administration (C) was R109 million giving a cost ratio $\frac{T}{C}$ of 17. Compared to the IAAO standard of 66 (see section 3.8.1), this is very low. However, the GV2000 Project was one of fiscal cadastral reform, and not maintenance, and so the costs are expected to be higher than normal. This figure is expected to reduce substantially in subsequent years. Data was not available to determine this as the costs of operating the property valuation and billing departments of the City were not made available. Note that the difference between property tax liability (TL) and property tax income (T) were not available, and only one figure is used for both.

Data on the personal income of property owners within the CMA was not available as income is taxed at a national level and not disaggregated into municipal areas. Property tax effort could thus not be gauged.

Total property tax liability (TL) (the total billed amount) was R1.866 billion (City of Cape Town, 2002), while the sum of property values contained on the roll at base date (AV) was R195.232 billion (na, 2002c). The market value at the time of billing (MV) (July 2002) has been calculated to be roughly R271.935 billion using the Rode House Price Index compounded monthly from the AV. The property tax assessment efficiency (sales ratio) =

$\left(\frac{AV}{MV}\right)$ should be = 1, usually <1 and in this case is 0.71. This is due to the retrospective nature of property valuation and taxation, but can be adequately compensated for in the property tax rate adjustments. The tax rate effort is calculated from $\left(\frac{TL}{AV}\right)$ and amounts to 0.95%. The Base effect $\left(\frac{MV}{Y}\right)$ cannot be calculated as the personal income of property tax payers (Y) is unknown.

A final figure of interest is the increase in property tax over the years since the introduction of the GV2000 valuation roll. In the lifetime of its application (July 2002-July2006) property taxes increased an average of 5.8% per annum. However, a jump of 7.6% in property tax was realized at the introduction of the new valuation roll in July 2002.

Municipal benchmarking

Municipal benchmarking was in its conceptual stages at the time of implementation of the GV2000 Project. It was championed by the South African Cities Learning and Support Network (www.sacities.net), and took the form of a peer review process using a system of benchmarking against an 'ideal' (highly effective) multifaceted local authority standard. The current Ideal SA Municipal Benchmark can be viewed at the Knowledge Sharing Programme for local government (http://www.ksp.org.za) in South Africa. Unfortunately this had not yet been developed or applied at the time of the GV2000 Project, and could therefore shed no light on the success of the Project at that time.

8.14. CONCLUSIONS

This Chapter has brought together in narrative form various aspects of the GV2000 Project design and implementation, focussing on contextual, strategic and organizational issues in line with research activity 1.5.2 d). Data from a wide range of sources has been presented, while interpretation and analysis is left to Chapter 9. This case study is used in Chapter 9 to

extend knowledge of fiscal cadastral systems and their reform through a process of induction.

The narrative presented in this chapter is biased towards data sources in the English language, while secondary data sources were used to present aspects relating to other language groups. As the metropolitan Cape Town, and South Africa in general, is not considered a safe environment in which to conduct house-to-house visits, interviews were restricted to the project team, interviews conducted at the venues of the Interim Valuation Review, and interviews with people known to the researcher. Letters published in the press overcome this bias to some extent, but this medium reflects opinions of the more literate and confident property owner, and is likely to reflect a racial bias due to the disadvantages caused by historical Apartheid policies. A bias towards natural rather than social aspects can be expected due to the researcher's background and training. However, social aspects are included through rich data obtained from personal observation, interviews, confidential documentation and documentation in the public domain. A functionalist bias as opposed to an interpretivist bias is also to be expected due to the skills of the researcher, but these should not overly influence the case study narrative as interpretation and analysis has deliberately been avoided in the narrative in order to facilitate naturalistic generalization (see 6.2.4). A further bias towards the opinions of property owners in the more affluent formerly "white" locations, is expected as the researcher is a property owner in such a suburb of Cape Town, and was a subject of the GV2000 process as a property owner and taxpayer.

This case study narrative presents the picture of a highly ambitious and complex local government project, using IT/IS in the form of CAMA, to reform the data of the fiscal cadastre and the operations of property valuations and taxation in the City. The project was undertaken with assistance from the private sector and carried wide political support in the City, as evidenced by the Project's continuance despite change of political control in the City, and also evidenced by its approved budget. It can be considered to be largely successful given its ability to withstand challenge in court, its general acceptance by the

property tax paying public (ratepayers), and by its extension in the subsequent process of the GV2006.

Chapter 9 analyses the case study of the GV2000 Project using theoretical and methodological frameworks developed in Part II.

CHAPTER 9. CASE STUDY ANALYSIS AND CRITICAL REVIEW OF PROPOSED THEORETICAL, METHODOLOGICAL AND ANALYTICAL FRAMEWORKS

9.1. INTRODUCTION

This chapter analyses the case study of the General Valuation 2000 Project (GV2000 Project) of the City of Cape Town using the theoretical, methodological and analytical frameworks developed in Parts I and II of the thesis. The main objective of the case study analysis is to test these frameworks for guiding and researching a single case of reform of a fiscal cadastral system. Activity 1.5.3 a) addresses this objective. These proposed frameworks are summarized as follows:

Theoretical framework - approach to the world (ontology) and knowledge creation (epistemology)

- Critical realism (see 4.3) is a suitable (ontological and epistemological) approach for analysing case studies of fiscal cadastral system reform.
- The Three Worlds Model, incorporating WSR elements, is suitable for analysis of whether cases of fiscal cadastral system reform are approached holistically (see 2.3.4, 2.3.5, and 5.2), and can be used to guide reform of such cases from a holistic perspective.
- Theoretical approaches to IS research and practice (see 2.3 and 4.2) provide a mechanism with which to identify approaches to fiscal cadastral system reform.
- A social systems approach (see 2.3.5, 2.4.2, 2.4.7, 3.3.2, 4.2.6, 4.4) is advocated for guiding and analysing cases of fiscal cadastral system reform.

Methodological and analytical framework – methodologies, methods and tools

- A multimethodological approach is advocated (see 5.4) to guide and analyse cases of fiscal cadastral system reform (the next bullet relies on a multimethodological approach).

- Methodologies, methods and tools identified as useful to guide and analyse a case of fiscal cadastral system reform are (see 5.5): hard systems thinking (analysis of context through drivers of change, principles, goals, risks), change management (modified strategic staged processes of Kotter), case study research methods, VSM, SSM, and the 7E's framework for performance measurement.

These frameworks contribute to knowledge in fiscal cadastral systems in particular and cadastral systems in general, in the exploration of the use of critical realism as the underlying philosophical framework, in the identification of the multimethodological approach which has the potential as a framework to integrate knowledge from a variety of disciplines, and in the use of a combination of social systems approaches in a structured methodological framework. A further result of the analysis is a social systems understanding of the fiscal cadastral system.

In this chapter, each aspect of these proposed frameworks is applied to the case study of the GV2000 Project of the City of Cape Town as reflected in the case study narrative (Chapter 8). The analysis is systemic – although most components can be related to specific case study data, there are components which reflect on the properties of the case study as a whole and cannot be disaggregated. The reader is reminded of the design aspects highlighted in Chapter 6 relating to single case studies and generalization (see 6.2). The development of these frameworks has benefitted from multifaceted triangulation (of theory, methodology and disciplinary knowledge (interdisciplinarity)), while the logic of generalization is naturalistic as per section 6.2.4, and Figure 4.2. In particular, evidence of useful application of these frameworks to the case study of the GV2000 Project is a final step in the process of establishing their relevance to the case study and will ascertain whether they are thus supported by the evidence of the case study analysis.

An important aspect of the case study narrative and its analysis to repeat is the bias of the researcher. Biases are discussed in sections 1.7, 6.2.6 and 8.14, however, it should be noted that a particular bias of the analysis of the case study is the exploration of this from a

cadastral systems perspective (rather than alternative perspectives such as those a sociologist, economist, political scientist may adopt). The functionalist bias of the researcher is revealed in the structured manner of the analysis of the case study. Being a detailed narrative, there are aspects reflected in the case study which do not explicitely emerge in the analysis thereof, as this analysis is guided by the analytical framework developed to address the specific research questions. It must also be added that the process of analysis of the case study is in essence interpretive, and therefore reflects aspects considered relevant by the researcher.

Testing of the proposed theoretical, methodological/analytical frameworks is conducted in the reverse order from their development. They were developed in a bottom-up approach from the theoretical paradigm to specific methodologies, methods and tools. In this analysis, the methodologies, methods and tools will be applied to the case study of the GV2000 Project at the outset to test their usefulness. Thereafter the principle of multimethodology, the social systems approach, and the multiparadigm philosophy of critical realism, will undergo critique in that order. Various approaches to the Project, informed by theoretical approaches in IS (see 4.2), are then considered. The analysis concludes with a critique of the multiperspective Three Worlds Model of Mingers (2006) adapted with inclusion of WSR elements of Zhu (1999, 2000a).

In the assessment of the proposed theoretical and methodological frameworks for use in the analysis of the GV2000 Project, some additional aspects become apparent. Extensions of these frameworks emerge inductively from the observation and analysis of the case study of the GV2000 Project, and are presented towards the end of the chapter. Finally, the extent to which each of the theoretical, methodological/analytical frameworks can be generalized to other similar cases is proposed.

9.2. ANALYSIS OF THE GV2000 PROJECT USING THE IDENTIFIED METHODOLOGIES, METHODS AND TOOLS

9.2.1. Structure of analysis of the methodological framework

In the development of the methodological framework for this research in Part II, it was necessary to argue firstly the principle of multimethodology (see 5.4.3 to 5.4.5), and thereafter to motivate the process of choosing appropriate methodologies, methods and tools (see 5.5). In the application of these to the GV2000 Project in order to test support for these aspects of the framework, it is necessary to reverse this order. Firstly, the recommended tools (see 5.5) are applied in this section to analyse the case study of the GV2000 Project in order to ascertain their applicability and usefulness. Thereafter, the appropriateness of the method used to choose these methodologies, methods and tools, is analysed (see section 9.3.1). Finally, the merit of a multimethodological approach for analysis of the case study is assessed (see section 9.3).

9.2.2. The systems framework of drivers of reform

Based on literature, change drivers in "best practices" in property valuation and taxation reform processes appear to fall into three categories: increasing financial needs of government, changes in property characteristics and hence inequities, and international changes in property valuation and taxation practice, including advances in technology (see 3.4). This classification is biased towards an instrumental understanding of the fiscal cadastral system, and was not deemed to be sufficiently systemic to appreciate a broad range of forces which act on a system driving change (see 6.3.3).

A systems framework was identified (a modified form of the framework of Fahey (1994)) in section 6.3.3 to analyse the forces driving reform in the case study. This is a systems thinking classification as it is conceptual rather than real (Mingers, 2006). It categorises forces driving the reform process as socio-political, legislative, technical, and economic. This classification is used to analyse the predominant forces for change which drove the GV2000 Project for the purpose of revealing the usefulness of this classification.

Socio-political forces

The need for equity in property valuation and taxation

The "best practice" model of reform in fiscal cadastral systems notes that most processes are driven by a need to increase revenue from the property tax (see 7.3). The change drivers in the GV2000 Project were dominated by the goal of equity within the City's property tax system following local government transformation after Apartheid (section 8.7.3). This need for equity is socio-political in nature. Equity is primarily a social issue, and was demanded by society as demonstrated in court challenges, in particular the LOGRA case (*Lotus River, Ottery, Grassy Park Residents Association and another v South Peninsula Municipality* 1999 (2) SA 817 I; [1999] 4 BCLR 440 I) (see 8.6 and 8.11.18). Equitable delivery can be linked to local government political success (or non-equitable delivery could be linked to reduced political support for the dominant political party at City Council level).

Socio-political forces at the group and personal level

At the group and personal level within the organization, increased respect, opportunities, power, income, and employability of individuals who were involved in the modelling processes of CAMA, were observed (Field notes, 2000-2002). Others appeared to be threatened by their perceived or real exclusion from the Project team and from personal use of CAMA technology (Field notes, 2000-2002). The opportunities for personal improvement presented by the GV2000 Project, as well as the perception of a threat to personal satisfaction and advancement by exclusion from the Project, served to advance as well as to impede project delivery, depending on the individual or collective involved (Field notes, 2000-2002).

Legislative forces

The general legal responsibilities of local government

In accordance with South Africa's Constitution (Chapter 7, Section 152 of the Constitution, 1996) the City has a responsibility to assist national and provincial governments in the

delivery of services in accordance with basic human rights. It also has an obligation to uphold the law in general in the execution of its duties.

Valuation and taxation law and the legal requirement for regular valuations

During the course of the GV2000 Project the PVO 1993 governed the processes of valuation and specified that regular valuations were required. Since a number of prior revaluations had failed, the requirements of this law were not met. In addition, the judgement of Justice Dennis Davis in the LOGRA court case (*Lotus River, Ottery, Grassy Park Residents Association and another v South Peninsula Municipality* 1999 (2) SA 817 I; [1999] 4 BCLR 440 I) provided a further force for reform of the system of valuation and taxation in the City (section 8.6).

Legislative reform

The period of local government restructuring was characterized by a climate of legislative transformation and resulted in overlaps and gaps, and hence uncertainty, in the legislative framework dealing with property valuation and taxation at the outset of the GV2000. The GV2000 Project actually drove changes to legislation (Dewar, 2002). The publication of the first draft of the *Local Government: Property Rates Bill* in May 2000 (final Bill [B19-2003]) did not include the possibility of using CAMA, and this was covered by an amendment to the Local Government: Municipal Structures Act No. 117 of 1998. This amendment was promulgated as a direct result of an appeal by the City of Cape Town (see 8.8.3). Eventually the Property Rates Act 6 of 2004 was approved on 19 February 2004. The legal requirements of market value as the basis for the property tax, equity in the fiscal cadastre, and a unified valuation roll embodied in this legislation indicate that legal forces were significant in the GV2000 Project.

Technological system forces

Delivery time frame

The socio-political urgency of reform resulted in a tight time frame for a new general valuation to be conducted (see 8.7.1). This was originally set at two years, but amended to

three years (GVPMT, 2000a). There was considerable legislative and political pressure since the judgment on the LOGRA case to produce a new valuation roll (Interview K, 2003). With traditional methods of individual property valuation the estimated project duration would have been at least five years, and so the latest technological innovations were investigated as a means to reduce the project lifetime (Interview K, 2003).

Enabling technology of CAMA

CAMA technology was identified as able to deliver on all of the key goals of the GV2000 Project (see 8.7.2). Software which enables a CAMA system was readily available. International trends to implement CAMA also created favourable conditions for its adoption by individual cities. Its successful implementation in the West, and more recently in Eastern Europe promised the ability to deliver results within stringent specifications. CAMA was known to be "best international practice" (Interview K, 2003) for valuation of large numbers of properties, especially residential properties. The Property Rates Bill also catered for its use, and was likely to be enacted. IT (in particular IT relating to CAMA systems) was understood to be the main driver of the change approach (GVPMT, 2001c, 3).

Economic forces

Personal/social economic factors

There is no evidence that the incidence (how the tax burden varies with income) of the property tax reform in the GV2000 Project was investigated and hence, at a personal level, economic forces cannot be seen to be a significant driver of the reform process. Equity, the primary driver of reform in the GV2000 Project, has an economic component (see various definitions in the Glossary).

The property economy

The effect of rapidly increasing property taxes on the property market, business and investment in the City is not currently analyzed by any level of government (Interview K, 2003). Economic factors were, however, an important consequence of the process as are

evident in public perceptions of property tax increases in July 2002 and 2003 following the additional valuations (see 8.11.12 and 8.12.1).

Internal politics/economics

CAMA offered an opportunity for the property valuations functions in the MLC's (and eventually in the unified City) to discard their "Cinderella" status and to have their strategic role in the City recognized (Interview K, 2003). Politicians had previously been loath to spend money on the process of generating property taxes, but the reform of the process of valuations through the implementation of CAMA offered an opportunity to source larger funding than ever obtained previously in order to modernize the operation of City valuations (Interview K, 2003). Internal politics thus also played a role in driving reform. The reform of the fiscal cadastral system in Cape Town through the GV2000 was functionally driven by the budget and project plan (Interview K, 2003). There were 25 managers on the project, and properties which would in the past have not been included as they would not have been "found" were thus brought into the property tax base. This illustrates the substantial resources made available to the project in order that its goals could be met (Interview K, 2003).

Cost recovery

Internally, a strategy for maximizing the potential revenue from property taxation was required in order for the City to realize its goal of upgrading infrastructure and provision for its citizens towards meeting basic needs as well as becoming a "world-class" city (GVPMT, 2001a). Thus, the need to develop a "sound foundation for generating income" and an "accurate municipal valuation roll" were key motivators for change (GVPMT, 2001a, 2) although they were not spelt out as key objectives of CAMA implementation (see 8.7.3). In addition, a report was commissioned internally to ascertain the means by which the City could recover the cost of services (Interview K, 2003). This report resulted in a fundamental shift in the methods of cost recovery and, thus, further reform of the fiscal cadastral system. This eventually resulted in the court case of *Rates Action Group v City of Cape Town* (*Rates Action Group v City of Cape Town*: [2004] 3 All SA 368 I). Although

finding the financial resources to meet the service delivery needs of the City was stated as important, it was by no means the primary factor driving reform of the fiscal cadastral system, as it is stated to be in international practice (Interview K, 2003). Rather, increasing the income through fiscal cadastral reform is a consequence of other imperatives such as the need for equity in valuation and taxation (see 8.7.3) (Interview K, 2003).

Improving the cost effectiveness of general valuation processes was a long term aim of the GV2000 Project. It was not cost effective in its initial implementation as it had not been done before (Interview K, 2003) (see the cost ratio in 8.13.1). International consultants had to be used extensively, and systems had to be purchased and adapted. The infrastructure in terms of hard and software, personnel and knowledge, structures and processes, and information should contribute to reduced costs of repeat general valuations and additional valuations (Interview K, 2003).

Non-residential areas were not valued using CAMA processes in the GV2000, and this will be an area in which costs can be further reduced in future. In particular, site visits to non-residential properties are expensive and need to be reduced through other data updating methods (Interview K, 2003). Also, in Valuation Board hearings the valuers had, in general, to visit the properties in question, incurring costs (see 8.11.18). It is largely a requirement of the specification of market value rather than market-related value (Interview K, 2003). If market-related value was to be used, one could make assumptions regarding leases etc. but with market value, valuers have to look at the specifics of each and every property and this is very costly and time-consuming, particularly with complex non-residential buildings (Interview K, 2003). In retrospect, market-related value should be used otherwise each general valuation will cost R6-7 million (Interview K, 2003).

Suitability of this classification of forces

This systems classification of the driving forces behind the reform process appears to be sufficient to capture all significant aspects of the forces driving the system. However, in substantially different contexts, it may be necessary to include other categories, or to split

the socio-political category into two. Overall, the task of analyzing forces driving reform proved to be a useful step in the appreciation of the context of the reform process, and the engagement of the operations and management structures with their environments (more about the operations, management and environment structures in VSM in 9.2.7). The value of an analysis such as this can be appreciated when more complicated modelling processes such as VSM and SSM are used as this information is then readily accessible. This framework for analysis of the forces driving reform is an a priori indicator of variety (see 5.3.1) which is out of balance in a system as modelled in VSM. The information captured by the process of assessing forces driving reform cannot easily be captured by VSM unless it is used to model variety in the system prior to any reform process being implemented. The advantage of the proposed framework for modelling of forces driving reform is that it can be conducted at any stage during the process of reform, even retrospectively, as demonstrated here in the analysis of the GV2000 Project.

The usefulness of analysing drivers of a change process is demonstrated in the analysis of the GV2000 Project and is persuasively supported. The classifications in this framework are supported, but only speculatively. With each case study, the classification framework should be critically assessed to ascertain whether additional classifications are required or whether some of the classifications used in the analysis of the GV2000 Project are irrelevant.

9.2.3. Analysis of goals in the GV2000 Project case study

One of the main inputs to the design of a change process is an identification of goals (see 2.6.1, 3.5 and 6.3.5) of change. These generally arise from an analysis of the gaps between a desired state and the current state (see gap analysis in 2.4.6), and are highly correlated with the forces driving change.

From a holistic perspective it is necessary to consider the goals of all role players in a reform process, and not only the goals of the leadership team. Role players included those considered to be outside of the fiscal cadastral system such as politicians. In the GV2000

Project some goals were explicit, but inconsistently conveyed in the project documentation (see 8.7.3). There was also no attempt to group goals hierarchically and to address conflicting goals. These steps play an important role in strategic project design. Goals can often be in conflict (see 3.5.1) especially in complex change projects. Conflicting goals were in evidence in the GV2000 Project as discussed below.

Conflicting goals identified in the case study

Equity vs. pro-poor agenda

Equity was listed as a goal (see 8.7.3), while absolute equity is juxtaposed with a politically expedient and socially responsive progressive taxation policy which favoured the indigent (see 8.11.17). The effect of equity in valuations (by moving every property onto a same-date market valuation) is equity in taxation. However, pure equity in taxation was not retained as a result of the pro-poor property tax policies (see 8.11.17). These included the zero tax on the first R50 000 of property value (bottom bracket banding) (see 8.11.17). This type of tax relief provides proportionately greater relief for low-valued properties than for high-valued properties and equity is compromised. However, it assists in realization of the property tax: the proportion of collected tax to billed tax is generally higher than if low-valued properties are included in the tax base. The reduction of R50 000 in value from all properties reduces inequality that would be created at the interface (between properties less than and greater than R50 000 in value) with a tax exemption applied only to properties with a low valuation.

Property tax rebates for pensioners, the poor, etc. also served to decrease equity in taxation (see 8.11.17), but was part of the progressive tax policy.

The policy to provide free basic services such as water, electricity and sewerage was implemented through the structure of property taxes (see 8.11.17). The decision to bill separately for refuse and sewerage charges, and thereafter to convert a portion of the sewerage charge into a charge based on market value, was the subject of dispute between the tax-paying public and the City (see 8.11.17).

At a certain stage of the GV2000 Project, back rating was employed to increase income (Interview K, 2003). This was driven by a pro-poor service delivery agenda which is of socio-political origin (Interview K, 2003). In the light of the huge influx of poor people from the Eastern Cape the question was asked whether the pro-poor agenda should rather be a national government responsibility rather than a local government delivery responsibility (Interview K, 2003). Project goals of equity and fairness were compromised by social and political agendas outside of the control of the GV2000 Project leadership.

Fairness – conflicting interpretations

Since there was no cap on property tax increases, interpretations of fairness in the GV2000 Project varied (see various interpretations in the Glossary) with the Rates Action Group (RAG) contesting the ability of residents to pay huge tax increases (see Robertson and another v City of Cape Town and another, and Truman-Baker v City of Cape Town [2004] 3 All SA 53 (C) in section 8.11.18).

Transparency vs. efficiency

Transparency is a stated objective in "best practices" (see 3.5) and was also an implicit goal of the GV2000 Project (see 8.11.15). Transparency is a duty of responsible democratic government (Constitution, 1996, Chapter 10, section 195(1)(g)), while information held by the government should be accessible to protect the rights of individuals (Constitution, 1996, Chapter 2, Section 32(1)). Transparency was in conflict with the goals of efficiency and could have jeopardised the Project delivery date since release of CAMA formulae and data could have resulted in litigation. As a result they were not made available to the public (Field notes, 2000-2002).

Communications – efficiency vs. effectiveness

Communications and property tax billing were initially only conducted in English, which was easily and quickly accomplished. This exclusion of other languages was later rectified,

but shows that inclusive and effective communications were in conflict with efficiency at that time (see 8.11.3).

Public participation – legality vs. efficiency

The requirement for public participation is legislated in the Municipal Systems Act No 32 of 2000. However, there were limited opportunities for engagement of role players with the Project team, largely to ensure efficiency of delivery of the GV2000 Project (field notes, 2000 – 2002). Efforts at engagement were perceived by the property tax payers as "selling" of the Project by the City in the communication of its necessity, processes, and legality (Interview M, 2003 and Field notes 2001-2002). However, there was little evidence of effective two-way engagement with all role players (Field notes, 2000 – 2002); particularly those with a specific interest in the process such as the RAG (see 8.11.3). The relationship between the RAG and the City became adversarial to the extent that the RAG embarked on court action against the City (see 8.11.18).

The benefit of analysis of conflicts in goals

Identification of goals was conducted at an early stage of the GV2000 Project, but these showed some substantial variations between different documents (see 8.7.3). Identifying conflicts between these goals, as well as establishing their hierarchy, was not overtly undertaken in the Project despite the fact that goals were conflicting. Conflicting goals were not overtly managed, resulting in mixed/contradictory messages (or communications of meaning e.g. of equity and of fairness) evident in the above analysis of these.

It is apparent from the case study of the GV2000 Project, that it is not only necessary to define goals of reform at the outset of a project, but also to establish the period of time during which each goal should be addressed, and when it peaks in importance (e.g. equity was a goal linked to property valuation, but equity in taxation was not aggressively pursued due to progressive property tax policy). This analysis should take into account that goals of different role players may vary (e.g. goals of the GV2000 Project team and goals of property owners), and also that not only goals of the project leadership should be

investigated, but also goals of other groups and individuals. Conflicting goals should be identified so that they can be managed.

The benefit of assessing goals at the outset of a reform process provides important information for strategic process design. Goals feed into planning stages of reform, as well as informing measures of performance. Goals are not static, however, and, in line with the thinking of WSR, other goals may "bubble to the surface" during the course of a reform process (see 6.3.6 and Figure 9.19). The analysis of goals should be performed initially and be subject to ongoing review. This information feeds into a dynamic process of project redesign.

Goal identification at the initial stages of a project and throughout its duration, establishing the lifetime and hierarchy of goals, as well as identifying goals of different constituencies and managing conflicting goals is persuasively supported by the analysis of goal identification and management in the case study. Since the proposed multifaceted systems approach to goals was not followed in the GV2000 Project, it cannot be conclusively supported, and is only persuasively supported based on the evidence of the consequences of its lack of application in the case study.

9.2.4. Analysis of risks in the GV2000 Project case study

A social systems analysis of risk ensures that risk is assessed from multiple perspectives, and should lead naturally to a holistic view of risk management (see 2.4.6, 3.6). Proactive risk management (as opposed to reactive response to crises) is required in strategic reform processes in order to direct the processes of change towards the desired outcomes (goals) (see 2.4).

An analysis of risk is very similar to the structure of analysis of goals (9.2.3). Evidence from the management of risk in the GV2000 Project as a whole indicates that assessment of risk should be conducted thoroughly at the initial stages of a reform project, as well as throughout the project as risks may have a lifetime, and a peak, while new risks may

emerge (as modelled in WSR spiral processes of change (see 6.3.6 and Figure 9.19)), during the course of the project.

The risks in the GV2000 Project

The risks to the GV2000 project were actively assessed (see 8.8.2). They were multifaceted and can be classified in terms of a systems conceptual framework:

- Political – political will and decisions;
- Social – public opinion, human resources (especially in CAMA), familiarity of public representative bodies with change processes, security situation in Cape Town, low levels of trust due to historic failures, public participation processes are required;
- Environmental – property markets, high levels of overall complexity;
- Organizational - internal restructuring of the valuation function during the project;
- Legislative – legislation to facilitate CAMA, general property valuation and taxation legislative reform environment, legislation governing municipal structure;
- Material – technical/institutional resources;
- Technological – systems integration requirements (especially CAMA and billing systems, CAMA and GIS), system amendments, changing specifications, data availability (in BLA areas data was sparse), piecemeal IT strategy, bandwidth;
- Management – decisions of management and processes unpredictable.

The benefit of analysis of risk

These risks were identified at the outset of the project which facilitated their management (see 8.8.2). In a number of cases, strategic decisions and interventions resulted from this analysis and played an important role in the overall success of the project (see 8.8.3). For example, political and social risks resulted in emphasis being placed on a multifaceted communications strategy, while legislative change was to an extent driven by practical use of CAMA technology in the Project, and an appeal for legislative reform by the Project leadership team (Interview I, 2002).

In general, risk assessment is shown to be essential in the later modelling of System 2 in the VSM (see 9.2.7). Risks relate to the possibility of undesirable and unbalanced variety in the system, and such variety is regulated by various mechanisms. Failure to understand risks, and hence variety, and regulation of this, can threaten the overall stability of a system such as that of the fiscal cadastre, and its reform.

A holistic approach to risk identification and management at the initial stages of a project is conclusively supported by evidence in the case study of the GV2000 Project. However, reflection on the nature and impact of risks in the GV2000 Project leads to persuasive support for an ongoing assessment of risk throughout such a project, as well as an analysis of the lifetime and hierarchy of risks. These elements are required in order to effectively respond to the dynamic risk profile in complex change projects such as the GV2000 Project.

9.2.5. Principles and key elements of reform in the GV2000 project

With the predominant driver in the GV2000 Project being of a socio-political nature, the principles of equity and fairness were entrenched in the project design and goals (see 8.7 and 8.8). All other principles identified in the investigation and analysis of "best practices" in property valuation and taxation and fiscal cadastral systems reform (see 3.6 and 7.3.4) are evident in the GV2000 Project design and permeate the case study narrative in Chapter 8. These are strong political and operational support, comprehensive integration of policy and administration, strategic implementation, simplification of policy and administrative procedures, and the use of computerized technology (see 3.6).

In terms of key elements necessary for reform, strong political and operational support was certainly in evidence (as reflected in Project support despite political and managerial changes, and large budget approval – see 8.7.1, 8.7.2, 8.8.5, 8.8.6, and 8.11.19). Policy and administration appeared in the case study evidence as a whole to be well integrated, although to an extent retrospectively once the Property Tax Act was in place, which was subsequent to the completion of the GV2000 Project. Strategic implementation was

dominant in the design of the project (see 8.8.6), the identification of the Project Team (see 8.8.5), the structure of the public private partnership (see 8.8.5), and in the integration of systems such as the Billing Interface Project with the processes of the GV2000 Project (see 8.10). Issues of capacity were catered for in the design and in goals of knowledge transfer and use of local government employees wherever possible (see 8.8.5). Simplification of administrative procedures was attempted through the use of computerized technology (see 8.7.2.).

The benefit of specific identification of these key elements and principles is not apparent in the GV2000 Project. This is probably due to the strong correlation between these and the goals and risks of such a project, and thorough analysis of goals and risks is probably sufficient, rendering this step largely redundant for the purposes of guiding and analysing cases such as the GV2000 Project.

The necessity to identify the key elements and principles of reform in the GV2000 Project appears to be unsupported by the evidence of the case study. These aspects appear to be accommodated within the prior processes of goal and risk assessment.

9.2.6. Project design and staged processes of reform in the GV2000 Project

A staged process of reform was identified in section 6.3.6 as a useful strategic change management tool, with the knowledge that change is not necessarily linear or predictable/controllable. A modified staged process of Kotter (1996) is recommended and is visually compared to some alternatives in Figure 6.2. This framework includes both the natural and social aspects of change (see social systems approach in 2.3.5, 3.3.2, and 4.2.6). It is inclusive, spanning change processes from conception to the stage of measuring performance and feedback for further cycles of change. Directed at managers in practice (rather than researchers of organisational and change management theory), the framework is easy to understand and apply, and embraces the staged process identified in property valuation and taxation “best practice” in section 3.7 (see 6.3.6 for the full motivation for this strategy).

GV2000 Project design

The GV2000 Project was designed in a linear, staged process with minimal feedback (only Progress Reports) (see 8.8.6), except within the model specification and calibration stages, which are highly technical. The design was process-based, with consideration of relationships between project units (see 8.8.5 and 8.8.6, Figure 8.3 to Figure 8.5). Impact assessments were considered, as were functional responsibilities within a hierarchical management structure, training needs and infrastructural considerations (see 8.8.6). Detailed systems specifications were required to be produced. Design was dominated by technical requirements along the lines of a technical machine process model – inputs, tasks/processes, and outputs (all Project Plans – GVPMT, 2000a, 2000c, 2000d). The process was monitored by comparing budgeted cost of work performed against budgeted cost of work scheduled (GVPMT, 2000c) as well as by comparing task completion against a set timeframe (GVPMT, 2000c).

Staged processes employed in the GV2000 Project case study

In this section, the GV2000 Project strategy is compared to the staged processes of Kotter extended with reference to Dolny (see 6.3.6). The GV2000 Project was envisaged to follow 5 planned phases (see 8.8.6). These were the planning, preparatory, sales and market review, valuation and valuation review, and closure phases. These phases are implementation phases, and would be executed along with Stages 3, 4 and 5 of the Kotter stages. They relate mainly to Stages 1 and 2 of the "best practice" stages covered in section 3.7.3. They are completed in a linear, lifecycle type of IT change model. There is very little built-in reflection besides the ongoing comparison of costs against budget during the course of the project, as well as assessment against the time schedule for various tasks (Project Plans and Progress Reports, GVPMT, 2000a, 2000b, 2000c, 2000d). The Billing Project was only linked to the GV2000 Project some way into its implementation (see 8.10), and involved two stages of a similar nature. These relate to Stage 3 in the "best practice" model.

Establishing a sense of urgency - Stage 1

The sense of urgency for change in the GV2000 Project was largely of socio-political origin and thus external to the local government (see 8.7.3, 8.7.4). Furthermore it was highlighted in the LOGRA court judgment and well covered in the press (see 8.6). The imperatives of reform were acknowledged at all levels of local government and civil society (see 8.4), and thus a detailed gap-analysis was not required. Some pilot work performed by Ward (2001a) highlighted the gross inequalities in the fiscal cadastral system, while new property tax legislation was in process to create a single national system in place of the disparate provincial systems in place at the time (see 8.6, 8.8.3). Legislative change is conducted through parliament and is thus in the public domain. Reform of municipal boundaries, as well as changes from the former municipal areas, to the transitional structures, and then changes from the two-tier to the one-tier system were all very well known (see 8.4, 8.6) and had significant effects on property owners, also highlighting inequities across the CMA (see 8.7.4).

Creating the guiding coalition - Stage 2

Management of the GV2000 Project was at a political level (see 8.8.5). As the single-tier municipal structure was not implemented at the start of the project, the CMC was initially instructed to manage the project (see 8.6). A project management team was formed. The UniCity Commission (Unicom) took over the management of the project via an agency agreement with the six MLC's as its clients (see 8.7.1). The MLC's were represented by the Valuations Task Team and the Project Advisor. Management was devolved to a GV Steering Committee (GVSC).

A public-private partnership (PPP) was formed in April 2000 to facilitate the project execution and in order to recruit and manage staff with appropriate skills (see 8.8.5). The PPP Project Managers managed the Functional Managers, and together formed the "Core Team". This reported to the Project Facilitator, who, together with the VTT Convenor and Core Team formed the "Change Control Committee".

The management structure of the GV2000 project changed when UniCom was dissolved and the metropolitan single-tier structure of the City of Cape Town was formed in early 2001 (see 8.8.5). The interim municipal manager took over with an interim GVSC. Another high level change in management of the Project took place in October 2002 when there was a change of political power at the City level (see 8.11.19). The project survived this unscathed, largely due to the high degree of cooperation with respect to the GV2000 Project between political parties since the outset (Interview K, 2003).

The management structure of the GV2000 Project is best illustrated by Figure 9.1, Figure 9.3 and Figure 9.5 in the modelling using VSM (see 9.2.7). On the whole, management of the Project can be deemed to be successful since the Project as a whole was considered a success (see 8.14), even given the number of high level management changes during the course of the project and some tensions at an early stage of the project (see 8.11.1). The structure of Project management with the highest levels of local government at the helm gave the process the necessary credibility and power required for implementation. The sense that the team was working towards a "common good" (Project goals see 8.7.3) helped to establish relationships of trust and collegiality within the project team (Field notes, 2000 - 2003).

Developing a vision and a strategy - Stage 3

The vision of an equitable system of valuation was well-established at the outset of the Project. This was articulated in a range of stated and unstated goals (see 8.7.3, 8.10.2). Some of these are clearly contextual and of political origin (e.g. transparency, accountability and equity which are stated in the White Paper on Local Government, (1998)), while others are related to "best practices" of property valuation and taxation (see 3.5). The stated goals encompassed the use of CAMA, standards/"best practice", cost effectiveness/efficiency, integration, accuracy and equity. The primary actual goal was equity, with the other goals being supportive of this primary goal (see 8.7.3). The socio-political nature of this primary goal, as well as the agreement between political role players (see 8.7.1, Interview K, 2003), was critical to the adoption of the project, the approval of

the budget, and the maintenance of the project through periods of high level leadership changes.

The Project Plan and its Revisions defined the strategy (see 8.8.6). The GV2000 budget was approved, as well as adjustments to this during the course of the project through specific mechanisms. The decisions regarding software related to historical commitments and compatibility issues, as well as the ability of the software to deliver the expected results at reasonable cost (see 8.7.2).

Part of the strategy of the GV2000 was the creation of the PPP (see 8.8.5). The location of the physical space occupied by the Project Office close to the Civic Centre (see 8.11.2), reflected the strong association and reliance between the Project Office and the MLC of Cape Town at the start of the project.

Communicating the vision - Stage 4

The communication function of the Project was considered very important from the outset (see 8.11.3). This demonstrates a far more holistic approach to fiscal cadastral reform than is understood by "best practices" (chapter 3). The communications manager reported directly to the UniCom from the beginning, reflecting its status in the project (see 8.8.5). This was born out of the identified risks posed by the three different official languages in the City, large areas which did not have a history of property valuation and taxation, areas with a history of rates boycotts and high levels of illiteracy (see 8.8.2, 8.8.3). The communications strategy was multi-facetted and multi-level and concentrated firstly on the collection of property data, then on the valuation, and thereafter on the property taxation (see 8.11.3).

Empowering broad-based action - Stage 5

Training in the implementation of CAMA was a key aspect of the GV2000 Project (see 8.8.2). Since the technology was not only new to the City, but also to the nation, there was no in-house expertise relating to such systems (see 8.11.4, 8.11.5). Training and inclusion

of existing staff in the Project wherever possible, even in so far as secondment to the Project Office, facilitated action in the GV2000 Project (see Figure 8.5, Figure 9.6).

Communication regarding CAMA and its ability to deliver on the primary goal of equity was part of the communication campaign (see 8.11.3). The implementation of CAMA required changes in legislation (see 8.8.3) which were also facilitated in order to implement the Project legally.

There was some resistance to change (see 8.11.4, Field notes, 2001-2002), and the valuation staff of the City was particularly worried about their future with the introduction of CAMA (Field notes, 2001 – 2002). However, during the course of the project, valuation skills were in demand, not only for those involved in the modelling, but also for the field reviews and site visits for the Valuations board hearings. There was also resistance in that the municipal valuers did not want to train the data collection trainees (see 8.11.4). This problem also did not affect the overall project delivery as training was facilitated by other means (see 8.11.1).

In terms of public resistance, "Public perception on both sides of the income divide remained sceptical and resistant to change, albeit for different reasons" while in the end "successful maintenance of property tax legitimacy and high collection rates has been a significant achievement" Van Ryneveld and Parker (2002, 173). Since 2002, resistance has dissipated, but concerns around property taxation peak in June and July of each year as the City's new budget is presented, as well as changes in property tax policy (Field notes, 2002-2007). Since 2002, there has been one new valuation roll (GV2006), which sparked additional resistance not related to the GV2000 Project. This resistance is very similar to that demonstrated in the GV2000 Project and relates to fairness, opportunities for public participation, incorrect valuations, the perception of the tax as a wealth tax, etc. (see 8.12.3, Field notes, 2006).

Negative power relations (those which are destructive rather than constructive) were evident in the Project in the sharing of data between the MLC's (see 8.11.4). Access to data was at times problematic.

Resistance on the part of the public was evident in the refusal to allow entry onto properties. In some areas this was a collective effort in protest against the system (8.11.4). This was evidence of the lack of acceptance of the GV2000 Project in some affluent areas of the City (e.g. Constantia and Bishopscourt) and lack of trust in the data collectors (see 8.11.4). It was suggested (informally) that this resistance should be tackled by overestimating property characteristics such that the resulting property values are high, after which the valuation review process, or valuation objections process, would facilitate site visits and accurate data collection (Field notes, 2002, source confidential). This suggestion appears highly unethical and also illegal. There is no evidence that this strategy was in fact employed, but the option of obtaining court orders to enforce access was not followed as it would have been expensive, time-consuming, and politically inexpedient (Interview L).

The legislative and institutional environment of the GV2000 Project effectively split technical and political objections. This prevented successful challenges to the GV2000 Project, the BIP and resulting property taxation. Valuations objections were restricted to single property objections through the Formal Objection process and the Valuations Board hearing process. Objections to the principles and application of CAMA, or to any other GV2000 processes, were not afforded a forum within the GV2000 Project processes. Objections of this nature were restricted to the ordinary courts in which only the legality of processes could be challenged. Political processes were understood to be entirely in the domain of the property tax policy formulation, and were heard in the property tax/budget objection process. There was no forum for integrated debate or objections dealing with property valuation and taxation as a system.

Generating short-term wins - Stage 6

Reports on progress and communication of successes were part of the communications brief of the project (see 8.11.3). Internal project newsletters called GV News were produced for project staff. These served to communicate overall project successes and also the structures and processes of the project to staff that may otherwise have a narrow view of the project. This internal newsletter was produced every two months. The official newsletter of the project was called PVP News and was more broadly available and also produced every two months. This bulletin was sent to organizations representing public interests (Field notes, 2002). The public press was also used to convey information to the general public on a regular basis, particularly community newspapers.

Consolidating gains and producing more change - Stage 7

As the GV2000 Project progressed, increasing complexity in the management structure was evident (see Figure 8.3, Figure 8.4 and Figure 8.5), until the closure of the Project Office once the project life-cycle was complete. There is evidence of adaption as Project complexity increased and additional risks were perceived (all Project Plans and Project Reports). Such adaption occurred in many areas, but particularly in the functions of communications, data cleaning and processing, CAMA modelling, field verification exercises. In addition, the project had a moving target of the Property Tax Bill which went through numerous versions and was only approved two years after the implementation of the property tax based on the GV2000 Project (see 8.9.1). Local government legislation was also in flux (see 8.6) and major changes to senior management occurred during the Project (see 8.8.5, 8.11.1, 8.11.11 and 8.11.19). The GV2000 Project was accountable to changing management, and remained responsive to the resultant policy changes (evident in the case study through its continued operation and support from management). All in all, the Project did not lose focus or energy, and structures and processes remained adaptable throughout its duration.

Anchoring new approaches in the culture - Stage 8

Once the Project drew to a close and the Project Office was formally shut down (see 8.11.13), functions of property valuation and taxation reverted to the new City of Cape Town. The systems which had been put in place, as well as the staff training and ongoing involvement of the Project Advisor in subsequent property valuation and taxation cycles (Field notes, 2004 – 2006), meant that there was little reversion to previous ways of doing things. The changed legislative environment, changed management environment (local government structure), change political direction (new political party heading the City), as well as devolved and shared leadership all served to anchor the reformed fiscal cadastral system. Far-reaching changes in the environment of the Project (socio-political, institutional, etc.) in some ways facilitated acceptance of the many changes that occurred within the fiscal cadastral system.

Additional change management issues identified by Dolny

Internal organizational politics as well as extra-organizational politics and public relations were critical in the GV2000 Project. The close alignment between political parties with the goals of the Project (see 8.7.1, Interview K, 2003) served to reduce potential conflict, while local level councillors were included early on in the project (see 8.11.3) and continuous engagement with this constituency was the mandate of the communications team. Internal collegiality and cooperation were the dominant approaches to internal organizational politics (see 8.5.3) evident in the case study (Field notes, 2000-2002). This was probably assisted by the appointment of a public private partnership to run the project, while secondment to the project office was largely on merit, skill and experience (Fieldnotes, 2000-2002). The Project Office itself was motivated by profit and delivery according to its contract (Interview C, 2002). These elements probably mitigated against internal politics having a sound footing. However, as such evidence in the case study is from secondary sources, and field observations were restricted to visits (the case study was not action research), some degree of politics was most likely at play. If so, it did not appear to affect the GV2000 Project in a significant manner.

At the outset of the Project, the interrelationship between legislation and the process of change, as recommended by Dolny (2001), was tackled by the Project's legal advisors, who were part of the senior management of the project (see 8.8.5).

Issues relating to race and gender were understood to be important from the outset of the project (Interview C). This is possibly due to the awareness of such issues and mechanisms to deal with them which have evolved in South Africa since Dolny (2001) experienced problems with the South African Land Bank transformation. Recognition of these issues allowed them to be formally accounted for in the GV2000 Project in aspects such as employment at all levels from management down to the data collectors, and including the Valuations Boards (Interview C, Interview K, Field notes, 2000-2002). Issues of race and gender in South African society cannot be ignored at this stage of the country's history, but there appeared to be no significant effects on GV2000 Project delivery that can be attributed to issues of race and gender.

Concluding comments on staged processes in the GV2000 Project

The eight-staged process highlighted above appears to have been broadly followed in the GV2000 Project despite the fact that there was no explicit strategic management framework for the Project (Interview C, 2002). In all likelihood, Africon personnel, with their experience in project management, employed basic principles of this discipline without explicit mention thereof.

An important note is that there appears to be no appropriate place within the framework of Kotter (1996) to reflect the three "best practice" stages of discovering and identifying all parcels, parcel classification and valuation, and property tax determination, collection and enforcement (see 3.7.3). A fourth stage of performance analysis as proposed in section 7.3.7 also does not easily find a place in the eight stage framework. The three "best practice" stages are part of the actual operations of property valuation and taxation, and are not expected to be explicitly accommodated in the Kotter framework. The design of this framework is structured to be able to accommodate personal and social aspects of change,

but appears not to accommodate the actual operations (nuts and bolts) of material/technical change.

If one assesses the Kotter model with reference to VSM (see 5.3.1) as in section 9.2.7 to follow, it is concerned with the management function denoted in the models by the rectangle (Figure 9.1, Figure 9.7, Figure 9.8, Figure 9.9, Figure 9.10), as well as being concerned with the interrelationship between role-players, and the communications functions between the operations, management, and sub-systems. It therefore is concerned mostly with what lies *outside* the operations circles in the VSM. The staged processes highlighted in the "best practice" framework, would find a place *inside* the operations circles (see Figure 9.1 and Figure 9.5). Stage 4 of performance measurement is both conducted as an operation within the fiscal cadastral system, as well as forming an essential component of the auditing system 3* in the VSM (Figure 9.8). This understanding of the Kotter model in the light of the VSM of the fiscal cadastral system indicates the relative place of the Kotter model and the compatibility of this with VSM.

As it stands, the Kotter model for change requires adaption for guiding or analysing cases such as the GV2000 Project – *in its current form it is not fully supported by the evidence of its usefulness in the analysis of the GV2000 Project*. However, this model informs the development of a social systems and strategic staged process framework in section 9.6.2, based on the proposed eight stage change management methodological framework of Kotter (modified) along with the staged processes of property valuation and taxation reform and inductive knowledge from the case study of the GV2000 Project.

Up to this point, the analysis of the GV2000 Project has been conducted using methodologies, methods and tools which have been developed from, or are in line with, a social systems perspective. However, the analysis thus far has not been conducted systemically (but rather piecemeal looking at various aspects such as forces, goals, etc. of the case study). Analysis of the GV2000 Project as a whole, as advocated in a systems approach, has not yet been conducted. In the next sections, the case study approach to the

GV2000 Project is analysed, and thereafter the overall Project structure, processes, and relationships are analysed using the systems tools of Viable Systems Modelling (VSM) and Soft Systems Methodology (SSM) identified as appropriate in Chapter 5. The reader is reminded that the VSM tools are functionalist in origin, while the SSM tools are interpretivist in origin, thus providing a balance of approaches in line with the adopted critical realist theoretical framework (see 4.3). Espejo and Harnden (1989) have also paired VSM with SSM, which balances the functionalist approach of the VSM, as is proposed in this research (see 5.5). The analysis of the GV2000 Project as a system is expected to provide an opportunity to analyse the emergent properties (Checkland, 1999) of the system – these properties are not exhibited by the elements of the system and its sub-systems, but derive from them (see Glossary for emergent properties).

9.2.7. Analysis of the case study strategy in the GV2000 Project

The case study strategy was motivated in section 6.2 as an appropriate approach to analysis of real world projects such as that of the GV2000 Project. The case study methodology encompasses research design, management, data collection, processing and analysis and generalization of case study findings (see all subsections of section 6.2). A thorough knowledge of case study methodology has facilitated rigourous design and execution of the observation and analysis of the GV2000 Project (see 8.2). This is particularly important in the case of the GV2000 Project as a single case study, as these aspects are not easily accomplished.

9.2.8. Analysis using Viable Systems Modelling (VSM)

VSM is used to analyse organizational structure and the balance of variety within an organisational system (see 5.3.1) (Beer, 1995). VSM has been introduced and critically argued in sections 5.3.1 and 5.5, while Jackson (2003) provides a thorough summary and critique of the model.

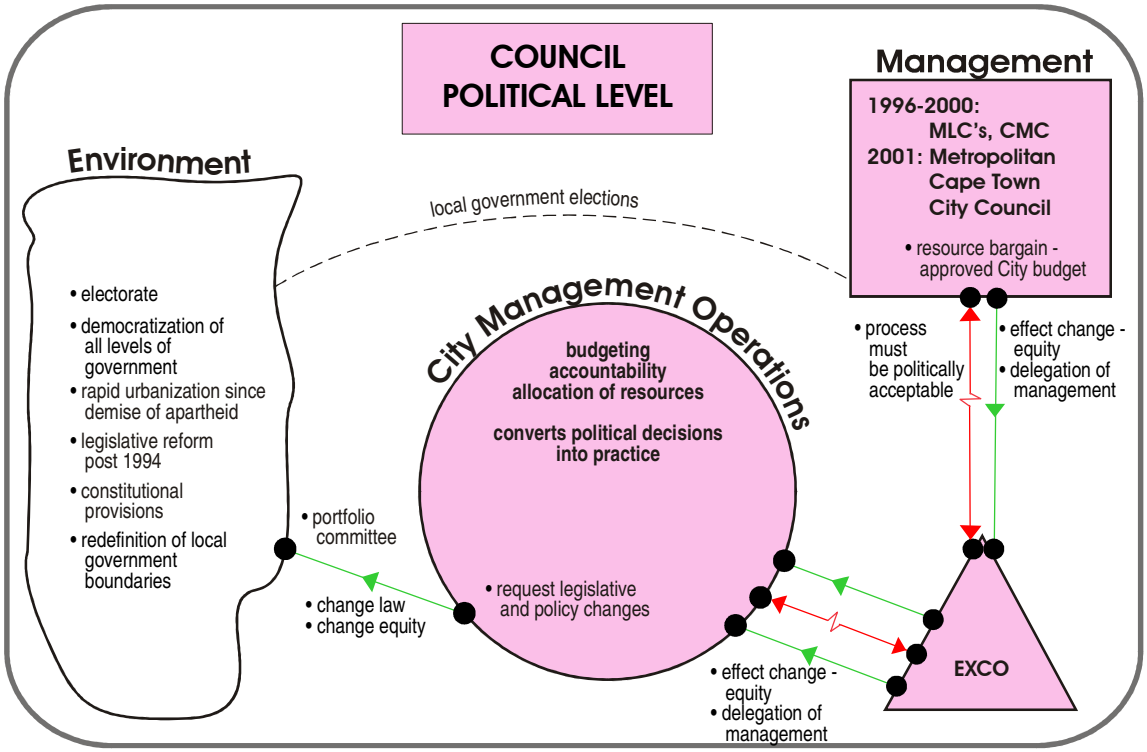
In some cases VSM has been misinterpreted as a hierarchical model (Jackson, 2003), whereas it is supposed to be non-hierarchical in its design and use. This is due to the fact

that the management structures often appear at the top of the VSM charts, whereas the focus of VSM is on the "System in focus" which consists of the operations, and not the management thereof. Various forms of control are balanced about the operations of the "system in focus" in VSM. The nature of hierarchy in the VSM lies in the embedded nature of systems, rather than in the relative importance of elements at any one level. Hierarchy is not commensurate with importance, and Beer (1994) maintains that systems at the most embedded level could be construed as equally as important as the "system in focus" (consider the biological analogy of the body, organs, cells, etc.).

In the course of this section VSM tools (Beer, 1995) are used to model aspects of the GV2000 Project and thereafter the ability of each model to reveal aspects of the case study is discussed. In the formulation of the viable systems models, the GV2000 Project as a whole has been considered, and as such, there are a limited number of direct cross-references back to the case study narrative in Chapter 8.

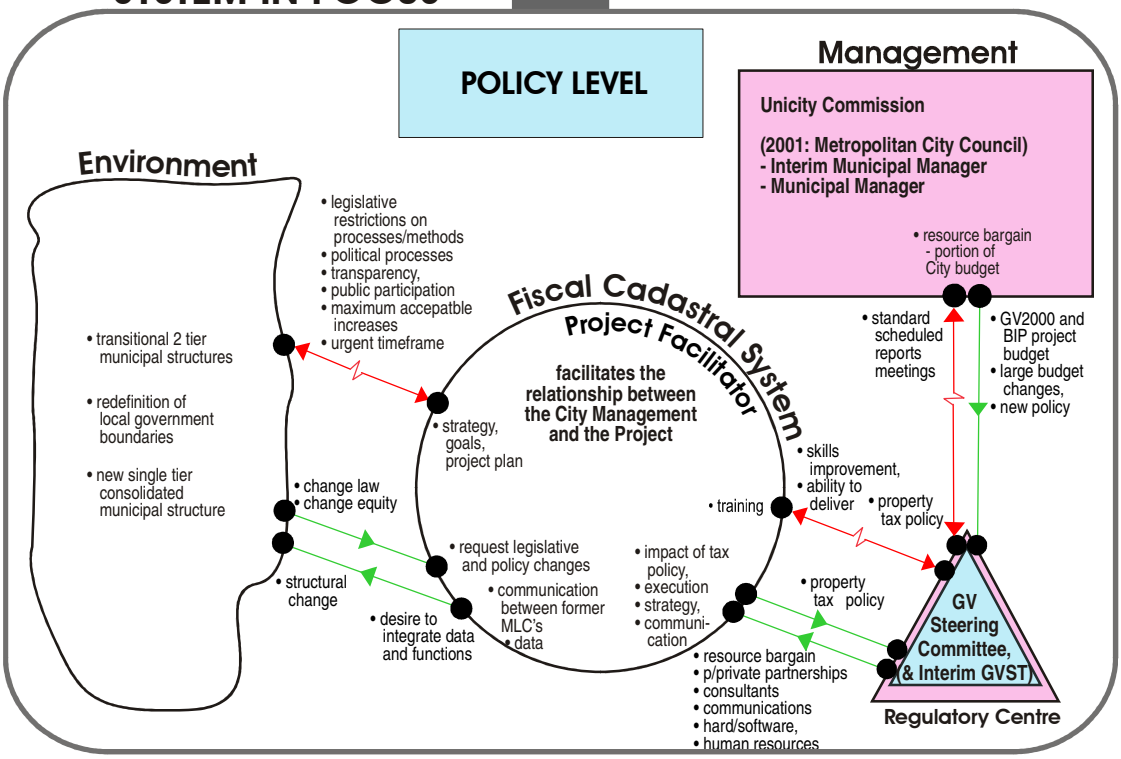
Viable systems modelling (VSM) of the GV2000 Project case study

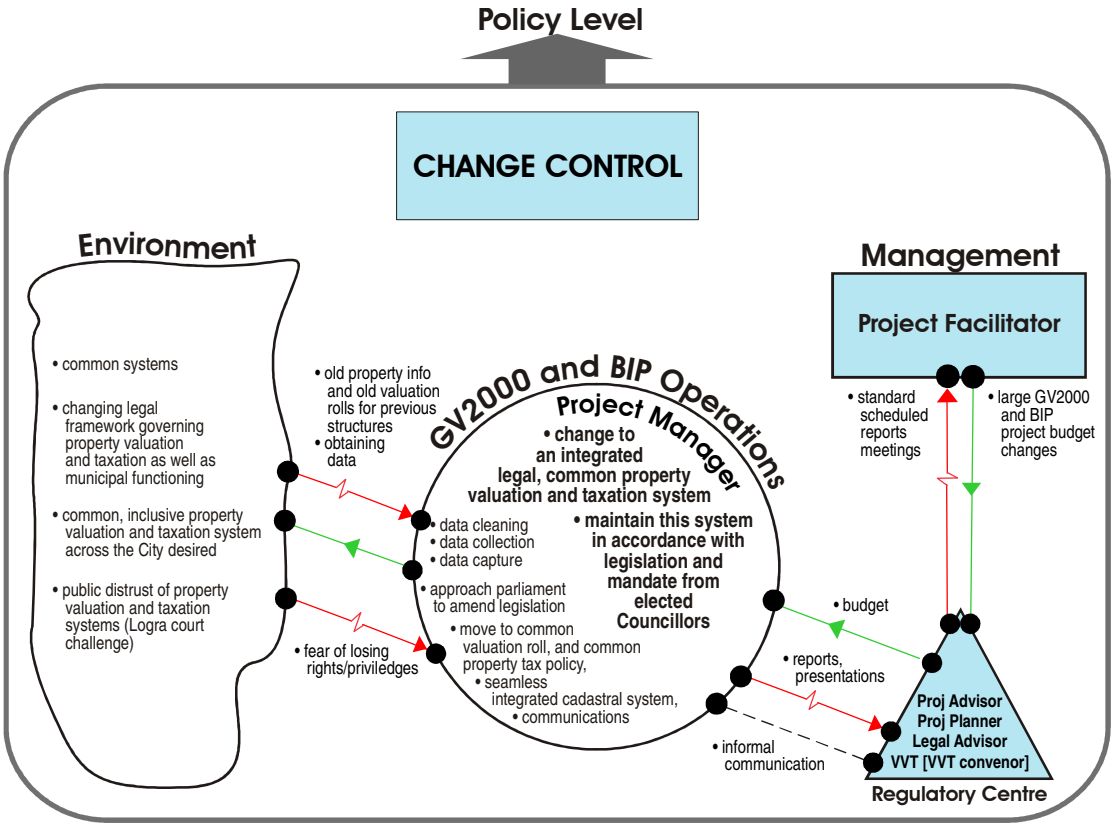
The following diagrams, which necessarily run over a number of pages (Figure 9.1), illustrate the fiscal cadastral system as the System-in-Focus in the VSM (Beer, 1995), as well as the systems higher and lower in the hierarchy. The detail of subsystems is extended down to the Senior Executive Level, although the place of the Coordinator Level is reflected. Links along the horizontal (left to right) are indicators of variety. Triangle symbols on these links indicate amplifiers of variety, while resistor symbols indicate attenuation. The large triangle acts as a regulator of variety between the system operations and its management (Beer, 1995).

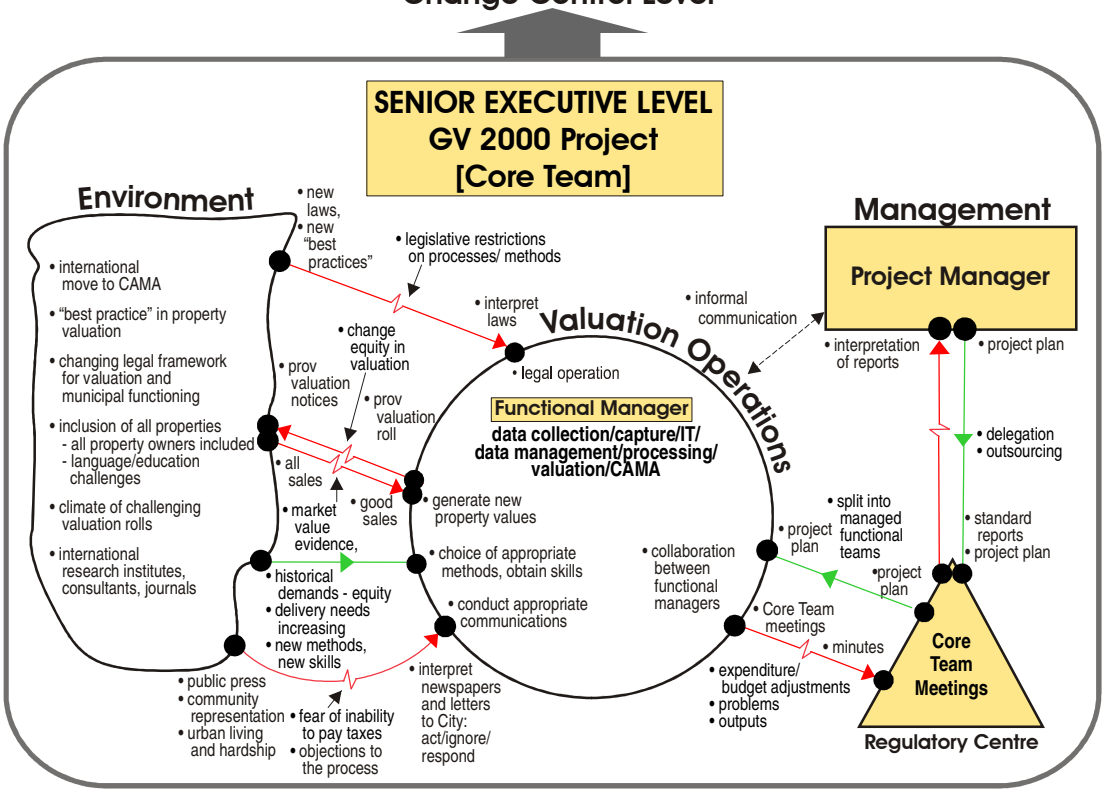


Political Level

SYSTEM IN FOCUS




Policy Level
CHANGE CONTROL
Environment
• common systems
• changing legal framework governing property valuation and taxation as well as municipal functioning
• common, inclusive property valuation and taxation system across the City desired
• public distrust of property valuation and taxation systems (Logra court challenge)
• old property info and old valuation rolls for previous structures
• obtaining data
• fear of losing rights/priviledges
GV2000 and BIP Operations
Project Manager
• change to an integrated legal, common property valuation and taxation system
• maintain this system in accordance with legislation and mandate from elected Councillors
• data cleaning
• data collection
• data capture
• approach parliament to amend legislation
• move to common valuation roll, and common property tax policy,
• seamless integrated cadastral system,
• communications
Management
Project Facilitator
• standard scheduled reports meetings
• large GV2000 and BIP project budget changes
• budget
• reports, presentations
• informal communication
Proj Advisor
Proj Planner
Legal Advisor
VVT [VVT convenor]
Regulatory Centre


Change Control Level
SENIOR EXECUTIVE LEVEL
GV 2000 Project
[Core Team]
Environment
• international move to CAMA
• "best practice" in property valuation
• changing legal framework for valuation and municipal functioning
• inclusion of all properties - all property owners included - language/education challenges
• climate of challenging valuation rolls
• international research institutes, consultants, journals
• new laws, • new "best practices"
• legislative restrictions on processes/ methods
• interpret laws
• change equity in valuation
• prov valuation notices
• prov valuation roll
• all sales
• market value evidence,
• good sales
• historical demands - equity
• delivery needs increasing
• new methods, new skills
• public press
• community representation
• urban living and hardship
• fear of inability to pay taxes
• objections to the process
• interpret newspapers and letters to City: act/ignore/ respond
Valuation Operations
• legal operation
Functional Manager
data collection/capture/IT/ data management/processing/ valuation/CAMA
• generate new property values
• choice of appropriate methods, obtain skills
• conduct appropriate communications
Management
Project Manager
• informal communication
• interpretation of reports
• project plan
• delegation
• outsourcing
• standard reports
• project plan
• split into managed functional teams
•project plan
• project plan
• collaboration between functional managers
• Core Team meetings
• minutes
• expenditure/ budget adjustments
• problems
• outputs
Core Team Meetings
Regulatory Centre

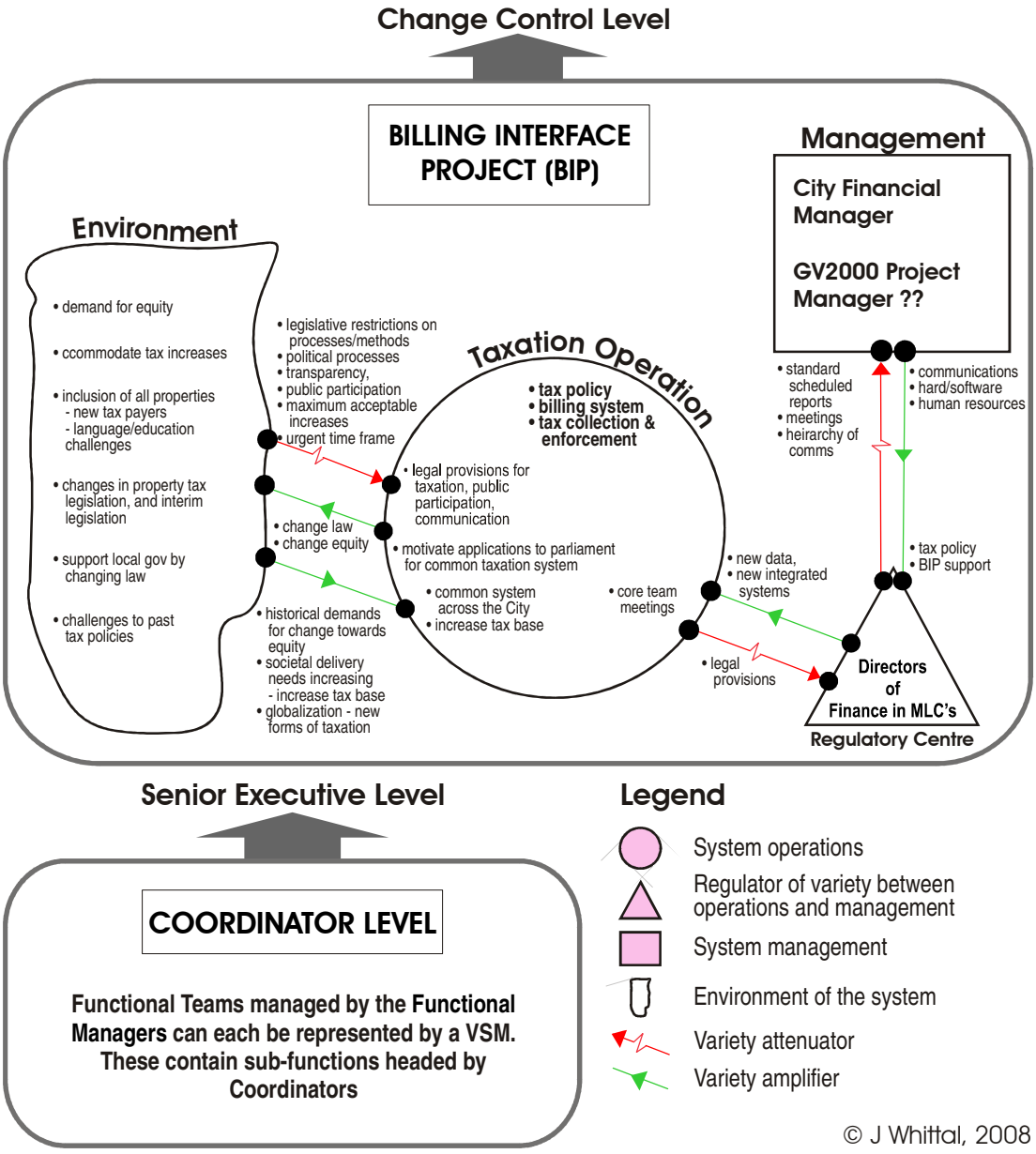


Figure 9.1 The initial VSM diagrams of the fiscal cadastral system of the case study

The systems shown in Figure 9.1 illustrate the recursion of management, operations, and the environment at many levels. Management is indicated by square blocks, operations by the central circles, and the environment by the irregular shape. In some instances, changes at the municipal structure level are reflected at the managerial level of the system while also being reflected as part of the context, or environment, in which the system operates.

Viability of each level of the system is conditional on the balance of variety illustrated on the horizontal axis (left to right) (Beer, 1995). It is evident that at each level of recursion in the case study fiscal cadastral system, there are system-specific flows of information between management, operations, and the environment. In Figure 9.1 the variety in the environment is shown to be managed through a system of attenuators in order to reduce this to a level which is usable by the system's management structure. In addition, the variety of responses available to the operations structure is amplified by the management structure through various means such as providing a budget for expenditure.

At the nodes (small black circles at the interfaces) of these attenuators and amplifiers are the mechanisms used to convey information across these channels. In some cases such as with written reports, these will be the same, whereas in other cases these will vary, such as "Property valuation roll" and "Property valuation notices". These are effectively transducers and are used to encode or interpret information. In the case study of the GV2000 Project the information flow to management is structured as project plans, reports, scheduled meetings, and management reviews.

At each level of the system, regulation of information between the operations structure and the management structure is performed by the regulatory centre (large triangle). This ensures that only relevant information is passed on to management and that this is presented in a format which can be meaningfully interpreted (remember the conversation about meaning vs. information in Chapter 2). Similarly, this regulatory centre regulates the information which flows from management to operations (Beer, 1995).

An important aspect of systems analysis not included within the orthodox VSM models (Beer, 1995) at this level are the informal communications channels, especially between the operations and management structures. These are included in Figure 9.1 in the chart of the GV2000 Project Core Team system, but they are likely to be more numerous than conveyed in these diagrams. Important information may frequently be conveyed informally. A

preliminary stream of communication and of regulation may often take place before information is reflected in the formal channels of communication. Informal communication between both the operations and management structures and the environment is also possible and would typically include communications between individuals which are understood to be "off the record" (Field notes, 2000-2003). The importance of these informal communications channels cannot be overemphasised, and they may very often be classified as partly political in nature.

These initial explorations of the system lead on to the formulation of Charts 1, 2 and 3. Chart 4, which reflects a high level of detail regarding viability, is not produced as it was beyond the scope of this research and its objectives.

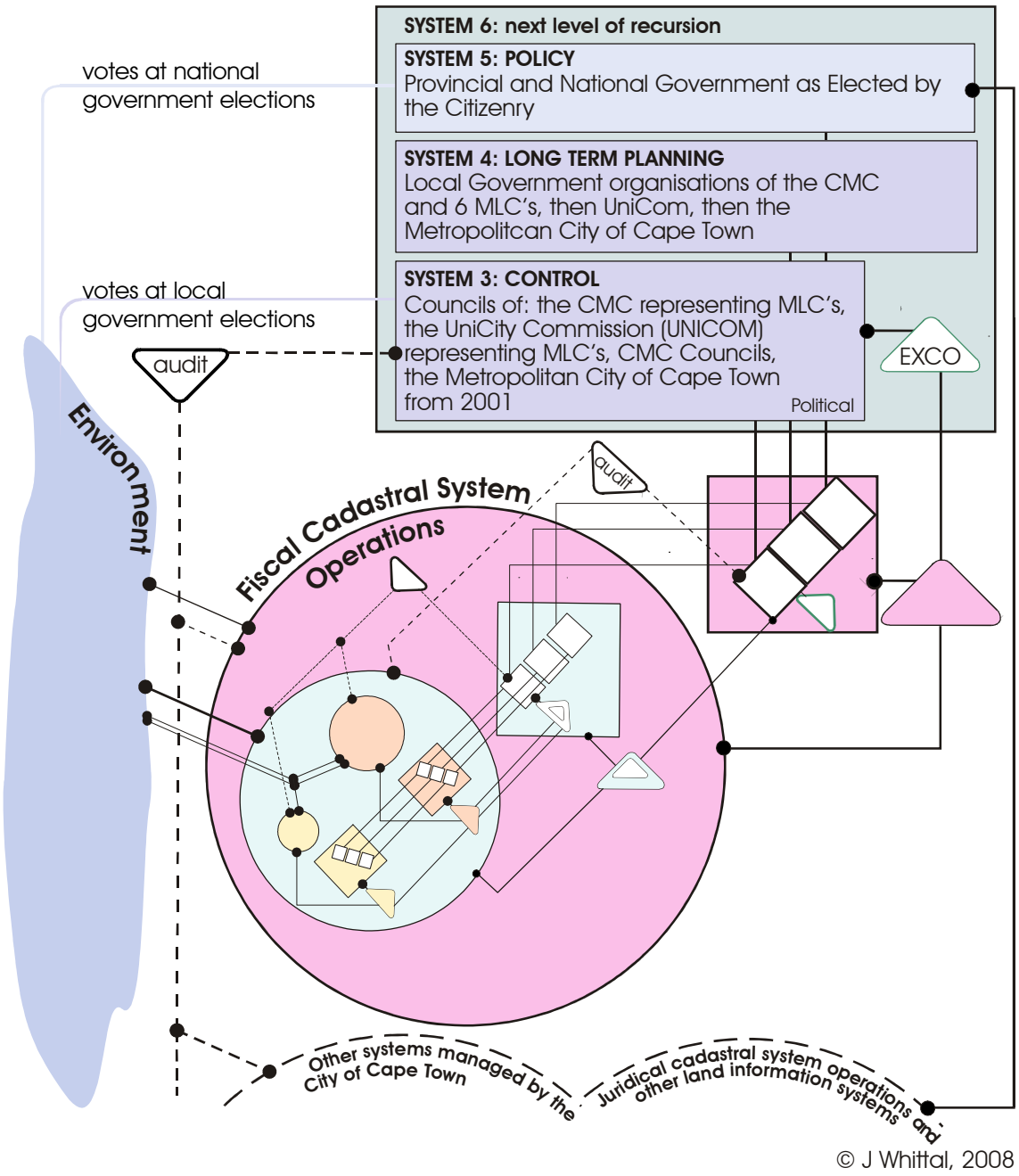


Figure 9.2 Outline of Chart 1 of the VSM fiscal cadastral system-in-focus as reflected in the case study

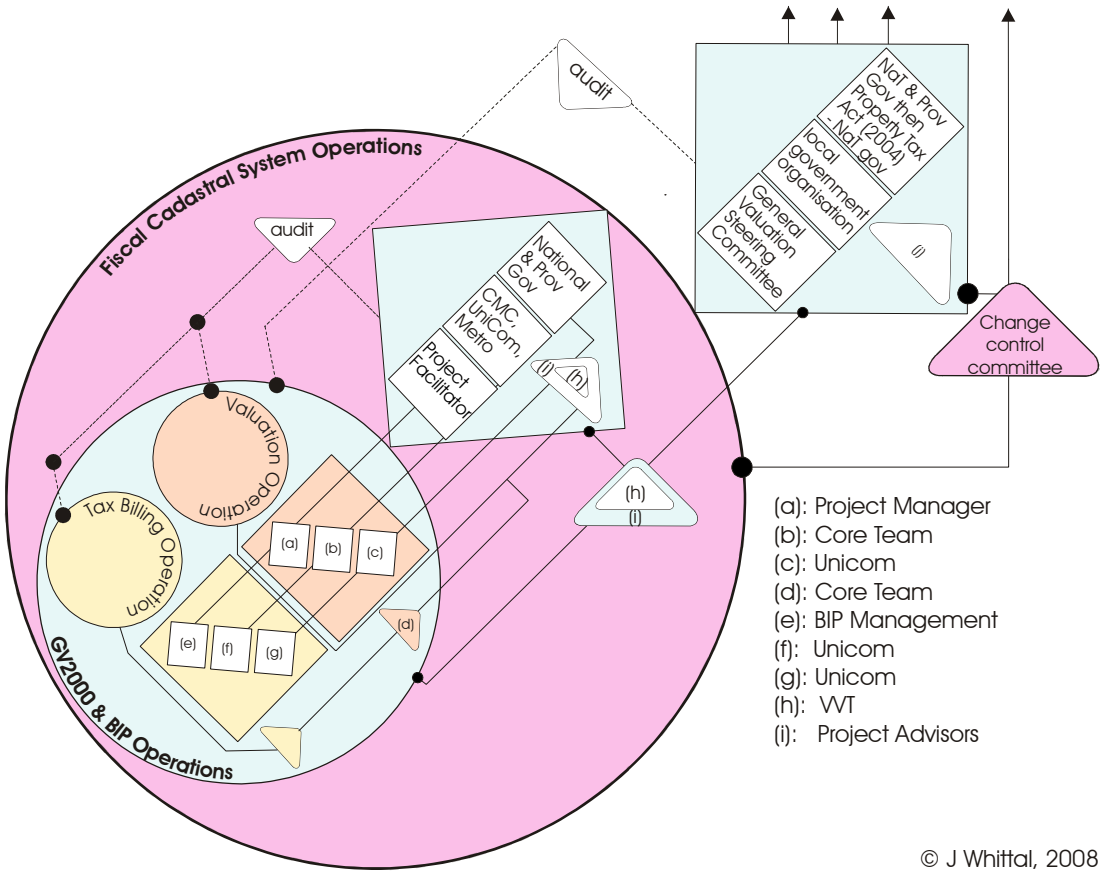


Figure 9.3 Internal detail of Chart 1 of the VSM fiscal cadastral system-in-focus as reflected in the case study

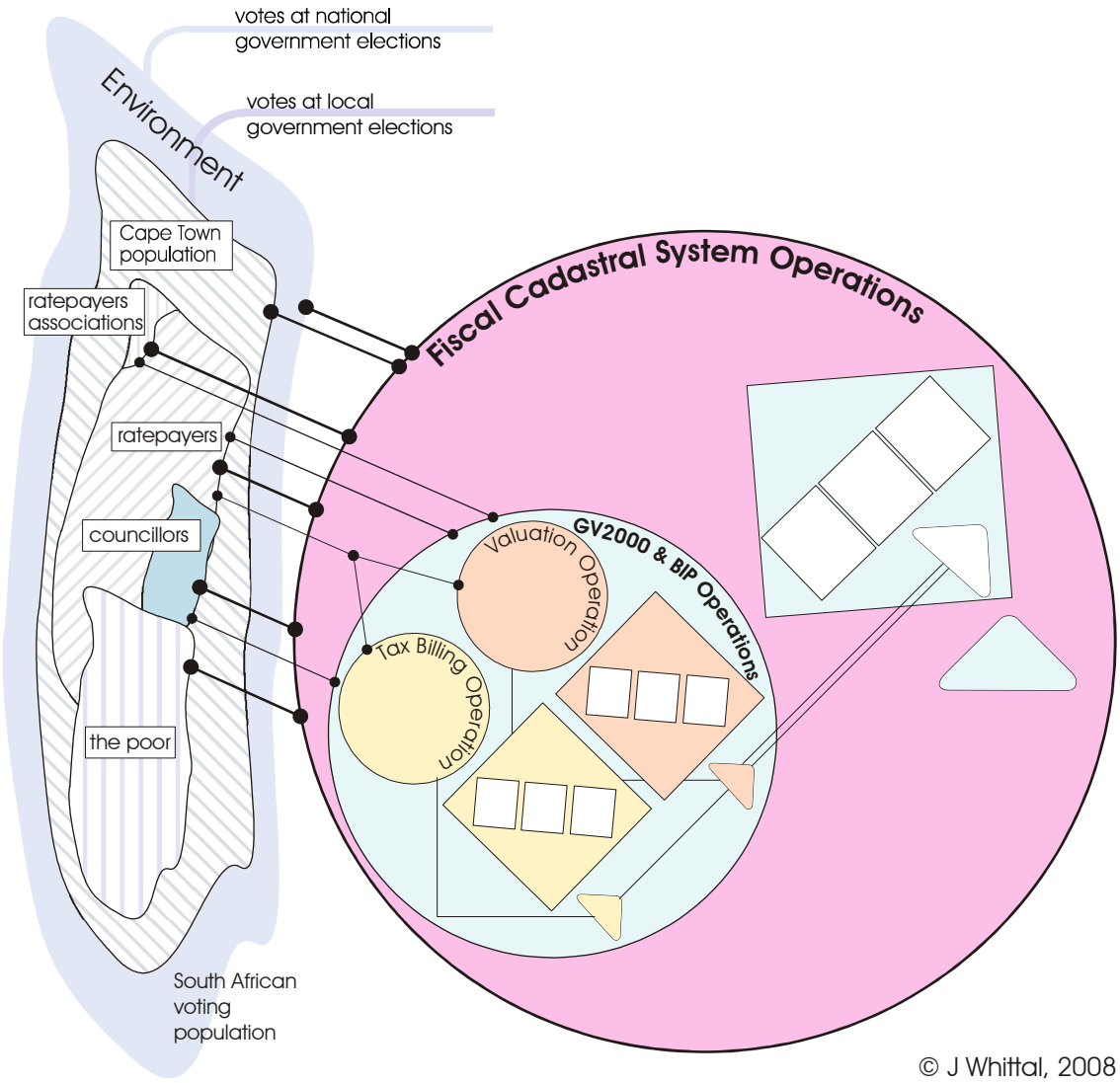


Figure 9.4 Environment in Chart 1 of the VSM fiscal cadastral system-in-focus as reflected in the case study

Chart 1 (Figure 9.2 - Figure 9.4) illustrates the system-in-focus with its subsystems in an embedded format and its relationships with management and the environment. Due to the limits of reproduction, detail at the sub-system level is limited, while the overall structure is accurately reflected. In VSM the system in focus is called System 1 (Beer, 1995). Systems 2 and 3* are discussed in Chart 3 (Figure 9.7 - Figure 9.10), while in Chart 1 (Figure 9.2 - Figure 9.4) Systems 3, 4 and 5 are represented (Beer, 1995). System 3 is the control function of the system in focus and varies during the project due to changes in the structure

of local government at the time (see Figure 9.2). It is interpreted as the Councils of the CMC and 6 MLC's initially, then the UniCity Commission (UniCom), and thereafter the Council of the Metropolitan City of Cape Town. System 4 is concerned with long term planning, and is interpreted in the case study as the local government organization (i.e. the departments and employees of the local government) which underwent fundamental structural change during the course of the project. In terms of long term planning, this system should conduct research into aspects affecting the system, but in the case of the GV2000 Project there is no evidence of research as a focus of management structures (Field notes, 2002-2003). System 5 reflects the policy level and is interpreted as the elected Provincial and National Governments. During the course of the GV2000 Project, the Property Tax Bill was under discussion, and nationalised the legislation governing property valuation and taxation. This Bill was enacted in 2004.

Systems other than the fiscal cadastral system are illustrated at the bottom of Figure 9.2. These would also include any other systems reporting to the System 3 Control which in this case is the City Council. There are many other systems that could be represented in this chart at this level – including all other operations of the local government of the City of Cape Town. For the purposes of understanding context, the operations of the juridical cadastral system are illustrated as linked to national government. In South Africa there are some fundamental linkages between the fiscal cadastral system operations and those of the juridical cadastre (see 8.11.4).

The environment of the fiscal cadastral system in focus (Figure 9.4) contains various levels of organization of society relating to property valuation and taxation. It is clearly seen that the fiscal cadastral system operations circle is ideally linked to all of these – both collectively and individually. In contrast, the linkages of the valuations and taxation operations to their environments are generally limited and not indicative of a holistic approach (more detail is illustrated in Figure 9.5). One of the primary benefits of the consideration of a fiscal cadastral system in comparison to property valuation and taxation

operations is thus illustrated in this model. The operations form only the elements inside the circle, while a systems analysis is able to reflect other aspects, relationships, variety, etc.

Within the fiscal cadastral system, the subsystem of the combined GV2000 and Billing Interface Project (BIP) operations is evident (Figure 9.3). During the course of the case study GV2000 Project, the reporting of the progress of the BIP was co-managed, which has resulted in this level of recursion. This would fall away after termination of the projects, and reporting structures would thus also be streamlined and simplified from those shown in Figure 9.2 to Figure 9.4. This added level of structural complexity is a necessary reflection of the complexity of the system in transition and is required in order to balance the exceptional levels of variety across the system during the fiscal cadastral reform process in the GV2000 Project.

The next level of recursion is that relating to the operations of valuation and taxation. Detailed information on the relationship between the BIP and the management of the GV2000 Project was not forthcoming, and the reporting structures are still unclear in the research data. This has resulted in an incomplete representation of the taxation operations although these are thought to have been reported at Project Facilitator level and are reflected as such.

The regulatory functions are provided by a hierarchy of groupings – the Core Committee consisting of the Project Manager and Functional Managers, the Valuation Task Team and Project Advisors, the Change Control Committee, and finally the Executive Committee of the Council. The Change Control Committee had the function of regulating changes in budget and timeframes which would have an impact on project delivery. The mechanisms of regulation are expanded on in Chart 3 (Figure 9.7 - Figure 9.10) as are the auditing mechanisms.

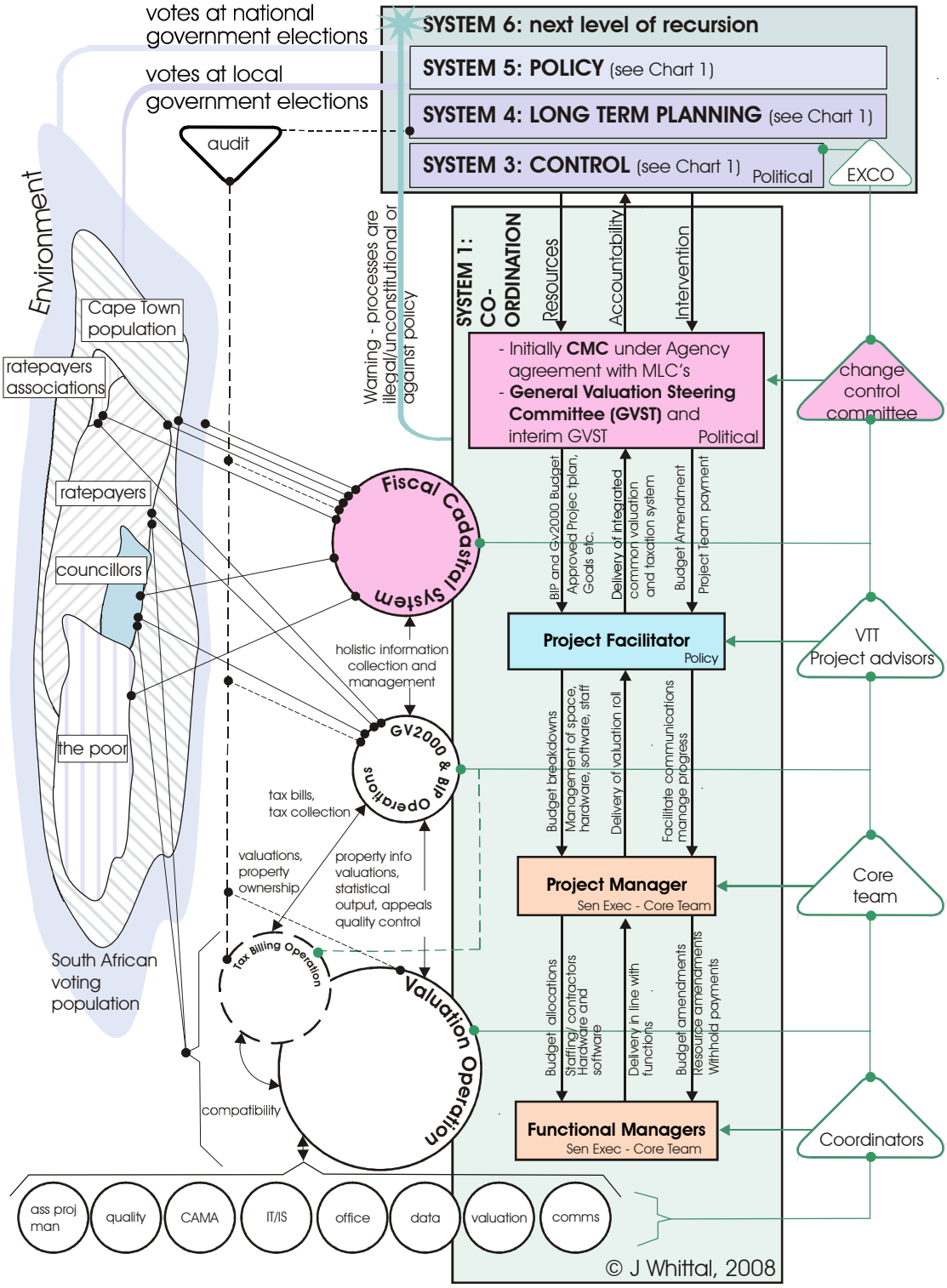


Figure 9.5 Chart 2 of the VSM of the fiscal cadastral system and its subsystems as in the case study

The fiscal cadastral system is represented in a hierarchical diagram referred to as Chart 2 in VSM (Beer, 1995). This appears in Figure 9.5. This figure illustrates the next level of recursion in the system – that of the Functional level of the GV2000 Project operations.

At this point, it is useful to consider the human resource issues in the Project, the public-private partnership (PPP), the integration of consultants, the staff secondment from the City to the Project at various levels, and contracting of functions. This is illustrated in the staffing organigram in Figure 9.6 (information from GVPMT, 2001b and Field Notes, 2000-2002).

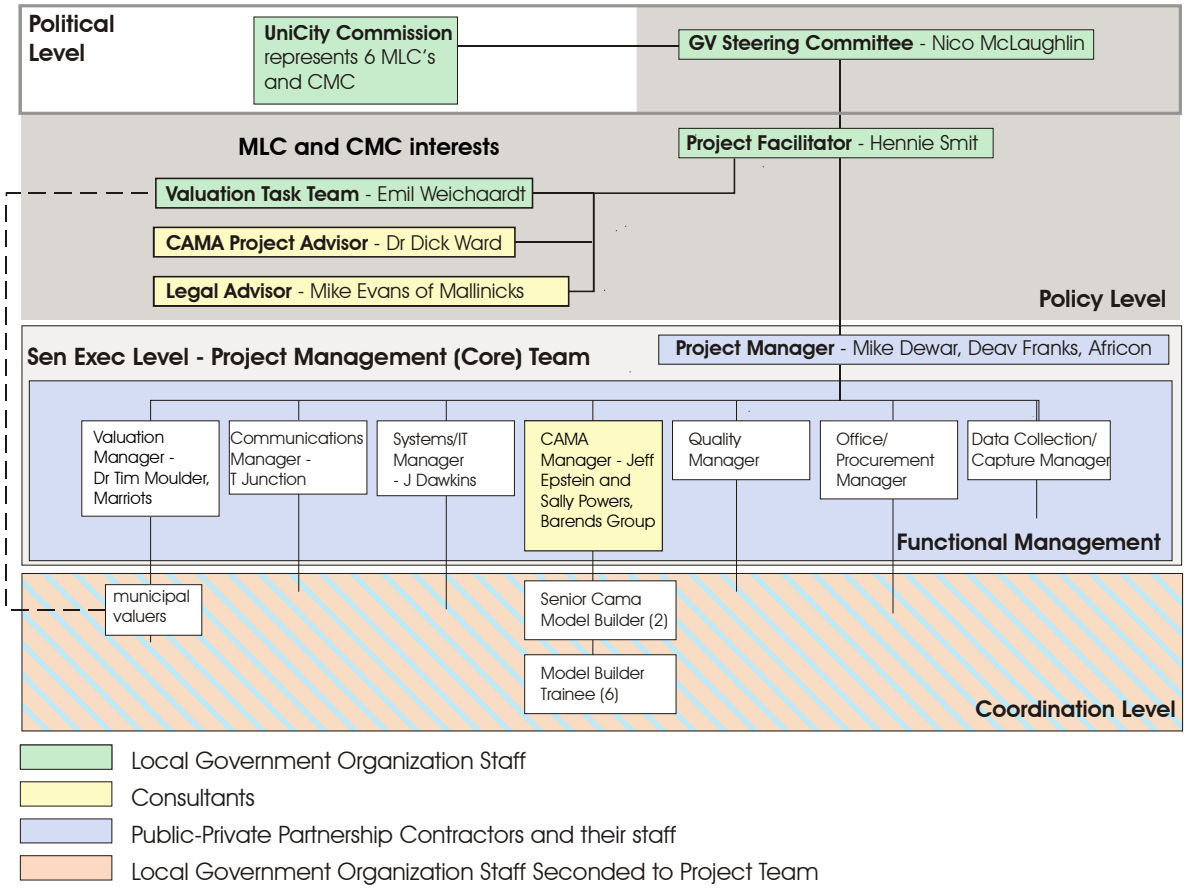


Figure 9.6 Public-private partnership and staffing - contracting, secondment, consultancies

The green blocks indicate permanent staff of the local government structures, which were either seconded to the Project, or performed an oversight or senior role. The yellow blocks

identify consultants, while the blue blocks indicate the PPP arrangement with Africon as Project Managers, and the appointment of a range of companies to handle the various functions required. The orange permeating the coordination and operations levels indicates the priority given to staff secondment from the City to the Project Team for the duration of the Project wherever possible. This served to facilitate knowledge transfer through the mechanism of the public-private partnership structure.

The third chart in the suite of VSM charts (Beer, 1985) adds a further two systems to the analysis of the fiscal cadastral "system-in-focus" in the GV2000 Project (Figure 9.7 - Figure 9.10). These are the anti-oscillation system 2 and the audit system, which is a subset of the control system 3 and hence is denoted system 3* (Beer, 1985). System 2 is designed to regulate oscillation and is therefore incorporates risk analysis. System 3* is understood to be the area of quality control (Beer, 1985).

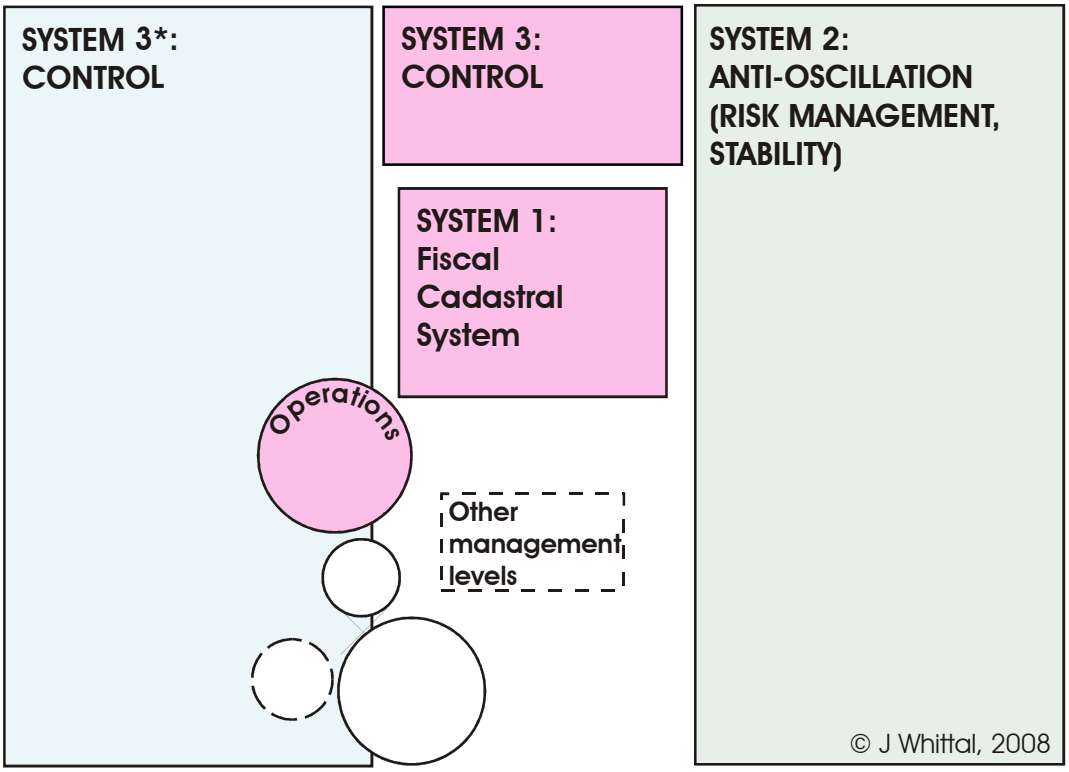


Figure 9.7 Outline of Chart 3 of VSM of the fiscal cadastral system of the case study

System 2 (Figure 9.10) highlights various vertical streams of activity designed to increase stability in the system (Beer, 1985). These streams comprise the risks identified at the outset of the Project. Through the various project documents, all of these were identified and a variety of strategic actions undertaken to reduce their influence on the Project outcomes. These strategic actions are well spread across the various system levels, indicating a comprehensive and multi-level design. Even if this was not overtly designed by the Project team, the spread of interventions can be lauded for being conducted intuitively.

System 3* (Figure 9.8) is divided into three categories, internal, external and environmental audit mechanisms (this categorisation is designed by the researcher). One can clearly identify that the internal auditing mechanisms are active at the embedded levels of system recursion and are characterized by quantitative tools. The independent auditing tools are similarly geared at measuring quantitative aspects of system performance and will only shed light on socio-political performance in so far as these quantitative measures are able to (for example statistical indicators of equity). This highlights the paucity of auditing tools which are sensitive to socio-political aspects of the project. Performance against socio-political goals may thus not be effectively measured during the course of the project. Lack of public cooperation appears to be one of the few mechanisms available to indicate performance which reflects the social and personal aspects of the system (as in Minger's Three Worlds Model – see Figure 9.18). The environmental auditing mechanisms are active at the primary system level and are characterized by tools which are responsive to a much broader range of socio-political influences including those relating to the fiscal cadastral system, and as a result are less predictable or controllable.

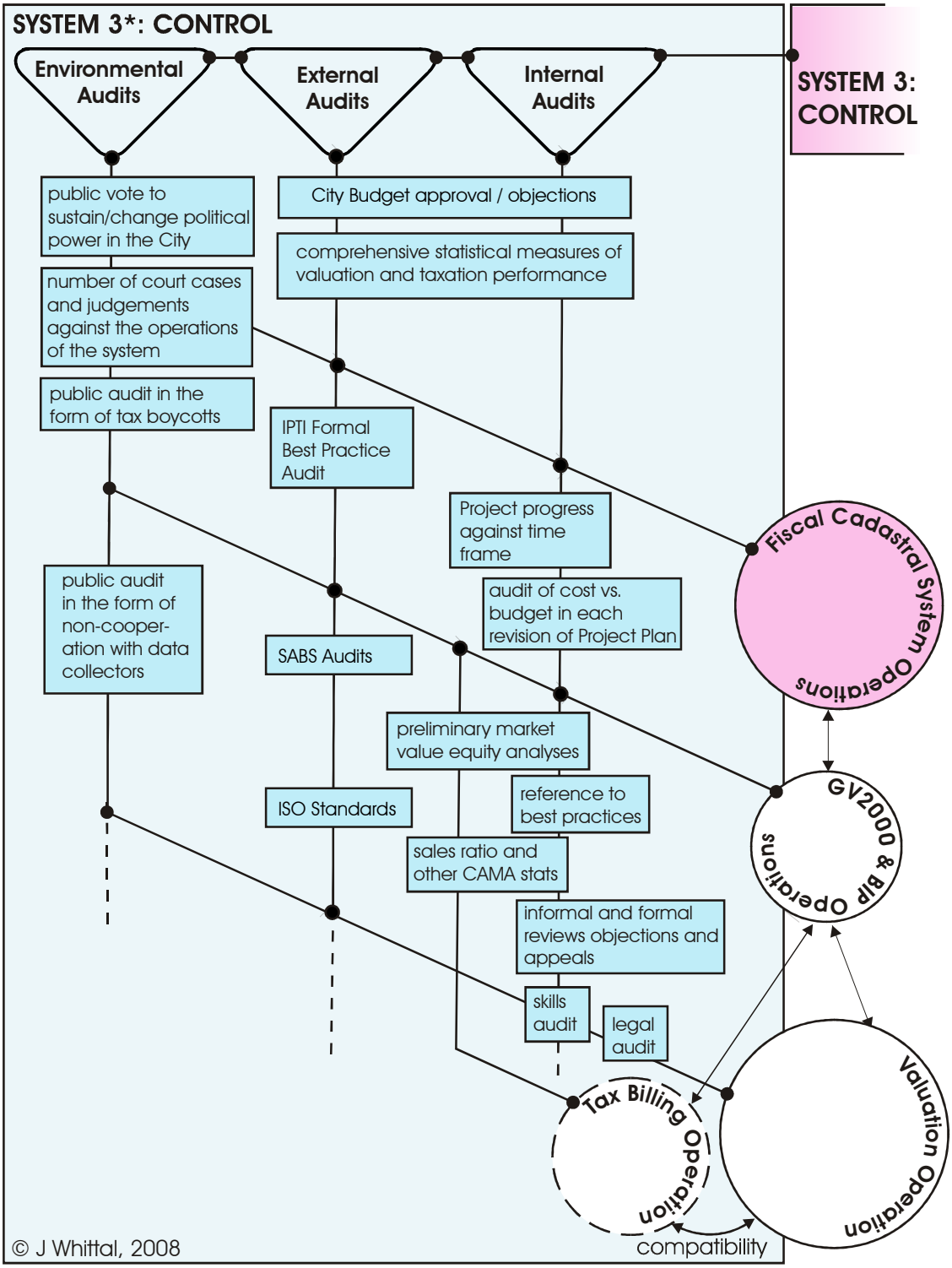


Figure 9.8 Chart 3 of the fiscal cadastral system of the case study showing audit components (System 3*)

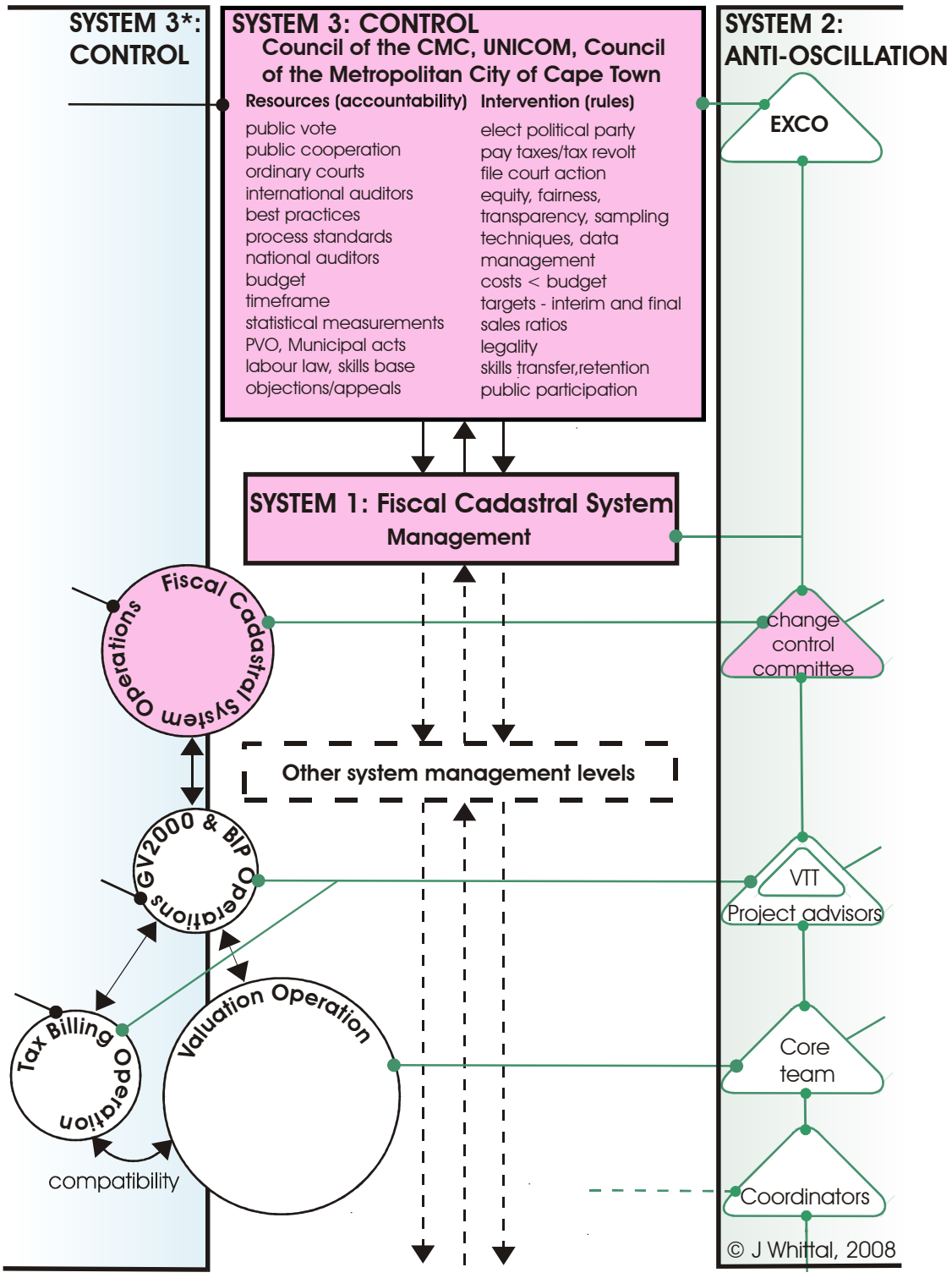


Figure 9.9 Chart 3 of VSM of the fiscal cadastral system of the case study showing management and operational components (System 3)

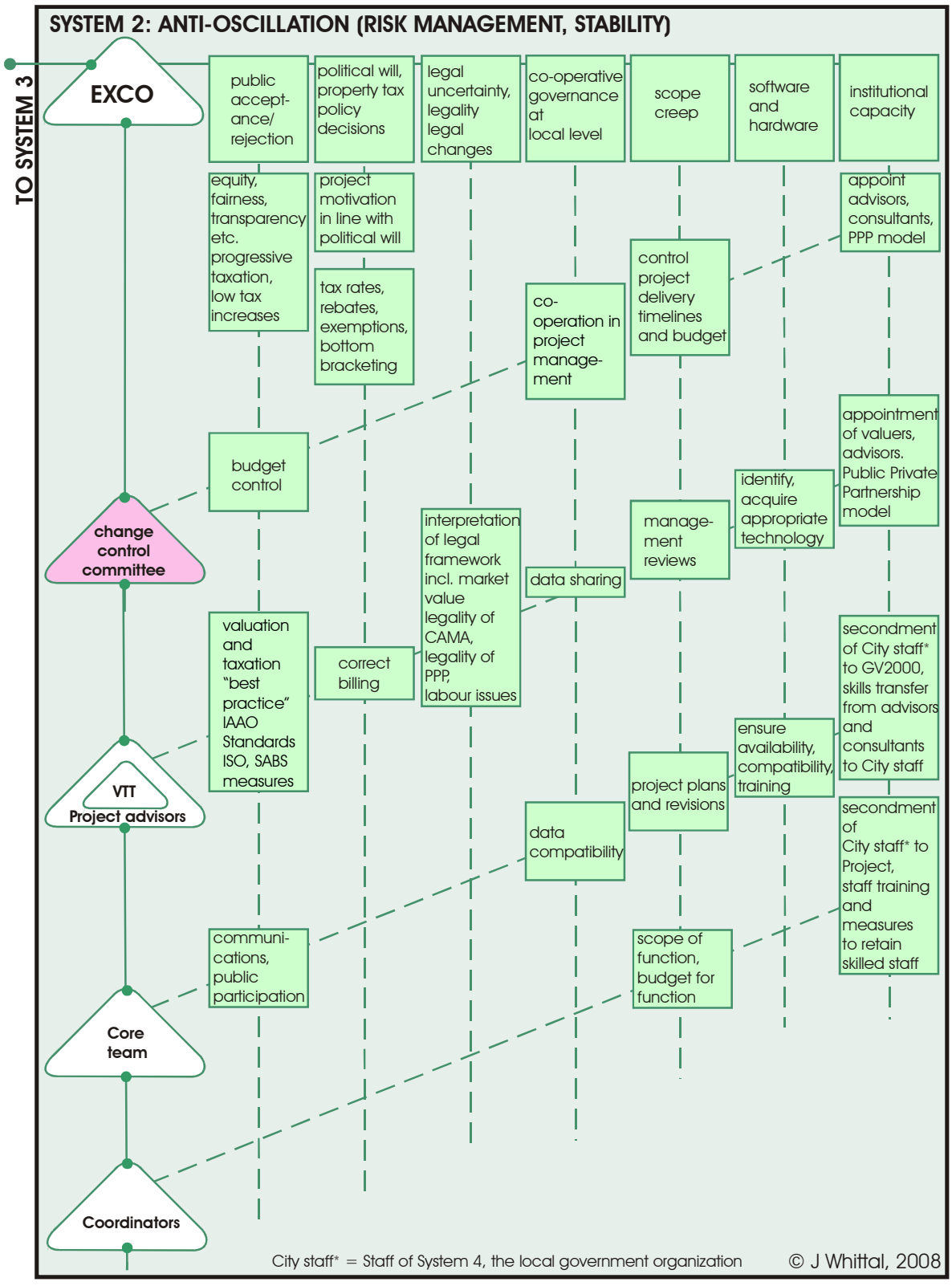


Figure 9.10 Chart 3 of VSM of the fiscal cadastral system (System 2: anti-oscillation components)

Review of VSM as a tool in analysing the GV2000 Project

Limitations of VSM in application to the GV2000 Project

The VSM is only able to deliver a snapshot of organizational cybernetics (see 5.3.1) at a particular time. It cannot reflect changes during the course of a project, unless a time-based series of VS models are produced. Due to this limitation of VSM, the modelling conducted above reflects organizational structure during the course of the GV2000 Project and not before or after its completion. Similarly, the tools in System 2 and System 3* may be applied initially only, throughout the project, or at the end of the project. VSM is unable to reflect temporal nuances.

Expanding on the analysis above, VSM is not able to model future viability, or to investigate ways of ensuring future viability. The concept of a learning organization (Senge, 2006) is defined as one which is continually in a state of change towards the goal of sustained viability. Since sustainability is a goal of cadastral systems reform in general (see 3.5), this aspect is important. The five disciplines of Senge (2006), which are personal mastery, mental models, shared vision, team learning and systems thinking, are more tuned to exploring the social aspects of a learning organisation. These aspects are not modelled with VSM. Even soft systems thinking is linked to cognitive systems in the intransitive domain, while VSM is best at modelling real systems in the intransitive domain (see 4.3, Figure 4.3).

Another failing of the snapshot analysis of VSM as a tool of organizational cybernetics is that it has no ability to model changes in the environment, especially slow changes over a long duration, which are the predominant threats to survival today (Senge, 2006). Furthermore, complexity which has a large temporal characteristic, such as is found in complex change management projects, gains limited benefit from a snapshot approach. Before, during and after the course of the GV2000 Project, substantial changes were occurring in South African, and Cape Town, society after Apartheid (see 8.4, 8.5 and 8.6.) Transformation involved changes in legislation, social and personal worldviews, politics at

all levels, organisational structures and processes, economics (South Africa once again became a player in international markets), in the property market, and in many other areas. VSM (and probably no other single tool) cannot reflect such complex changes in the environment.

Arguments for the VSM in application to the GV2000 Project

Despite its limitations, VSM is able to reflect a hierarchy of recursive systems. It is useful in analysing management structures, information flows, highlighting system operations, and relationships between various elements and the environment. However, the primary benefit of VSM identified in the analysis of the GV2000 Project appears to be its ability to model the regulatory centres and auditing systems of the system-in-focus (the fiscal cadastral system) and its subsystems. The balance of viability along the horizontal (left to right) axis using these mechanisms provides the analyst with systems tools which appear (to the researcher) to have no current rival.

Another clear benefit of VSM is the representation of the fiscal cadastre and processes of property valuation and taxation as an integrated fiscal cadastral system. The link between the system and all role players in the environment, as well as the inclusion of property taxation and valuation together in the system is an important result. However, the aspects of the personal and material aspects of the fiscal cadastral system are not well represented by the VSM tools.

The importance of modelling viability links back to the framework for analysis of forces driving reform (see 9.2.2). Clearly if these forces are not balanced, the system (in this case the fiscal cadastral system) becomes unviable with dire consequences such as gross inaccuracies, inequity, and increased risk of popular rejection of the system (leading to tax boycotts, court cases etc.). At the outset of a Project such as the GV2000 Project, such imbalance is expected and necessitates reform of the system. VSM has not been used to model this imbalance, as the framework for analysis of the forces driving reform has been motivated to fulfil this function and is more suited to ongoing review during the course of

the Project as it is cognitively easier to understand (based on cognitive systems) and execute than multiple versions of VSM during the course of a project.

The case study analysis conclusively supports the use of VSM for modelling the elements and relationships of a fiscal cadastral system undergoing a process of reform. The benefits of VSM in the modelling of the GV2000 Project case study outweigh its limitations, and a pairing of the VSM social systems tools with other complementary tools can facilitate a holistic analysis.

9.2.9. Analysis using Soft Systems Methodology (SSM)

SSM was identified along with the other methodologies, methods and tools used to analyse the GV2000 Project in section 5.5 and demonstrated in Table 5.7. SSM brings an interpretivist systems approach to the analysis, and is hence not divorced from the bias of the researcher (see 1.7). The analysis facilitated by SSM is firmly seated in the transitive domain within the critical realist paradigm (see 4.3, Figure 4.3) and attempts to model cognitive systems. Such systems are chosen for their usefulness in the analysis, rather than as an attempt to model systems in the real world e.g. the economic system (see 5.3.2).

Choice of SSM tools for application to the GV2000 Project

Use of SSM in a reflective analysis of an intervention is not its designed purpose (see 5.3.2), and hence not all tools of SSM will be used in the analysis of the GV2000 Project (see 5.5). Those which are designed for action research are thus not useful e.g. involvement of role players in rich picture creation in order to gain understanding of the problem situation from a variety of world views (or *Weltanschaung*).

Activity models (which identify various activities and processes) in SSM are thought to add little to this analysis of the GV2000 Project. Activity models are cognitive models in SSM representing human systems of activity and may take the form of rich pictures, models of learning cycles etc. Most activities are adequately represented by the VSM models (in section 9.2.7), which provide a more structured approach to modelling activities,

relationships, and particularly monitoring and control. It is noted that the favouring of VSM over SSM for this may be related to the bias of the observer, who is more comfortable with a functionalist rather than an interpretivist approach. “Best practices” in property valuation and taxation (Chapters 3 and 7) also concentrate on human activity systems: what needs to be done and in what order. This research seeks to provide a broader overview of the fiscal cadastral system rather than to reflect activities which are well-documented in literature (see Chapter 3). Hence the activities of actual property valuation and actual property taxation are not included in detail in the models presented, but do find a place in the staged process of change management which are inductively extended in section 9.6.2.

The tools of SSM which will be tested in the analysis of the GV2000 Project are the CATWOE analysis, PQR analysis, the rich picture, and the Two Streams Model (Checkland, 1999). The subsequent Four Main activities model of Checkland (1999) is not included as this is primarily geared at intervention and action research.

CATWOE analysis and root definitions

The CATWOE analysis in SSM is used to establish “root definitions” (see 5.3.2) and identifies customers, actors, the transformation process, worldviews, owners, and environmental constraints of the system. The CATWOE analysis of the GV2000 Project is given in Figure 9.11.

CATWOE ELEMENTS	CATWOE ANALYSIS OF THE GV2000 PROJECT
C = customers = the victims or beneficiaries	ratepayers, City Councillors and their political parties, City Management and officials, population of the City
A = actors = the do-ers	City managers, project team (consultants, City staff, contractors), ratepayers, higher levels of government, Councillors
T = transformation process = conversion input to output	process of change of fiscal cadastral system to a system in which property data are processed and property taxes are collected in accordance with project goals (equity, sustainability, efficiency, effectiveness, etc.)
W = worldview = meaning of T in context	part of a broader process of post-apartheid restructuing and transformation of all levels of society and public organisations to ensure fairness, transparency, equity, legality, etc.
O = owners = those who could stop T	the ratepaying public and the City under mandate from National government
E = environmental constraints = elements outside the system	socio-political processes, micro and macro economics, legislated local government organisational structures, mandates and responsibilities, the Constitution

Figure 9.11 CATWOE analysis of the GV2000 Project

This analysis overlaps to a large degree with information already modelled in the VSM and in prior processes of analysis of the problem situation and context (forces driving change, goal and risk analysis). However, in the interests of methodological generalization, the tool could serve a purpose. *As such, the use of CATWOE in analysis of the GV2000 Project, when other recommended tools are also applied, offers little to the analysis. Its addition to the suite of recommended tools with which to analyse the GV2000 Project is not supported or rejected by the evidence of this analysis.*

PQR analysis

The PQR analysis in SSM involves defining what to do (P), how to do it (Q) and why it should be done (R) (Checkland, 1999). Figure 9.12 and gives an indication of the nature of the problem situation and mechanisms which may be used in the GV2000 Project.

Figure 9.12 PQR analysis of GV2000 Project

The elements included in Figure 9.12 are based on a reflective analysis of the GV2000 Project. At the outset of a project, with no prior knowledge of the problem situation, the value of the PQR analysis could be argued. The PQR tool may be useful in action research, which is not the case in the GV2000 Project case study and analysis. The PQR analysis appears to served little purpose in the analysis of the GV2000 Project; other tools reflect the content of the PQR analysis adequately. However, in the interests of methodological generalization, the tool could serve a purpose. *Its addition to the suite of recommended tools with which to analyse the GV2000 Project is not supported or rejected by the evidence of this analysis.* However, if other tools within the proposed suite of tools are removed, the usefulness of the PQR analysis may increase to compensate.

Rich picture

A rich picture is a type of mind map which assists the researcher to understand the various components of the problem situation and interrelationships. It is dependent on the worldview of the person or group who created it, and may therefore be used to understand the problem situation from different perspectives (Checkland, 1999). This was not possible in the analysis of the GV2000 Project case study as the analysis was undertaken retrospectively and access to role players was at that stage limited.

The rich picture tool does find a purpose in retrospective analysis. Figure 9.13 illustrates the use of a rich picture at the preliminary stages of SSM analysis and provides view of the problem situation and the Project from the perspective of the researcher. It should be remembered that SSM models are not intended to represent reality, but only to represent how the analyst thinks about reality (hence systems *thinking*) (Mingers, 2006) and the bias of the researcher is understood and inherent in this interpretive process.

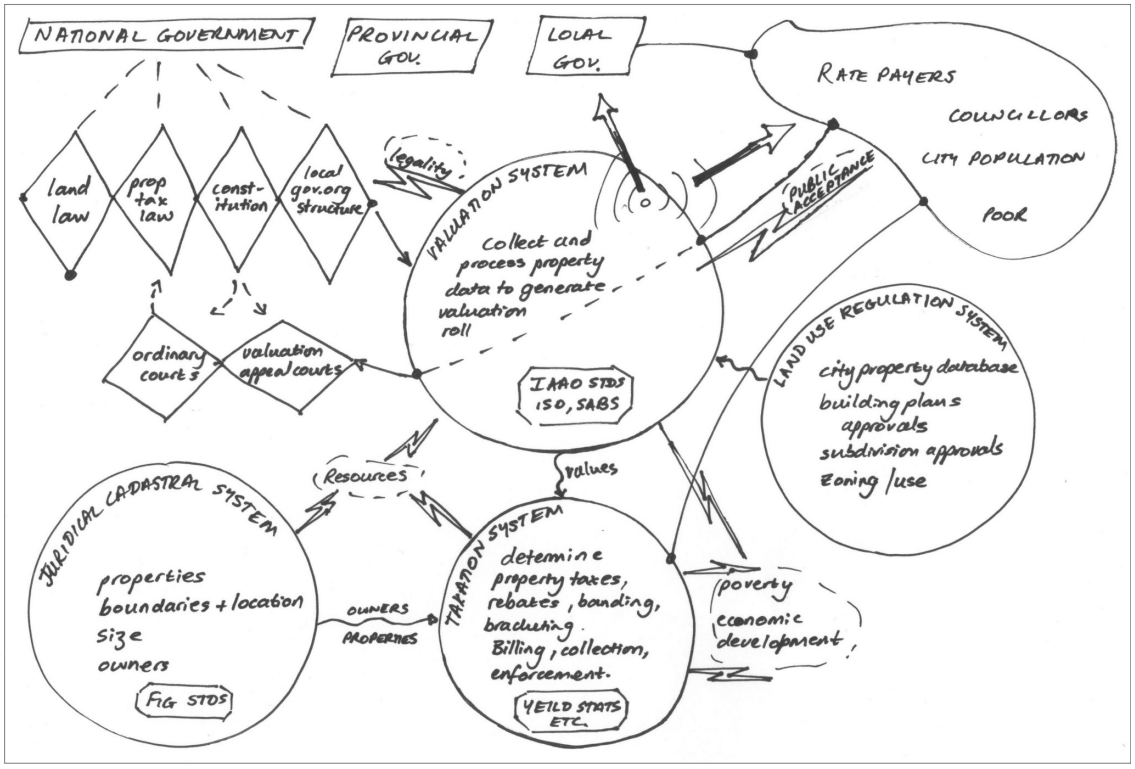


Figure 9.13 Rich picture of aspects of the GV2000 Project

The link between property value and taxation illustrated in the rich picture

The rich picture (Figure 9.13) illustrates the link between property valuation and taxation, and it is appropriate to discuss the nature of this link here. The use of the property tax as a means to obtain revenue for spending on service provision is well established. Property taxes, particularly when derived from property value, are probably the least acceptable form of taxation from the point of view of the public as the link between property tax and the service benefits received is contentious, especially when service charges are additional to these taxes (see sections 8.11.12, 8.11.17, and 8.11.18).

The embedded assumption in taxing real property is that property value is dependent on its location within the community and on the access of the property to services, neither of which is due to investments by the owner in the property itself. It is this aspect of value, deemed to be added by broader society, which justifies the levy of a property tax. It may also imply a certain burden of cross-subsidization which can be linked to socio-political

agendas and policies (Bahl and Linn, 1992) as was evident in the GV2000 Project in the link between property valuation and taxation and broader issues of transformation (see 8.5).

Others see this system of taxation as purely a "wealth tax" based on the notion that property market value is a proxy for personal wealth (see sections 8.11.12, 8.11.17, and 8.11.18). This is a tenuous and disputed link, as the value of landed property cannot easily be realized as it is most often used for residential purposes by the owner. This measure of wealth decreases in validity as the time-since-purchase increases. Changes in personal circumstances and inflation of the property value above or below general inflation rates reduce the correlation between personal wealth and property value. It is thus a particularly harsh tax for pensioners, and can result in what is seen to be economic eviction (field notes from Valuations Board hearings, 2002). The indigent and the poor can be accommodated through tax concessions, but the middle class pensioner is particularly hard-hit and many can fall through the social safety net (see 8.5.18). This is in evidence in the Appeal Board hearings which took place in the GV2000 Project (see 8.11.18).

Another aspect is the weak link between property value/tax and consumption (refuse collection, water, etc.). However, a reduced property tax rate can go hand in hand with services charges based on measured use. In this instance, the property tax is intended to cover municipal services which are difficult to quantify and ascribe to individual residents, such as roads, emergency services etc. In some circumstances service charges are linked to property value and not only to consumption – this does not appear to be logically defensible, and was the subject of a legal battle between the RAG and the City, a battle which was won by the City (*Rates Action Group v City of Cape Town* [2004] 3 All SA 368 (C)) (see 8.12.2).

The value of rich pictures in the analysis of the GV2000 Project

The rich picture illustrated in Figure 9.13 is but one of many such pictures used in the course of thinking about the GV2000 Project structures, processes and relationships. As a preliminary tool prior to formulating the VSM diagrams, rich pictures featured strongly and

many versions were required to appreciate the situation. As a preliminary tool for the Two Streams Modelling to follow (see 8.5.2), the rich picture tool also provided a means of exploring the cognitive systems of the GV2000 Project from the perspective of the researcher.

The rich picture was a useful mechanism in the analysis of the GV2000 Project, and its inclusion in the suite of appropriate tools for this purpose is supported.

Two Streams Model

The Two Streams Model of SSM (see outline diagram in Figure 9.14) seeks to combine a cultural analysis with a logic-based analysis of the problem situation. It should thus include social structure and politics. However, detailed analysis of political and social systems is beyond the scope of this research and the competence of the researcher, and these aspects are reported in the case study narrative only (Chapter 8).

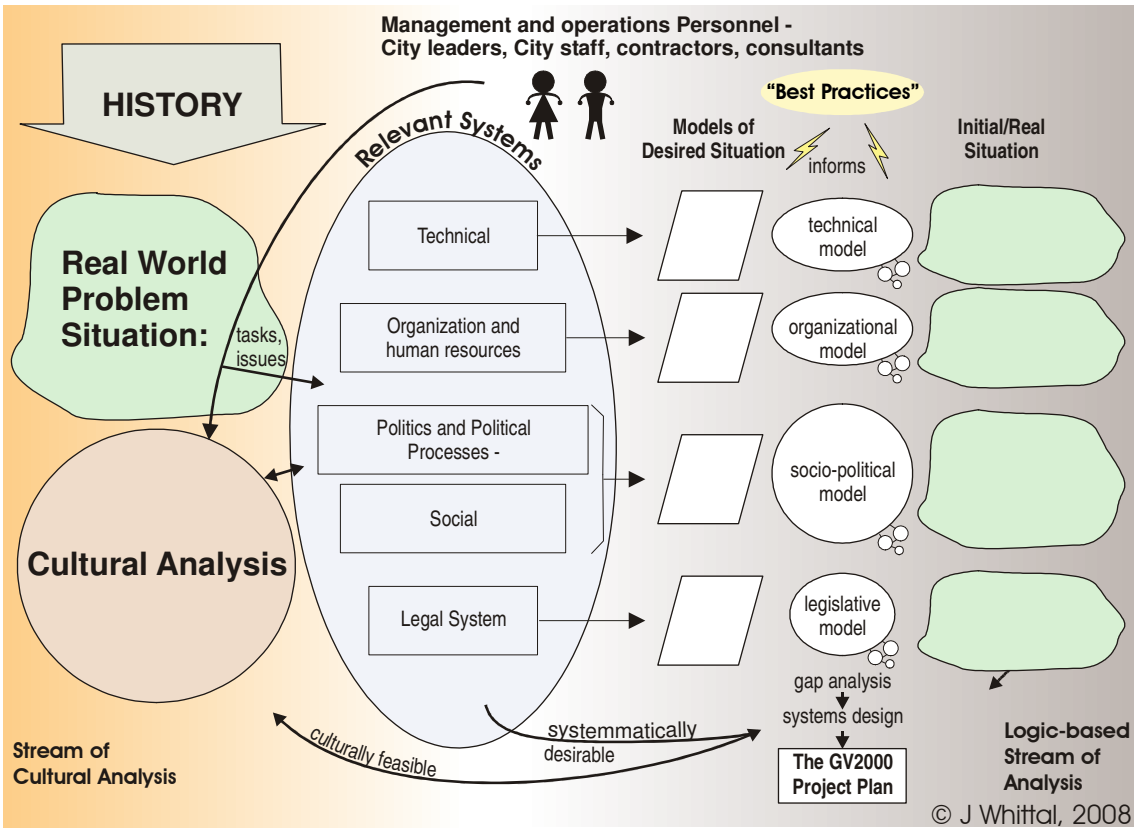


Figure 9.14 Outline of the Two Streams Model of SSM of the GV2000 Project

Entries in the stream of cultural analysis are derived from observation of the case, case data, media reports, and personal experience as a resident and property owner in Cape Town, further biased by having worked with the City of Cape Town and having been immersed in the apartheid-era culture of local government.

The historical influences, the problem situation, and the cultural analysis relating to the GV2000 Project are partly covered in the earlier section dealing forces for change (see Section 9.2.). However, there are some contextual issues which have not yet been explored and will follow hereafter.

Policy and political influences

The starting theoretical premise (that of revenue generation, see section 3.5) for fiscal cadastral system improvement can be described as accommodationist. It attempts to find a better way to accommodate urban growth. In pursuit of this aim, it seeks to address how to finance urban services in large growing cities, and how to capture the benefits of urbanization in order to increase the delivery of services. In Cape Town, accommodating urban growth was secondary to ensuring equity in the reconstructed City structure (8.7.3). An ancillary outcome is broad-based societal transformation through the reallocation of resources from the rich (largely the white privileged) to the poor (predominantly black people who generally suffered under apartheid) through equity in valuation and progressive property tax policy. This is not necessarily the case in all cities employing property tax based on market value.

It was during the period of the GEAR national policy (see 8.4) that the techniques to be implemented to conduct reform of the fiscal cadastral system took shape – use of the Computer Assisted Mass Appraisal (CAMA) information system in the GV2000 Project. This was driven by an earlier decision to move to a market value based approach of property taxation (essentially a pro-poor "wealth tax" based on property value and ownership – see 8.6, 8.11.3, and 8.11.12). This took place under the more leftist RDP government policy and was legislated in the Local Government Transition Act No 209 of

1993 and entrenched in the Constitution of 1996. The fiscal cadastral system in Cape Town appears not to have been overly influenced by the shift in national policy in the period of transition to democracy and the introduction of the RDP policy, nor subsequently by the change of national policy towards GEAR. It can probably be argued that the effect of the fundamental shift in national policies was dampened at the local level in Cape Town by the retention of power by the DA (opposition party at national level) until 2002. Once the ANC gained control of the Cape Town City Council in 2002, the act of balancing its legitimacy through the fostering of capital markets (which is understood to lead to growth and hence an increasing tax base) and looking after the poor (providing social services) became more delicate and sensitive.

Analysis of the GV2000 Project using the Two Streams Model of SSM

The analysis of the GV2000 Project from a systems thinking perspective in order to generate the Two Streams Model relies predominantly on an in-depth knowledge of the case, systemic reflection thereon, and intuitive linking of concepts. An attempt to provide links back to the case study has not been made for this reason, although information contained within the figures forms part of the case study narrative in Chapter 8.

In Figure 9.14 - Figure 9.17 it can be seen that the GV2000 Project leaders approached the problem situation from a holistic perspective, and included knowledge of the historical situation and cultural aspects in its design. Although a systems approach was not overtly adopted by Project leadership, the adopted strategy considered and included relevant systems. A full appreciation of the problem from multiple perspectives, knowledge of “best practices” in the field, and extension of these to suit local conditions, can all be credited for the overall success of the project (see 8.14). This occurred despite the fact that the theoretical basis for these practices was apparently unexplored, and the inclusion of natural and social systems appears from the case study evidence to have been largely intuitive.

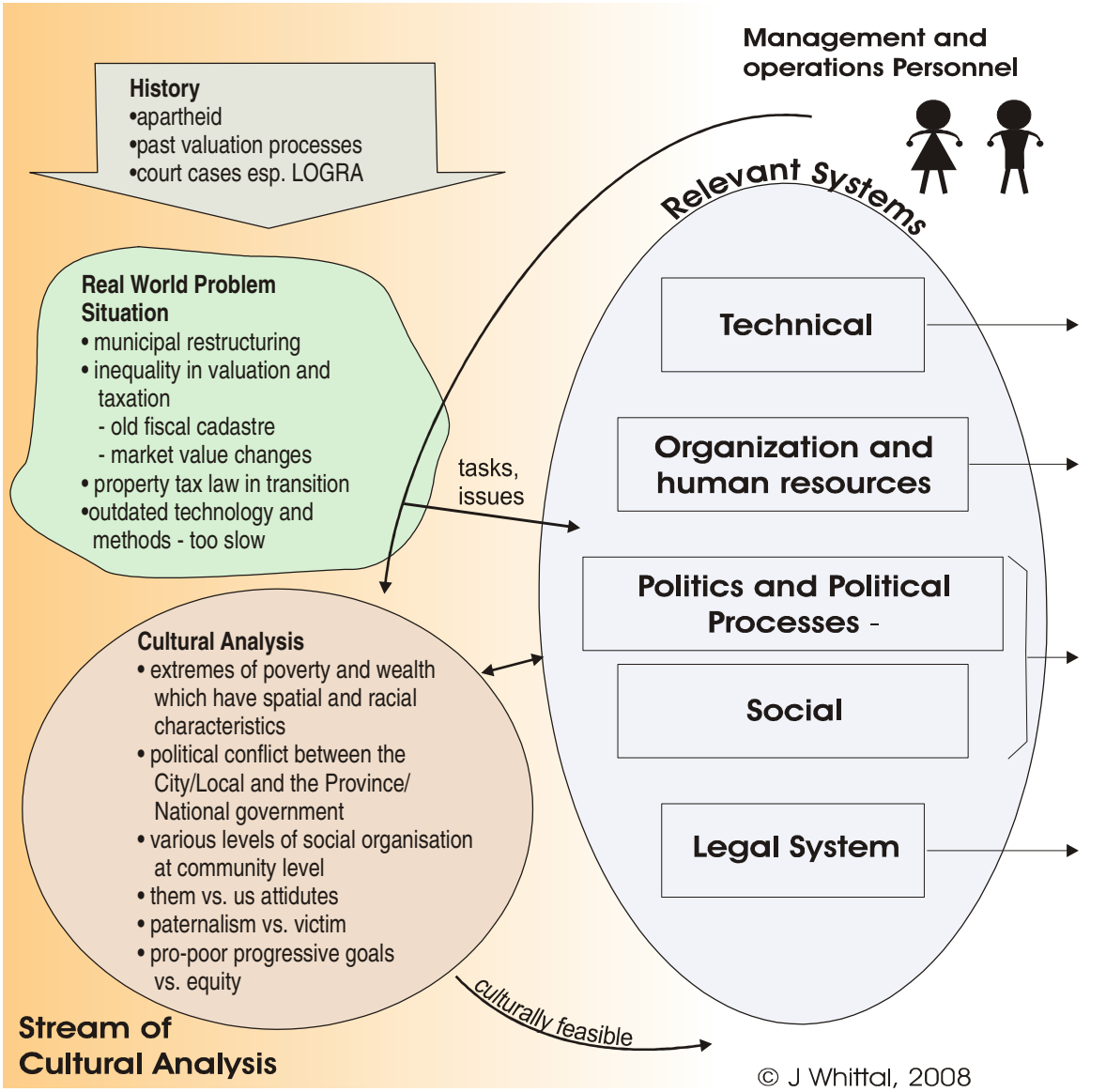


Figure 9.15 Cultural Stream of analysis of the Two Streams Model of SSM of the GV2000 Project

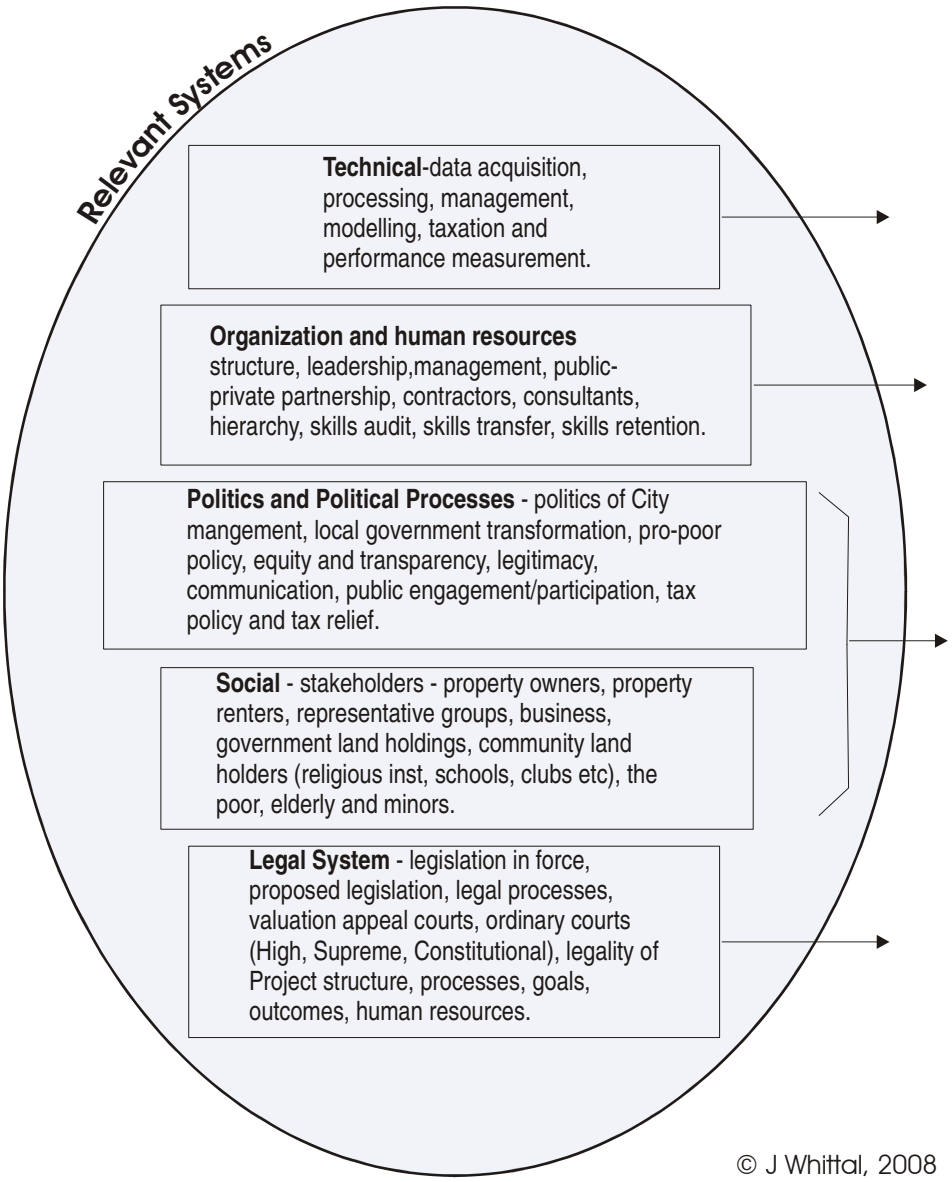


Figure 9.16 Conceptual systems in the Two Streams Model of SSM of the GV2000 Project

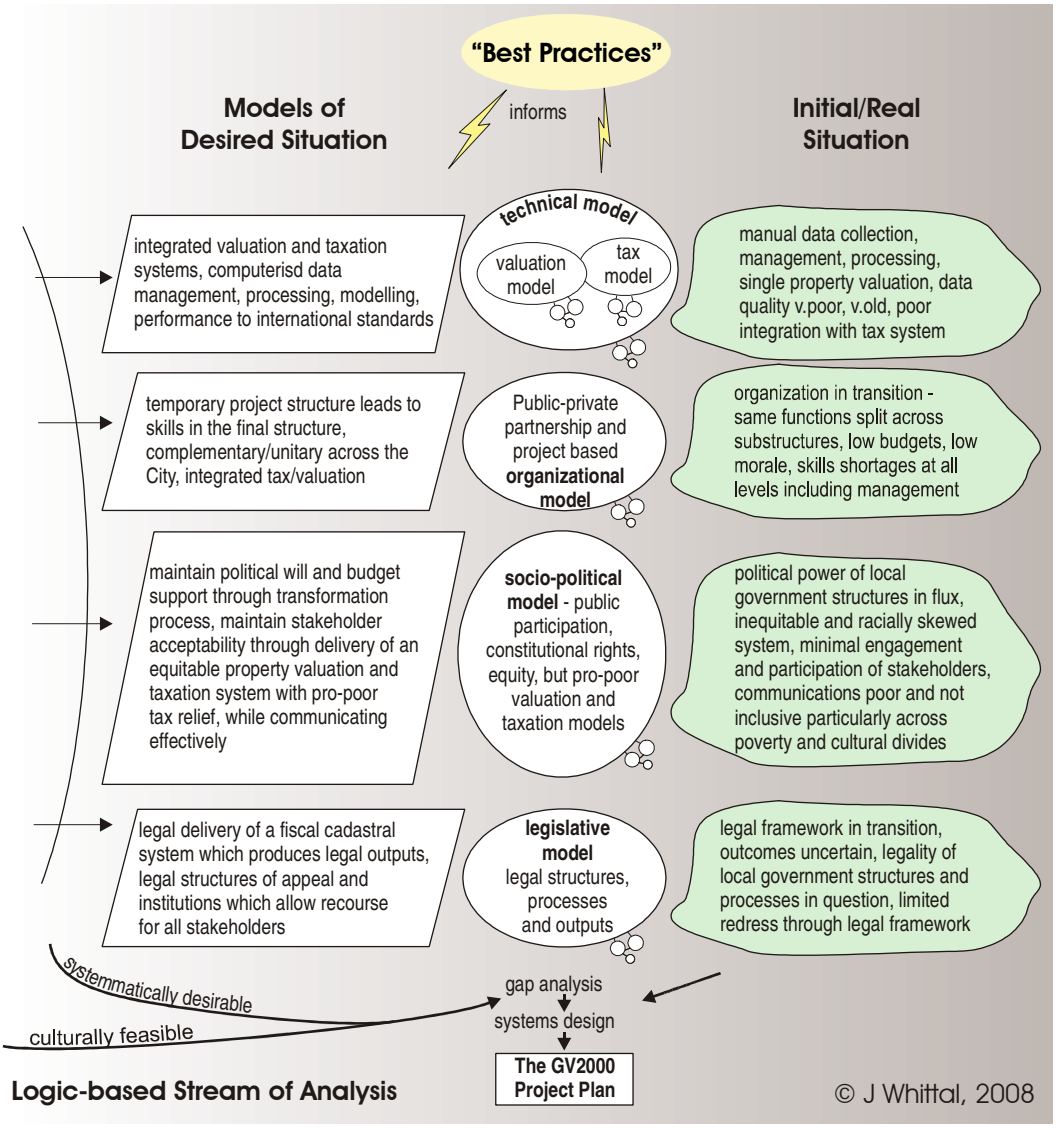


Figure 9.17 Logic-based stream of analysis in the Two Streams Model of SSM of the GV2000 Project

The use of the Two Streams Model in SSM provides the benefit of a social systems analysis of the GV2000 Project as a whole. The stream of cultural analysis (Figure 9.15) largely relies on the sensing mechanisms of the framework for assessing driving forces of reform, goals and risks presented earlier (sections 9.2.2, 9.2.3 and 9.2.4). However, the representation of these in the format of the historical situation, the real world problem situation, and the cultural aspects (see Figure 9.15) provides an alternative and may serve to ensure that all aspects have been considered. Furthermore, use of alternative tools to

analyse the same aspects of case is an aspect of triangulation and good research design which leads to greater generalizability.

The sub-systems identified in the project (see Figure 9.16) balance the functionalist perspective provided by VSM with an interpretivist perspective, and a systems thinking (mental) model of the Project. The logic-based stream of analysis provides a very useful representation of the goals of change, the current status, and systems models of how to move towards the changed state. This is essentially gap analysis (see 3.5) from a systems perspective. A cautionary note of relevance to this process is that both the desired state and the current state are subjectively derived and potentially in conflict (see 9.2.3). The strength of the logic-based stream of SSM analysis in understanding change goals and perceptions of the current state are in ensuring that all constituencies in the process of change are consulted in the formulation of these models such that they reflect multiple perspectives.

A general caution in change management processes and interventionist tools such as SSM is that actions are not necessarily causative, especially in complex cases (see 6.3.1). The processes of change cannot always be controlled, and interventions should rather be seen to be directing/steering the change process. Outcomes are not always predictable, regardless of the tools, methods and methodologies employed.

The Two Streams Model of SSM is shown in the analysis of the GV2000 Project to facilitate a truly systems thinking (interpretivist) appreciation of the Project and is supported.

On the whole, none of the tools of SSM which have been used in the analysis of the GV2000 Project have been shown to be detrimental to the analysis of the case, and all have some value. However, inclusion of some SSM tools in the suite of methodologies, methods and tools used to analyse the case study of the GV2000 Project are noted to contribute to a holistic and multi-paradigm analysis of the case study. These are the rich picture, and the Two Streams Model of SSM.

9.2.10. Performance measurement using the 7E's framework

A social systems framework for measurement of performance of reform/change processes appears to be under-developed in the literature which informs this research (see sections 2.6 and 6.3.7). Interventionist strategies such as those of SSM appear to be under-explored in the design of frameworks for measurement of performance despite the importance of conducting performance measurement throughout a change project. This is essential in providing ongoing feedback for further change in subsequent cycles of reform (see sections 2.4, 2.6 and 6.3.6).

An attempt has been made in this research to apply systems theory, and a multiperspective holistic approach in the design of a framework for performance measurement of the GV2000 Project. The framework for measurement of performance of Checkland (1999) (3E's and 5E's) was extended with reference to Jackson's classification of systems methodologies (see sections 3.8, 5.3, 5.3.2, 6.3.7 and 7.3.7). The use of the 7E's framework as opposed to the 3E's and 5E's frameworks of Checkland (1999) is argued on the basis of its inclusion of the more personal aspects of performance which may not become apparent if the last two categories of exception and emotion are removed (as in the 3E's and 5E's framework). In line with the Three Worlds Model of Mingers (2006), an equal weight should be afforded to the material, social and personal aspects of any system. Furthermore, inclusion of all 7E's forces consideration of personal aspects of performance, and if there are none, nothing can be said to be lost, while the converse may not hold true if social and personal aspects are of significant weight. The resulting 7E's framework is informed by a social systems approach and consists of efficiency, efficacy/effectiveness, elegance, empowerment, emancipation, exception and emotion (see section 6.3.7 for an explanation of these elements).

The 7E's framework is used to assess the performance of the GV2000 Project case study below. Cognisance is taken of the goals of the Project – which can be represented within this framework; the goal-based approach being a usual (but limited) mechanism for assessing performance (see 2.6).

Assessing performance of the GV2000 Project using the 7E's framework

Efficiency – minimizing the use of resources in the attainment of objectives

Efficiency was tackled in a number of ways. One of these was to appoint a public-private partnership (PPP), which allowed for the secondment of skilled staff from the City to the Project Office, as well as the appointment of contract staff in specialist and general positions (see 8.8.5). This avoided labour relations issues and yet served to transfer skills to the City in line with project objectives (see 8.7.3).

Another aspect of efficiency was the operation of the GV2000 Project on a budget approved initially by the UniCity Commission. The formal structure and processes controlling the budget and any deviations from it ensured efficient operation (see 8.8.5 and 8.8.6).

Efficacy/effectiveness – delivery

The use of ISO 9002:2004 internal data audits covering data collection and data capture, which were applied using standard sampling techniques, are measures of effectiveness of the project delivery (see 8.11.4). The CAMA statistics were used to control valuation quality, as well as field reviews (see 8.11.5, 8.11.15, 8.13). Informal reviews helped to identify errors in the property characteristics, and also served as a mechanism for public participation in the process (see 8.11.16). Management reviews were conducted every six months (see 8.11.15). External auditing according to South African Bureau of Standards (SABS) standards was also undertaken (see 8.11.15). The overall project was assessed by the IPTI whose focus was mostly on technical aspects of implementation (see 8.13.2).

The validity of the CAMA results are in some areas in question due to the paucity of sales data available for modelling as well as by problems in the 4th Quartile around Table Mountain. The fact that the response surface analysis uses sales data also reduces the acceptability of the modelling process and the validity of the results (see 8.13.2).

The processes undertaken by City valuers in preparation for the Valuations Board hearings require some adjustment. It is quite possible, even probable, that collusion between City valuers and property owners could have taken place (personal observation) affecting fairness and equity of the overall valuation, despite the fact that there is no evidence of this. City valuers conducted site visits on their own to properties which were the subject of objections (see 8.11.18). They often conversed with the objector and came to an agreement as to the market value of the property. In many instances, property values were substantially reduced from those determined in the CAMA process. In such instances, both parties – the City as represented by the valuer, and the objector, agreed on the property value, and the case was not discussed in the Valuations Board hearings. Instead, the decision of the parties was simply reported. This system was unaudited, and could benefit from the appointment of two City valuers for every site visit, or some other mechanism of verifying that no corruption is taking place. In the long term, gross discrepancies in property value will be revealed in subsequent valuation cycles.

The mechanisms used by the Valuations Boards in deducing the value for a base date appeared to vary (Field notes, 2002). In some cases, equity was paramount – i.e. even if the value was wrong, in order to keep it in line with other similar properties in the neighbourhood. In other cases, the market value was adjusted even if this resulted in inequality with other similar, even adjacent, properties. In addition, the ways of splitting the value of the land and the value of the improvements values from the overall property value differed between Valuations Boards. Delivery of an equitable valuation roll can be said to be compromised by these differences of approach.

Van Ryneveld and Parker (2002) state that it is often easier to maintain an existing but unfair system of property taxation rather than subject the system to a transformation process. They state that the critical issue is legitimacy, and that the key to this is ensuring a perception of fairness. A measure of the success of a fiscal cadastre is the percentage payment of property tax bills. In Cape Town this stood at 98.5% in June 2000, prior to

reform, indicating that the previous system, although not fair, was accepted by the public and was generally considered legitimate (Van Ryneveld and Parker, 2002).

Elegance – acceptability to stakeholders

The complexity of the CAMA models (see 8.11.5, 8.13.2) and the practice of withholding the actual models from the general public (see 8.11.5) reduced the acceptability of the system. RAG claimed that the GV2000 Project was not transparent (see 8.9.2, 8.11.12, 8.11.17). Discontinuities at neighbourhood boundaries were observed (see 8.9.2) and lack of trust in the CAMA processes is evident (Field notes, 2001-2002). In addition, it was felt that the legislation required to facilitate CAMA was hurried through without proper engagement with the public (see 8.11.12).

The processes of CAMA were communicated by the Project to be technical and of no political interest (Field notes, 2001-2002). The valuations process was argued using the rhetoric of fairness and equity and paying rates for services delivered. This sometimes came across as less than honest, as the market value system is not a rate-for-service concept. Talk of hidden agendas (see 8.11.12, and Interview J, 2002) indicates levels of distrust in the system and its managers. Transparency and public participation were understood to be poor see 8.11.12, and Interview J, 2002). This was particularly notable in the decision to apply the R50 000 bottom bracket rebate (see 8.11.12, and Interview I, 2002), the inclusion of a market value based charge for sewerage, and the subsequent increase of this, as well as the charge of sales tax on that portion of the sewerage charge, which is not a consumption-related charge (see 8.11.17 and 8.12.2).

A quantitative indicator of the acceptability of the project is the number of interim and formal objections to the valuations (see 8.11.18). The number of formal objections was about 7% of the total properties valued in the GV2000 Project, and this number was anticipated. The Project Team was not unhappy with the number of objections (Field notes, 2001-2002).

Interviewee M summed up the meaning of taxing land at current market value from a social and personal perspective "Another factor is that the City views residential property purely as an investment and asset and maintains that those who cannot afford to pay the property tax, and who do not qualify for subsidies, should liquidate the asset and repurchase a property of lower value and thus greater affordability. This perspective ignores the human aspect of land, and occupation/dwelling. It gives no thought to the complex of personal attachment, history, sense of belonging and community, etc. which are afforded by a home, as opposed to a house." (Interview M, 2003).

Empowerment – contribution by stakeholders to decision-making and action, inclusion

Property owners did not feel sufficiently included in the decision to move to CAMA-based mass appraisal based on market value of property, nor in the processes leading up to the passing of the Property Tax Act (see 8.11.12). Communication with the public was also claimed to be insufficient, and based on rhetoric and not real engagement (see 8.11.12).

An additional aspect of poor empowerment was the poor communication of the additional valuation after the GV2000. About 20 000 properties had valuations increased by at least 100% without any communication to this effect. This was largely due to errors in the GV2000 valuation roll (see 8.12.1).

Emancipation – assisting the marginalized/disadvantaged

There is evidence of poor levels of emancipation in the GV2000 Project from the disparity in the numbers of objections lodged in the former BLA and "coloured" areas in comparison to other areas. These areas are representative of the majority of disadvantaged people in the City due to past apartheid practices (see 8.11.18)

Poor emancipation is compounded by the risk of appeal against the decisions of the valuation appeal boards (which heard objections) – it was possible for the appellant to be left with bearing the costs if the appeal was unsuccessful. Access to the ordinary courts was

limited to those supported by NGO's such as the RAG due to the costs involved (see 8.11.18).

In terms of the delivery of a more equitable valuation roll, and in terms of the progressive property tax policies employed, the GV2000 Project can be said to have promoted the interests of the poor in the City, and hence achieved a measure of emancipation.

Exception – ability to hear and act on suppressed viewpoints/concerns

Interim and formal objections were limited to individual and not collective objections, and were restricted to the valuation processes (see 8.11.18). Collective, policy or legality objections had to be heard in the ordinary courts. This effectively reduced exception. In addition, the short time periods allowed for objections, and the confusion about the dual processes of interim and formal objections, served to limit the platform for objections. The Valuations Boards were not structured in a manner which included members of the public. The Boards consisted only of experts, and were perceived to be "The City" rather than an independent body hearing opinions from both sides (the City valuer and the public objector). Care was taken, however, to make sure that the Boards were representative of race and gender differences.

Communications efforts of the City tended to favour those with the loudest voice, especially the RAG. Communication with those whose viewpoints were not mainstream, or in line with those of the Project team were not accommodated in the design of the communications strategy. This was an effort at selling the GV2000 Project rather that of listening to concerns (see 8.11.3, Field notes, 2000-2003).

Emotion – doing what feels right

As with the "best practice" fiscal cadastral system model, the effect of doing what feels right is minimal and restricted mainly to the modelling processes in CAMA which integrate knowledge of the property market with the modelling process (see 8.11.5).

In the GV2000 Project there was an additional aspect which could be linked to emotion, and this was that most participants acknowledged that a move towards equity, or even progressive valuation and taxation, was in line with what was right (Field notes, 2000-2007).

The suitability of the 7E's framework for performance measurement of the GV2000 Project case study

The 7E's framework has been demonstrated to accommodate all traditional "best practice" methods of performance measurement in the case study. Furthermore, it extends that material/technical focus to a truly social systems approach to performance measurement including the social and personal aspects of the system, as well as the material/technical aspects. It highlights performance measurement gaps in "best practices" (see 7.3.7) and also in the GV2000 Project. It is likely that knowledge of this framework at the outset of the Project would have focussed attention on these aspects which may have lead to a more holistic approach to goal setting, risk management, design of reform processes, and better management of planned change.

The use of the extended 7E's frame work for performance measurement is supported in the application to the GV2000 Project. It reveals that many of the project goals were met, while other aspects of the Project, when considered from a social systems perspective, were shown to be deficient. Alternative frameworks for performance measurement identified in this research are biased towards the material/technical and do not reflect a social systems approach (such as the methods employed in "best practice"), or they are not as inclusive as the 7E's approach (e.g. the 3E's and 5E's of Checkland, 1999).

9.3. MULTIMETHODOLOGY IN THE GV2000 PROJECT CASE STUDY

9.3.1. Multimethodological approach

Multimethodology is argued as appropriate in section 5.4 and is in line with the adopted philosophy of critical realism. It also supports generalization (see 6.2.4) through facilitating

triangulation of methodologies, methods, and tools. The use of a range of methodologies has been demonstrated in the analysis of the GV2000 Project to highlight a range of aspects of the project, and provides a rich understanding of the system which would not otherwise be attained (see 9.2 to 9.2.10). *Multimethodology as a basis for the methodological framework for research of the GV2000 Project is supported.*

9.3.2. A framework for choice of methodologies

Having assessed the usefulness of a suite of individual methodologies, methods and tools in analysis of the GV2000 Project, some conclusions can be drawn as to how these were chosen, and the theory behind their choice.

The framework of Mingers (2006) (see 5.4.6) proved to be a highly effective mechanism with which to choose appropriate methodologies, methods and tools for the analysis of the GV2000 Project. The inclusion of the Three Worlds of the material, social and personal in the framework, as well as the social systems design of the framework to include relevant aspects of the project, provided a structure that could easily be understood and executed (see Table 5.6, section 5.5). The identified tabular framework was identified as more useful than those of Jackson (2003), which was narrower in perspective, while Zhu's (WSR) approach was rather too intuitive for this researcher, given her functionalist bias (see 5.4.6). Other appropriate mechanisms may exist but were not discovered in the course of this research.

The tabular framework (Table 5.6) of Mingers (2006) to identify suitable methodologies for use in analysis of the GV2000 Project is supported by the evidence of its use in identifying the methodologies, methods and tools used to analyse the case study.

9.4. THEORETICAL APPROACHES IN THE CASE STUDY

In this section, a systems approach to the GV2000 Project is discussed. Thereafter, a set of philosophical approaches used in the IS field of enquiry (see 4.2) is used as a framework

for identification of the approach to the case study of the GV2000 Project. The Three Worlds Model of (Mingers, 2006) as adapted with reference to the WSR approach of Zhu (2000a) is used as a framework for analysis of the world views in the GV2000 project. Concluding this analysis of the theoretical framework is an analysis of the suitability of critical realism as a philosophical basis for the guiding and analysing the GV2000 Project.

9.4.1. A systems approach

Systems approach in the management of the GV2000 Project

A systems approach to fiscal cadastral systems and their reform is advocated in "best practice" as ascertained from literature (see 3.3.2). In particular, Bahl and Linn (1992) advocate a systemic approach to reform of fiscal cadastral systems in developing countries. Hard systems thinking features in the "best practice" fiscal cadastral systems design as discussed in section 7.2.4.

There was no evidence that the project team were well versed in systems approaches to change, and there is no evidence that the design of the change process was linked to any theoretical or methodological systems theory. As in "best practices", hard systems thinking is also evidenced in the case study by the causative change process model adopted (see 8.8.6) as well as by reliance on standards and benchmarks (see 8.7.3 and 8.13.2). *Evidence from the GV2000 Project cannot support or refute the adoption of a systems approach to such cases since it was not applied by the Project team in this case.*

A social systems approach in the analysis of the GV2000 Project

A social systems approach to the analysis of the case study has been argued in section 4.4. This approach to the research has demonstrated that the benefits of a systems approach lies in the ability to integrate natural and social systems in the analysis, the ability to understand the fiscal cadastral system as a whole, with properties of its own which are not simply a sum of the properties of its parts, and includes both real structures and processes, as well as cognitive systems, elements, structures, and relationships. Although systems approaches are advocated by a few (such as Bahl and Linn, 1992), they do not form part of mainstream

thinking in property valuation and taxation "best practice" (see 7.2.4). Systems approaches are able to include a wide range of aspects such as power and politics, technical and social interactions, boundaries and the environment. A systems approach underpins the development of the tools used to assess Project goals, risks, and forces driving change, as well as the established SSM and VSM methodologies and the extended framework for performance measurement. Without this approach, these tools would not be able to reflect the complexity of the Project. *A social systems approach to the analysis of the case study of the GV2000 Project has been shown to be highly appropriate and is conclusively supported.*

9.4.2. IS approaches and the GV2000 Project

Simplistically, the GV2000 Project as a whole was an instrument to deliver an updated valuation roll and an integrated valuation and taxation system. As such its motivation and management was instrumentalist (see 4.2.1) in approach. However, the primary goal for the GV2000 Project as understood by the Project team in terms of the data collected was not the usual goal of increasing revenue (see 3.5), but rather it was to improve equity in the fiscal cadastral system (8.7.3). This notion of equity as the main driver of change was universally adopted as revealed by multiple data sources including "off the record" interviews with role players (Interviews A, K and H), Project documentation (GVPMT, 2000a, c, and d), press releases (multiple sources), as well as public meetings (Field notes, 2001). The use of technological processes of property valuation and taxation to facilitate transformation within this sector, and hence consolidate social, political and economic transformation after apartheid (see 8.7.3), is in line with social constructivism (see 4.2.4).

CAMA technology was seen by the Project team as morally neutral (Field notes, 2001, Interview L, 2003) and correlated with progress (expressed as international best practice - see 8.7.2). These aspects are in line with an instrumental approach (4.2.1). CAMA was, however, primarily viewed by the Project team as a means to solve a particular problem (8.7.2), which indicates an approach in line with soft technological determinism (4.2.3).

A social systems approach is adopted in this research to analyse the case of the GV2000 Project (see 4.4. and 9.4.1). In the long term, an analysis of the effects of CAMA and the fiscal cadastral system, and their ongoing evolution within the local government organisation, could benefit from a structuration approach (4.2.5). The fiscal cadastre (including CAMA) is a part integrated land information systems (LIS). The structuration approach could contribute in terms of analysing the impact of such information systems as a catalyst for change.

9.4.3. Modelling worldviews in the GV2000 Project

This section assesses world views and splits this discussion into the worldviews of the project team and those of the public, as these are the primary two different constituencies involved in the GV2000 Project. Within these groupings, there are likely to be several constituencies and coalitions. The most vocal of these are the most noticeable, while those who agreed with the GV2000 Project, or who passively acquiesced, do not leave a significant data footprint.

The world view and approach of the Project team to the GV2000 Project

Interviews and other data suggest that the underlying philosophy motivating the GV2000 Project from a management perspective appears similar to that in "best practices" in this field (see 7.2). A positivist approach to the change project drove a linear, staged process of change with emphasis on the material and technical aspects (see 8.7.1, 8.8.6). However, the timing of the project with its context of radical local government reform, political uncertainty, and social transformation (see 8.4 and 8.6), sensitised the project team to socio-political issues (Interview L). The meaning (see 2.3.1) of property valuation and taxation to broader society is clearly evident through the strong focus on aspects of communication and equity evidenced in the case study (8.7.3, 8.8.6, 8.11.3, 8.13). The legal framework was also included in the project design (see 8.8.6), illustrating a holistic approach to change not found explicitly in the "best practice" model (see 7.2.4). Inclusion of these aspects was undoubtedly driven by the high level of risk associated with them (see 8.8.2 and 8.8.3) and the sensitivity of the project team to the broader issues of

transformation (Interview A, 2001). This was partly facilitated by the dominance of local expertise in the leadership team (see Figure 8.3, Figure 8.4, Figure 8.5, and Figure 9.6), with individuals at the helm highly familiar with the local environment since they were residents of the City.

The world view and approach of the public to the GV2000 Project

The Three Worlds Model of Mingers (2006) (see 5.2, Figure 5.1) has been adapted with reference to the WSR elements of Zhu (1999, 2000a) for the fiscal cadastral systems domain in analysis of the worldviews in "best practice" (Figure 7.2) and for analysis of worldviews in the GV2000 Project (Figure 9.18). In both cases, the entry of elements into the three worlds of the material, social and personal, is intuitive and relies on a systems appreciation of that being modelled. In the case of Figure 7.2 this is based on an appreciation of the relevant literature, while in the case of Figure 9.18, it is based on observation of the case study for the purposes of this research, as well as participant observation (personal evidence of the researcher as a resident of Cape Town and property tax payer). The interpretation of worldviews relating to the GV2000 Project is influenced by subjectivity and the bias of the researcher, although many elements in the figure can clearly be linked to case study evidence.

The material/technical world is populated by tangible/visible aspects of the GV2000 Project which relate to the historical, geographical, procedural, and technological aspects as well as resources and political control of the City, delivery needs, and the transformation of structures and processes in the City. These aspects relate to *Wuli* in WSR (see 5.2.3). *Wuli* includes material things as well as patterns of interconnectedness and formal structures.

The social and personal worlds are more esoteric, and difficult to perceive. In the analysis of the social worldview, the social aspects of the GV2000 Project are divided into those of the property owners, and those of the local government. Within each of these are aspects relating to *Shili* and aspects relating to *Renli* (see 5.2.3). *Shili* aspects include individual and communal perspectives and models of viewing the world, or meaning; *Renli* deals with

relations with others: individual and communal value systems, motives, desires, but also norms of human relations. Property owner *shili* aspects in the GV2000 are the attitudes of "them vs. us" reflected in letters in the media and through collective representative groups such as RAG and ratepayers' associations. Public perceptions of the property tax undoubtedly vary, but the contention that it is a politically motivated "wealth tax" appears to dominate the discourse of the RAG and others in letters published in the media (see 8.9.2). A noticeable cluster of informed members of the public felt alienated from the technical processes as CAMA models were not made public, and the processes were thought, by some, to be illegal, which resulted in collective court action (see 8.12.2). *Shili* is also understood in terms of democratic and constitution rights of property owners as a subset of society. *Renli* aspects with respect to property owners describe the primary collective methods of communication. In the GV2000 Project these were language in public meetings, letters in the media, letters to City officials, court appeals, as well as through collectively uncooperative behaviour in terms of the GV2000 Project (e.g. restricting access to data collectors see 8.11.18).

The local government worldview towards the GV2000 Project also exhibits *Shili* and *Renli* elements. *Shili* elements include the security of authority obtained through a democratically elected Council, as well as through the appointment of experts and City officials to the Project. *Renli* communication aspects are political rhetoric and grandstanding, use of the media, flyers accompanying City bills, local and community structures and newspapers, and public meetings. Communications from the City exhibit a paternalistic attitude to the general public (Field notes, 2001) with limited engagement (Interview J, 2002). The political and legislative framework, as well as technology (web pages, email), partly structures the social world of the GV2000 Project.

The personal world of the Three Worlds Model of the GV2000 Project similarly includes both *Shili* and *Renli* aspects. *Shili* aspects relate to the views of the individual property tax papers of their rights as individuals, the impact of fiscal cadastral changes to their personal wealth/poverty, individual aspects of equity and fairness, feelings of powerlessness and

"victimhood" faced with changes beyond their control (rather than feeling a partner with local government in its decision-making and enactment), as well as compliance mostly motivated by duty or coercion rather than by choice (participant observation, field notes, 2001). Individuals also have to balance their income and expenditure, with the results of the GV2000 Project impacting on their expenditure on property tax (see 8.11.18) (Field notes in Valuations Board Hearings, 2002). As residents of the City they also experience service delivery, and are cognisant of changes in levels of service delivery – property taxes are linked to expected service delivery levels of users (Field notes, 2001). Personal *Renli* aspects of the GV2000 Project are individual's use of letters to the media, formal objections and appeals through the processes of the GV2000 Project, and also the individual's choice to join a collective group and enjoy the benefits of communal communication mechanisms. Participation of individuals in the GV2000 Project is limited by the project design as well as GV2000 structures and processes, while rights of participation are minimally protected through legislation. Views towards the GV2000 Project were also conveyed in a range of respectful and compliant, resigned, distrustful and confrontational communications in informal reviews and other interactions with City officials (Field notes, 2002). Mechanisms for grievance were limited but many individuals did object through the valuations appeal courts (see 8.11.18). A few chose the option of the ordinary courts with support from collective groups such as RAG (see 8.11.18). Although rates boycotts were an option, the majority of the property tax paying population was compliant with regard to the implementation of the GV2000 Project (see property access rates in section 8.11.4 and property tax revenue in section 8.13.2). An investigation as to the reasons for compliance is beyond the scope of this research.

The public in general appeared to embrace an integrated personal and social response to the GV2000 Project, which was really the only option in terms of interaction with the Project, as material interaction was only weakly facilitated (few public meetings and limited engagement with respect to real issues of policy and theory – see 8.11.12, 8.11.17).

The aspects of the three worldviews of the GV2000 Project expressed above are illustrated in Figure 9.18. This figure follows that of Mingers (2006) (see generic version in Figure 5.1) with embedded aspects of the WSR approach of Zhu (1999, 2000a). From Figure 9.18 it can be seen that the social and personal aspects are at least as numerous as the material/technical aspects in the case study of the GV2000 Project. Since the bias of the researcher is towards the material/technical, this observation shows that bias did not significantly mask the social and personal aspects in the observation or analysis of the case study. A similar analysis from literature of "best practices" in property valuation and taxation showed that they are dominated by material/technical aspects to the detriment of personal and social aspects (see 7.2.1 and Figure 7.1). The case study of the GV2000 Project can be concluded to have displayed a more holistic approach than is advocated by "best practices" in property valuation and taxation (Chapter 3).

In summary, the use of the combined Three Worlds Model and Zhu's WSR approach is demonstrated in this analysis of the GV2000 Project case study to reveal the nature and extent of material, personal and social aspects in the case. It highlights differences in perceptions of individuals and society, as well as different mechanisms used to engage with other role-players in the GV2000 Project. *The use of the Three Worlds Model with integrated WSR elements is supported by evidence of its usefulness as an analytical tool in the GV2000 Project case study.*

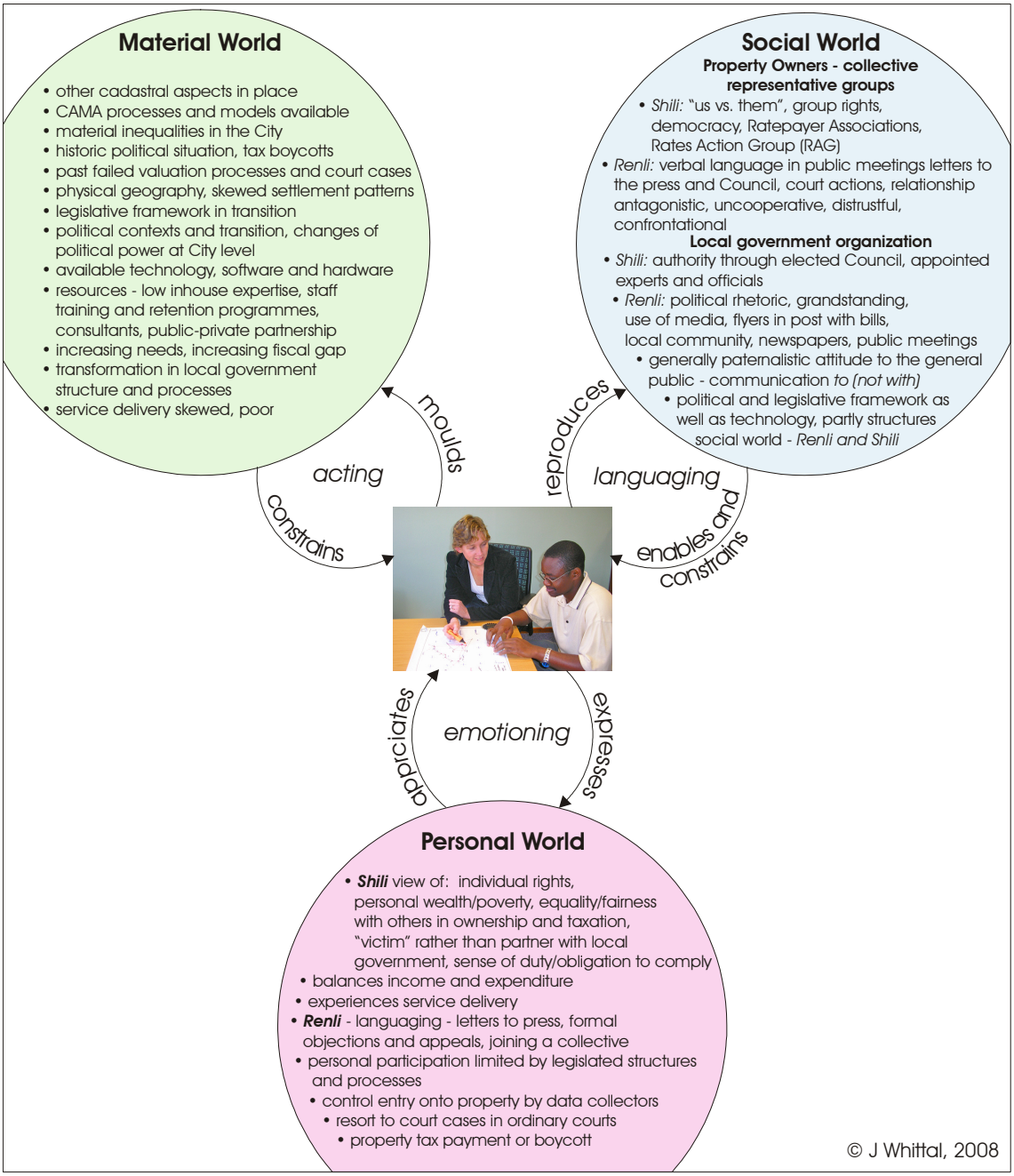


Figure 9.18 Three Worlds Model of the GV2000 Project

9.4.4. Suitability of critical realism as an underlying paradigm to investigate the GV2000 Project

A philosophical argument for critical realism

A search of the mainstream literature on property valuation and taxation, and of literature in the cadastral domain (specifically that of fiscal cadastres), has not revealed any evidence of a critical realist approach to research and practice. The philosophy of critical realism is explained in detail in Chapter 4. However, the main benefits to using this in the exploration of the case study of the GV2000 Project are in the adoption of a theoretical foundation which explicitly accommodates the integration of functionalism/positivism and interpretivism, as well as facilitating the adoption of methodologies from a variety of paradigms, such as positivist (e.g. hard systems thinking) with interpretivist (e.g. SSM) paradigms. The view of the world as consisting of two domains, the transitive and the intransitive (see Figure 4.3, Figure 7.1), allows for material/technical, social and personal aspects of the Project to be accommodated. It also facilitates the inclusion of aspects which are real as well as purely cognitive. No hierarchy is given to these, and cognitive systems are accommodated with equal weight to real structures and processes. An example is in the modelling of fiscal cadastral system processes. Some of these are real, such as the data collection process which must precede the CAMA modelling process. Others are conceptual, such as the legislative and technical systems. Both the real and conceptual aspects can be modelled using social systems tools (such as VSM and SSM), but they offer different and mutually complementary strengths to the process of understanding the fiscal cadastral system – its entities, its processes and structures, and its systems and interrelationships.

Evidence of critical realism in the case study

In so far as the CAMA modelling is concerned, the decision that the CAMA values should override the sales values in the valuation roll reflects an understanding of the sales as only indicators of real market value (see 3.7.2), and rightly positions them in the transitive domain under the critical realist epistemology (see Figure 4.3 and Figure 7.1). The validity

of accepting CAMA values as commensurate with real property values, is dependent on the accuracy and robustness of the functional relationship between market value and property characteristics used, and the quality of the data. CAMA-generated market values will occupy the domain between the transitive and transitive domains, as shown in Figure 7.1. The decision to override the sales values with the CAMA values was moderated by socio-political factors requiring the acceptance of the valuations by the public and minimizing objections (in order to increase efficiency etc.) and it was agreed that the values published on the roll could be modified to the sales values if sufficiently close to these and if the sale was close to the valuation base date (Interview A, 2001). This understanding of the actual values produced by CAMA and their relationship to the sales values was on the whole lost on the general public, but it can be interpreted from a critical realist perspective and is important.

Apart from aspects of valuation modelling, there is evidence of the dual appreciation of reality in critical realism (as two domains – transitive and intransitive) (see 4.3.2 and 4.3.3 and Figure 4.3) in many aspects of the GV2000 Project. The goals and benefits of the Project were conceptualised and motivated to the general public, along with the principles of the reform process – such as equity, transparency, legality etc. However, the practical implementation of the GV2000 Project in many cases deviated from these principles and goals (the transitive domain), while communication with the public remained aligned with the espoused ideals (intransitive domain) in order that perceptions of the GV2000 Project in the public mind were similarly aligned. Examples of this are in the restriction of CAMA information such as models from the public domain (lack of transparency) (see 8.11.5), compromises in equity through property tax policy (see 8.11.17), and inadequacy of aspects of CAMA modelling (such as issues in the 4th Quartile modelling in the Cape Town MLC) (affects transparency) (see 8.11.5).

Creation of knowledge in integrated natural and social real world systems is limited by a positivist stance, while interpretivism has the potential to ignore aspects which are more tangible – material/technical aspects, or to ascribe too much importance to bias in the

process of modelling real entities and relationships (see 4.3.1). Critical realism allows for flexibility in approach, while avoiding conflict at the ontological and epistemological levels. The paradigmatic pluralism of analysis facilitated by critical realism is demonstrated later in the analysis of the case study from a multimethodological approach (see 5.4, 9.2). The analysis relies on both positivist and interpretivist analytical tools. There is evidence (as shown above) of transitive (cognitive) and intransitive (real) aspects of the case study itself, understanding of which is facilitated through this critical realist classification.

Critical thinking endorses reflective scepticism of rhetoric, tradition, authority and objectivity (Mingers, 2006). In keeping with this, the identification of suitable paradigm for this research should not be prescriptive. For different cases, an argument may well be made for the appropriateness of other approaches. *However, for the GV2000 Project, a* critical realist approach to the case study and its analysis is supported.

9.5. GENERALIZATION OF CASE STUDY FINDINGS TO OTHER CASES OF FISCAL CADASTRAL SYSTEMS REFORM

The process of generation of theory from literature and application to a specific case has been discussed in section 6.2.4 and relies on naturalistic and temporal generalization. Figure 6.1 illustrates the design of this project and its logic of generalization which, in short, is based on triangulation of data, theory, methodology and disciplinary knowledge (interdisciplinarity) in order to construct the theoretical and methodological/analytical frameworks presented at the start of this chapter. These are then applied to the single case study (see sections 6.2.2 and 6.2.3) of the GV2000 Project in order to ascertain whether they are supported, or not supported, by the case study evidence. If they are supported, generalization to other cases is through a process of naturalistic generalization based on an analysis of the similarity between other cases and the case of the GV2000 Project. This analysis may be limited at the outset due to lack of appreciation of the new problem context, which is part and parcel of these proposed methods! The significance of

differences would therefore require ongoing assessment in new cases to which this theory is to be applied.

The aspect of temporal generalization of the findings presented here is enhanced by the duration of the case study (about seven years of active study as well as participant observation as a resident of the City through the period of macro level change brought about after Apartheid) and also the reflective nature of the analysis. Temporal generalization could be strengthened further by extending the observation and analysis of the case study to cover subsequent processes of property valuation and taxation such as the GV2006 Project. However, this was beyond the scope of this research project.

In summary, all aspects of the theoretical and methodological frameworks which are supported after use in analysing the GV2000 Project are supported for application in general to other projects which are judged to be sufficiently similar.

9.6. EMERGENT ADDITIONS TO THE THEORETICAL AND METHODOLOGICAL FRAMEWORKS

Various aspects of the GV2000 Project inform the inductive extension of the framework for fiscal cadastral systems reform in environments of complexity and rapid multifaceted change. These are the combination of a linear change process model within a larger spiral process of change, the attention given to communication in the project – which is accommodated in the modified Kotter change management model, and the importance and place of performance measurement and feedback. Each of these aspects is now discussed, and the proposed set of methodologies, methods and tools for each stage in the process is summarized in tabular form.

9.6.1. A spiral of reform processes and embedded stages

The design of any reform process should take into account variable degrees of success in achieving goals, and the necessity for repeat processes to accommodate changes in the

environment, even during the course of a complex project. A model proposed by Zhu (2001) of a spiral process in which issues are allowed to "bubble to the surface" is probably the most useful in considering the processes such as the GV2000 Project and its sustainability over time. However, it is perhaps too far removed from the experience and skills of those implementing change, who are far more comfortable with linear, staged processes which can be strategically planned. These can be accommodated within a broader spiral process allowing review during the course of change as well as at the end of the project cycle, in order to provide feedback for repeat processes in a continual process of learning and change Zhu (2001). Repeat processes, or repeating stages within these, may be required, and most often these processes will require continual repetition in perpetuity if the system is to remain well adapted to its environment and optimally viable (see Figure 9.19).

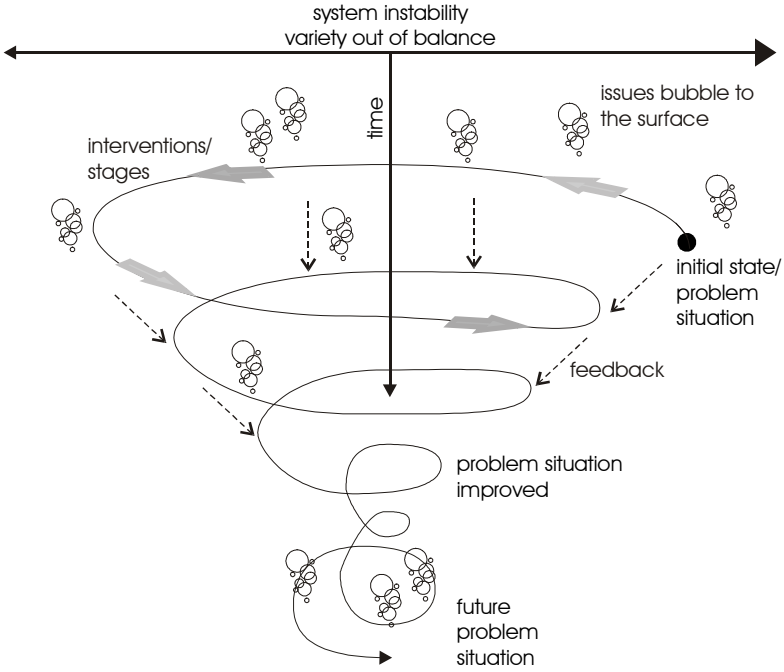


Figure 9.19 Spiral process of reform (diagram based on the concepts of Zhu (2001))

9.6.2. Strategic, staged processes for fiscal cadastral system reform

The change management framework of Kotter (1996) as modified by Dolny (2001) is shown to be highly relevant to cases of fiscal cadastral reform and links well into the overall critical realist paradigm adopted in this research (see 9.2.6). It is structured to be able to accommodate personal and social aspects of change, but initially appears not to

accommodate the actual operations (nuts and bolts) of material/technical change. As it stands, it is therefore deficient for the three worlds understanding of a holistic world view. The three stages of the "best practice" model of fiscal cadastral reform (see 3.7.3) attend to these specifics, and can be accommodated between stage 5, empowering broad-based action, and stage 6, generating short term wins, in the Kotter (1996) framework.

A social systems framework for reform of fiscal cadastral systems is proposed. It is divided into four main processes:

- Process A: Understanding/appreciating the problem situation;
- Process B: Preparing for reform;
- Process C: Undertaking the reform process;
- Process D: Performance review and feedback.

Figure 9.20 illustrates the four main processes of reform, with the embedded and highly compatible staged processes of Kotter (1996), Mingers (2006) and Zhu (2000a). The dark block containing the three stages of the property valuation and taxation processes relates to "best practice" (see 3.7.3) and highlights its narrow focus. Critical additions are in assessing the problem situation, cross-cutting communications and coordination functions, performance measurement, feedback and repeat processes.

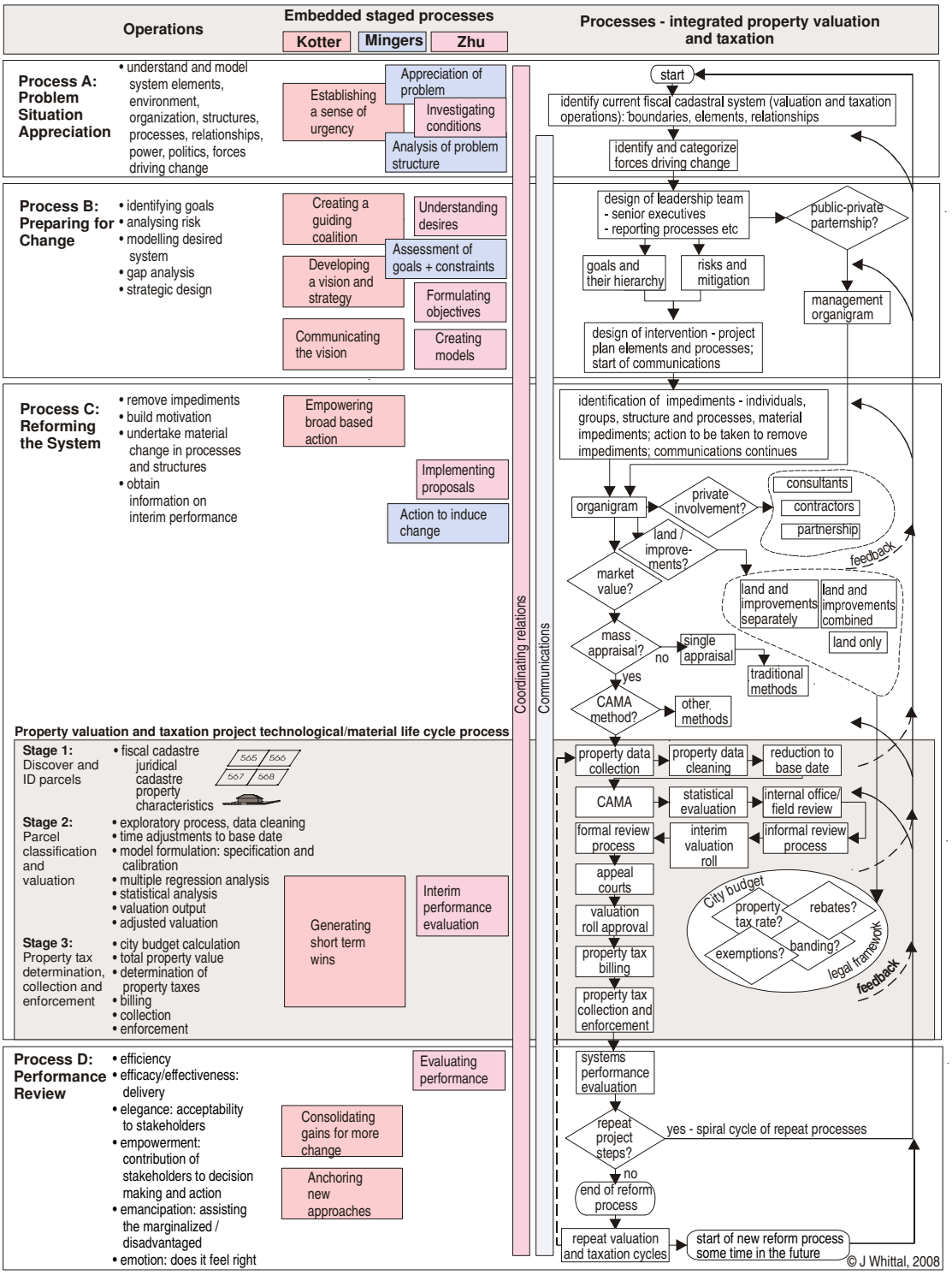


Figure 9.20 Integrated, strategic, systems approach to reform of a fiscal cadastral system

9.6.3. A suite of methodologies, methods and tools for fiscal cadastral system reform

A multimethodological approach based on the critical realist paradigm, involves the use of multiple tools from a variety of hard and soft systems traditions in the analysis of the problem situation and in its improvement (see 5.4). These are best represented by a series of tables which detail the methods chosen and their purpose, as well as their ability to reveal material/technical, social and personal aspects as proposed by the Three Worlds model (see 5.2). This tabulation is a summary of the analyses conducted in this chapter.

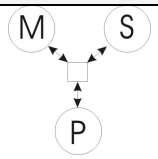
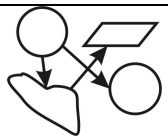
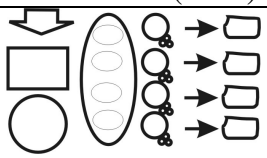
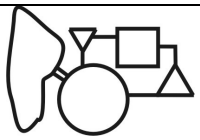
MODELS/TOOLS	PURPOSE	SENSITIVITY
 Three Worlds Model of Mingers integrating WSR of Zhu	Reform approach acknowledges material/technical, social and personal aspects of current fiscal cadastral system	Material Personal Social
 Rich Picture (SSM)	Current fiscal cadastral systems, elements, relationships, information flows, power, risks. From alternative world views.	Personal Social
 Two Streams Model (SSM)	Historic influences, problem situation, cultural aspects, conceptual systems and models of real situation	Material Personal Social
 Forces framework	Analysis and categorization of forces driving change	Material Personal Social
 Viable Systems Modelling (VSM)	Modelling of real systems and recursion, information flow, variety balance	Material Social
 Staged Processes	Kotter Stage 1: establishing a sense of urgency; Mingers Stage 1 and 2: appreciating and analyzing problem structure Zhu Stage 1: investigating conditions	Material Personal Social

Table 9.1 Methodologies, models and tools for Process A: Understanding the problem situation

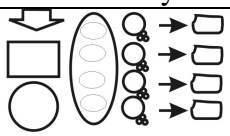
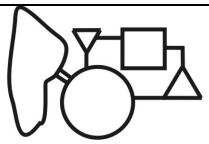
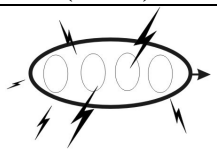
MODELS/TOOLS	PURPOSE	SENSITIVITY
 Goals Analysis	Identification of explicit and implicit goals, temporal goals, procedural goals. Grading/hierarchy of goals	Material Social
 Two Streams Model (SSM)	Conceptual fiscal cadastral sub-systems/models of desired situation, gap analysis, planning	Material Personal Social
 Staged Processes	Kotter Stage 2-4: creating a guiding coalition, developing a vision and strategy, communicating the vision; Mingers Stage 3: assessment of goals and constraints Zhu Stage 2-4: understanding desires, formulating objectives, creating models	Material Personal Social
 Viable Systems Modelling (VSM)	Modelling of desired fiscal cadastral system and sub-systems	Material Social
 Risk Analysis	Identification and mitigation of risks (causes of instability with negative consequences)	Material Personal Social
 Project Plan	Strategic staged design of fiscal cadastral system interventions	Material Personal Social

Table 9.2 Methodologies, models and tools for Process B: Preparing for change

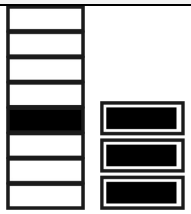
MODELS/TOOLS	PURPOSE	SENSITIVITY
 Staged Processes (Kotter and "best practice")	Kotter: Empowering broad-based action, Generating short term wins Zhu: implementation Best Practice fiscal cadastral systems: data input, processing, tax collection Cross-cutting: communications	Material Personal Social Material
 7E's framework for performance evaluation	Interim analysis of fiscal cadastral system and performance in seven areas during reform	Material Personal Social
 Feedback	Feedback to result in further change	Material Personal Social

Table 9.3 Methodologies, models and tools for Process C: Reforming the fiscal cadastral system

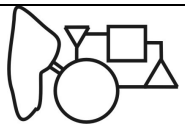
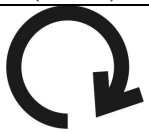
MODELS/TOOLS	PURPOSE	SENSITIVITY
 Staged Processes	Kotter: consolidating gains for more change, anchoring new approaches in fiscal cadastral system operations and relationships	Material Personal Social
 7E's framework for performance evaluation	Analysis of fiscal cadastral system performance in seven areas post reform	Material Personal Social
 Viable Systems Modelling (VSM)	Modelling of resulting fiscal cadastral system and analysis of viability	Material Social
 Feedback	Feedback to result in further change processes	Material Personal Social

Table 9.4 Methodologies, models and tools for Process D: Performance review and feedback

9.7. CONCLUSIONS

This Chapter has addressed research activities 1.5.3 a) and b) in its critique of the case study of the GV2000 Project. It comments on the generalizability of case study findings, and inductively extends knowledge in fiscal cadastral systems and their reform. It therefore completes the primary research objective, which is to develop a framework to guide and analyse the processes of reform of a fiscal cadastral system (see 1.4.1).

The analysis of the case study of the GV2000 Project using the theoretical and methodological frameworks identified in earlier chapters highlights the usefulness of these frameworks. The approach to fiscal cadastral system reform exhibited in the case study is revealed, and the adopted methodological framework is shown to be wholly adequate to analyse such a case and to guide similar reform processes. The tools of VSM and SSM were motivated in Sections 5.3.1 and 5.3.2 and ably extend knowledge of property valuation and taxation processes to an understanding of the fiscal cadastral system which reflects the irreducible nature of this system and its relationships and properties. “Best practice” stages of property valuation and taxation are inductively extended to a social systems, strategic, staged approach within a spiral process of ongoing change. Associated with this process are a suite of methodologies, methods and tools which have been identified through literature and shown to be useful in application to the case study of the GV2000 Project. Generalization of these research findings should be naturalistic (see Figure 4.2) and therefore relies on the skills of the researcher and the similarity between other cases and the case of the GV2000 Project.

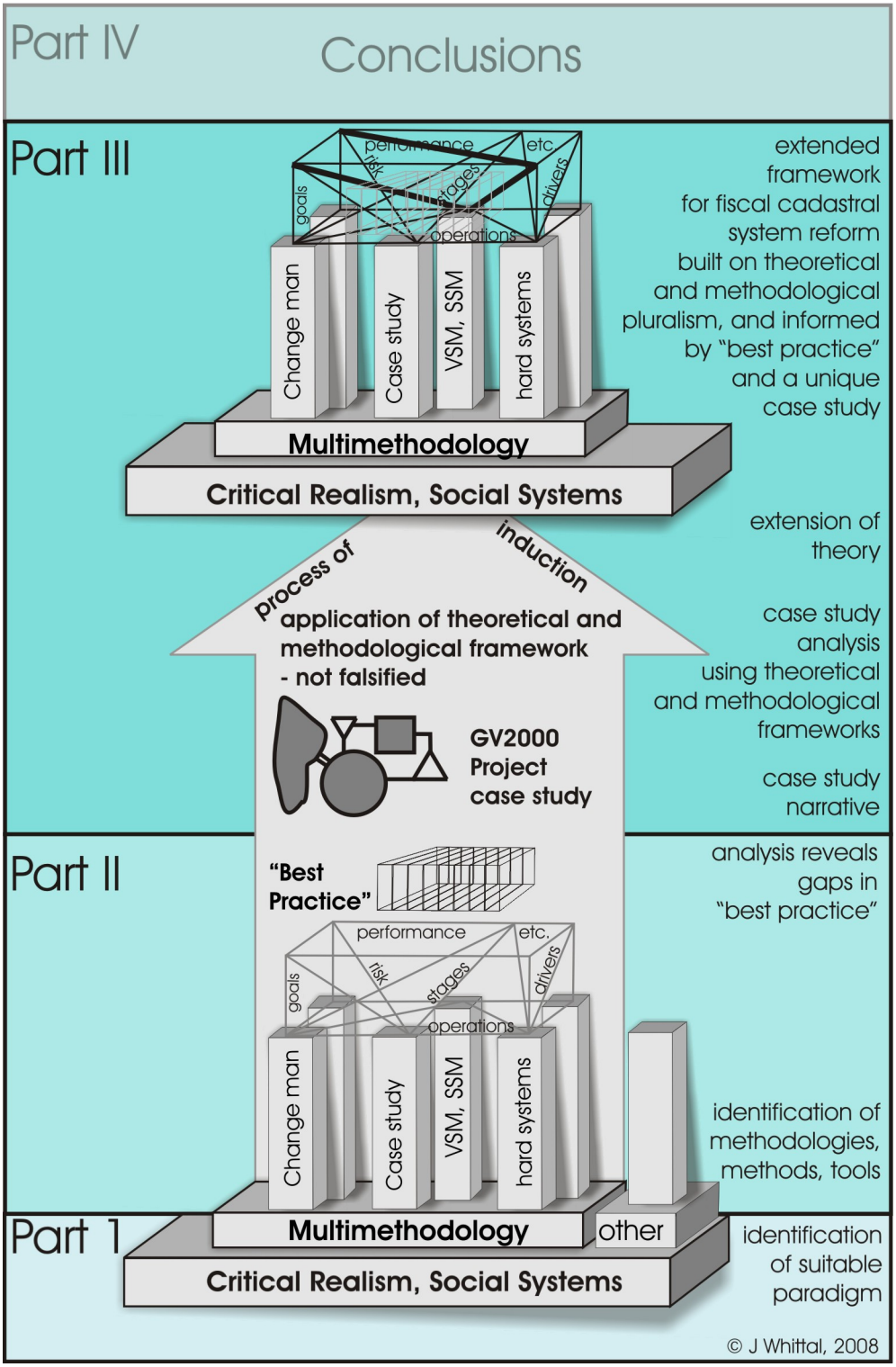


Figure 9.21 Progression of research logic – Part III

Part IV: Conclusions

Part IV draws together the main conclusions from preceding chapters and relates these back to the objectives of the research as outlined in Chapter 1.

CHAPTER 10. CONCLUSIONS

10.1. INTRODUCTION

This thesis has developed a framework to guide and analyse the processes of reform of a fiscal cadastral system. In order to achieve this, an appropriate philosophical theoretical framework for studying fiscal cadastral systems reform using information technology (an important aspect of a CAMA system) was identified. A methodological and analytical framework was developed to describe and analyse fiscal cadastral system reform in general and specifically in the complex case study of the GV2000 Project of the City of Cape Town. The main contributions of this research are in the development of theory, and in the exploration of the fiscal cadastre as a system.

Part I of this research began by investigating current theory in the domain of IT/IS (Chapter 2). This was complemented by an investigation of change management theory in cadastral research and practice (Chapter 2). The conclusion of Silva and Stubkjaer (2002) is confirmed - that research in the cadastral domain is weak at integrating theory from allied disciplines. It is further concluded that research in the cadastral domain, which includes theoretical foundations, is minimal. Current theory and practice in fiscal cadastral systems and their reform was investigated in Chapter 3 and expressed as the "best practice" framework as understood by researchers and practitioners in that industry. These "best practices" are subject to critique in Chapter 7, and are generally found to be narrow in approach and focus.

Part II of the research focussed on developing the methodological framework for guiding and researching cases of fiscal cadastral systems reform, such as that of the GV2000 Project case study. The critical realist paradigm was identified along with a social systems approach to the research. A multimethodological systems framework for research and analysis was motivated and adopted, and various tools suitable for investigation of the particular case study of the GV2000 Project of the City of Cape Town were identified. The case study approach facilitated case study research design, implementation, and analysis, while the strategic change management framework of Kotter (1996, modified by Dolny, 2001) was identified as compatible with the theoretical framework, and suitable for analysing change processes such as those in the GV2000 Project. "Best practices" in property valuation and taxation were then subject to critique using the identified frameworks, and were shown to be insufficiently holistic.

Part III of the thesis presented the case of the GV2000 Project in a narrative form, followed by analysis of this using the frameworks identified in Part II. These frameworks were assessed for their usefulness. In this process, an understanding of the operations of property valuation and taxation as part of a fiscal cadastral system emerged which is part of a larger whole, the cadastral system. The methodological framework was extended to a staged, strategic, and social systems framework for reform of a fiscal cadastral system. Thereafter the suite of useful methodologies, methods, and tools was presented in a tabular format in line with the four main stages in the above framework.

Part IV, contained within this chapter, draws together the findings of previous chapters in a structure which follows the research methods/activities from Chapter 1 (1.5.1 to 1.5.3). Each research method/activity forms a new subsection with conclusions specific to that activity summarized at the end of each section in italics. Since the analysis in Chapter 9 was heavily cross-referenced to other sections in the thesis, and since the structure of this chapter largely mirrors that of Chapter 9 and simply summarizes the results, cross-referencing is, on the whole, not included in this chapter in order to facilitate ease of reading.

10.2. THEORETICAL FRAMEWORK AND TOOLS

Secondary research objective addressed: *identification of an appropriate philosophical theoretical framework for studying fiscal cadastral systems reform using information technology.*

10.2.1. A critical realist ontology and epistemology

A critical realist approach to analysis of fiscal cadastral systems and their reform has been shown to be beneficial in avoiding the straightjacket categorization of exclusively hard vs. soft systems and interpretivist vs. positivist approaches. The critical realist approach is also compatible with attempts to model actual structures and processes believed to be evidenced in data relating to cadastral systems. It thus embraces both positivism and interpretivism where appropriate and useful. Furthermore, it forms a useful basis for employment of multiple methodologies which, having their roots in a variety of paradigms, would otherwise be incompatible from the perspective of their worldview and underlying assumptions about knowledge creation. An illustration of the critical realist understanding of the transitive and intransitive domains can be found in Figure 4.3.

Critical thinking, which is allied to critical realism, implies improvement of a problem situation as an outcome of the process of investigation and analysis. This is invariably the task of any reform process such as that of a fiscal cadastral system, and as such, the synergy needs no further clarification.

10.2.2. Holistic world view

The trinitarian world view model of Mingers and Zhu (see sections 4.3.2 and 4.3.3) extends the highly material/technical world view of "best practices" in fiscal cadastral reform to one which includes the social and personal aspects of the system, and how these relate to the operations of the system. This holistic approach provides a useful platform for understanding the fiscal cadastral system from multiple perspectives. This is illustrated in Figure 9.18.

10.2.3. Theoretical approaches to information systems research and practice

The various theoretical approaches to research in IS have proven a useful structure with which to identify the various approaches to fiscal cadastral systems from multiple, different perspectives. The differences in approach of role players highlights the limitations of a singularly positivist stance and the importance of interpretivism in understanding fiscal cadastral systems. This further endorses the critical realist approach adopted in this research in which both paradigms are accommodated.

10.2.4. Social systems approach to the fiscal cadastral system and its reform

The benefits of a systems approach lies in the ability to integrate natural and social systems in the analysis, the ability to understand the fiscal cadastral system as a whole, with properties of its own which are not simply a sum of the properties of its parts, and includes both real structures and processes, as well as cognitive systems, elements, structures, and relationships. A social systems approach integrates a variety of cognitive systems (technical, social, economic, legislative and political) in a holistic sense taking into account the various elements of the physical artefacts, institutions and their environment (Bijker *et al*, 1994). Technological innovations, such as the implementation of CAMA in the GV2000 Project, are seen as part of a whole – part of a system – and are indivisible from their context.

10.3. METHODOLOGICAL AND ANALYTICAL FRAMEWORK

Secondary research objective addressed: *identification of a suitable methodological and analytical framework to describe and analyse fiscal cadastral system reform in general and in a complex case study.*

10.3.1. Multimethodological analysis – analytical holism

Every methodology has both strengths and weaknesses. These are often related to the paradigm from which they are developed and to the purpose for their development. The choice of appropriate methodologies was easily conducted using the design framework of

Mingers (2006) (see Chapter 5). Additional techniques such as change management were informed by the operations research and management science fields, while case study methods grounded the development of theory in practice through application to the GV2000 Project. A multimethodological framework facilitates triangulation of results through the use of a range of methodologies, methods, and tools. This enhances the generalizability of findings, which is highly desirable.

10.3.2. Methodologies, methods and tools advocated

Drivers of reform

The identification and classification of the forces driving change of a fiscal cadastral reform project according to socio-political, legislative, economic, and technical categories has proven a useful mechanism in both analyzing the "best practice" framework as well as the example of fiscal cadastral system reform in the case study of the GV2000 Project. It is inclusive in its ability to highlight forces driving reform. Its facilitates a structured exploration of the context of reform, and in doing so should sensitize the leadership team to what is referred to as the historical situation of SSM and feeds into the cultural stream of analysis in that model. It, furthermore, covers all three aspects of the material/technical, social and personal as identified as appropriate when viewing a problem situation.

Analysing goals

The analysis of goals of change, and especially consideration of goals that are in conflict, is an omission in "best practices" in fiscal cadastral systems design and reform. The analysis of goals in the case study showed that this information is critical to the reform process as it can result in additional risks which require management and regulation. A further conclusion is that goals may also be temporal, and as such, should be reassessed from time to time during the course of a reform project. Their relative importance may also wax and wane at different stages of the project, which will require a variety of responses. While some goals may be easily achieved, others may emerge during the course of the reform process, in particular due to the unpredictability of complex change projects such as that of the case study.

Analysing risks

Risk analysis is a field of enquiry in its own right, but within the framework for reform of fiscal cadastral systems, it forms an important component. Risks are variants which influence the outcomes of a process negatively. Strategic change interventions require knowledge of risks, as well as their duration, their peak, and their causes. Risk management is geared to minimize the impact of risks and thus maximize the potential of positive outcomes of change processes. In fiscal cadastral systems reform in highly complex contexts, risks abound, and predictable outcomes are limited. This aspect of reform is thus critical to such a process. Ongoing assessment and management of risk throughout the duration of a fiscal cadastral reform project is advocated.

Staged processes of change management

Staged processes of change management serve a useful purpose, not only in analyzing change processes, but also in directing these. The identified change processes of Kotter (1996), Mingers (2006), Zhu (2000a) within a spiral process of change, are shown to be useful. However, these fail to include the nuts and bolts of property valuation and taxation (or any other operations in a different system). This framework was thus extended to include these aspects, as well as performance measurement, feedback, and additional cycles of change (see section 9.6.2 and Figure 9.20)

Case study research methods

Case study research methods have been identified as a suitable mechanism for analysing a real case of fiscal cadastral systems reform such as that in the case study of the GV2000 Project from a systems perspective (see 6.2).

Generalizability of case study findings has been enhanced through triangulation of methodologies, the credibility of the results, and the use of multiple sources of evidence. Methodological triangulation was achieved through the choice of complementary methodologies which reveal similar aspects of the case from multiple perspectives. This is shown in the last column (sensitivity) in Table 9.1 Table 9.4. Generalization processes

subsequent to this research should be naturalistic, (rather than statistical and analytical) taking into consideration the similarities of other cases to the case study as expressed in the detailed narrative. The temporal nature (longitudinal research) of the study lends further generalizability to the research outcomes. However, the reliability of the research output is tempered by knowledge of the observer and her bias., as well as the biases of the key informants. This has been explicitly tackled in Chapter 6, while researcher bias is thought to be more of a benefit than a hindrance in the investigation of the research questions.

Suitability of Viable Systems Modelling (VSM)

The VSM technique has been demonstrated to be a very structured and useful method for capturing organizational structure, process and various system components (environment, system in focus, management, audit and regulatory structures). It is able to illustrate causes and management of variety in the system very ably, which links back to forces driving reform and the risks inherent in the process, as well as methods to control these. Its particular focus on auditing processes links well with measures of performance and feedback mechanisms. Imbalances in variety across the horizontal axis are managed through processes – modelled by transducers and amplifiers of variety. The ability of the VSM to model a real system-in-focus and its subsystems in an integrated and holistic manner, based on the principle of recursion of systems, is a major strength of the technique. The emergent properties of the fiscal cadastral system become apparent with VSM, such as the relationships between the fiscal cadastral system and its environment and management structures, as well as auditing and anti-oscillation features of the fiscal cadastral system which are different from those of its component sub-systems.

There are some limitations of the VSM technique, which are recognised in the initial choice of methodologies using the framework of Mingers (2006). These are mostly in the inability of the VSM to reflect power, politics, as well as cultural, social and personal aspects. In order to model transitions in organizational structures and processes multiple VSM models would be required, with different timestamps. This could explain its lack of recent

application, particularly with the rise and fall in popularity of business process reengineering.

On balance, VSM is a very useful tool and its weaknesses can be accommodated by pairing VSM with other techniques with complementary strengths such as SSM.

Suitability of Soft Systems Methodology (SSM)

SSM as a methodology, comprises a range of techniques, most of which have been used in the analysis of the case study. These were developed from an interpretivist paradigm, and are heavily slanted towards analysing different perspectives of a problem situation, rather than to uncover real structures and processes underlying such a problem. The SSM tools/methods are strong in modelling the personal and social aspects of a situation, but weak in modelling the technical/material aspects. The complementarity of SSM and VSM and their pairing in analysis mitigates against the weaknesses of these methods when used alone.

The SSM tools of the CATWOE and PQR analyses assist in defining the problem situation, but add little value when used in combination with the tools of analysing goals, risks and forces driving reform. However, the principle of methodological triangulation supports their inclusion. The rich picture tool is designed mainly to explore a variety of world views when engaging in action research. In the analysis of the case study, the researcher was not engaging in action research and passive observation and data collection were separated from analysis, with there being limited intervention or influence on the Project outcomes. Some of the SSM tools were thus not useful, such as modelling human activity systems. However, the rich picture was used extensively to create mind maps of structures, processes and interrelationships between elements of the problem situation. This proved an important process which informed the later modelling in VSM and SSM.

The Two Streams Model of SSM added little value to what had already been accomplished in the analysis of forces, goals and risks, which are conducted at the outset of the project.

The split of operations into various systems based on type is thought to be less useful than the systems based on real operations, management and environmental structures identified in VSM. The interrelationship between the systems illustrated in the Two Streams Model is poorly included (if at all) and the clear linkages with the environment outside the system are not portrayed with the same detail as is possible with VSM. The impression of the researcher is that a thorough knowledge of the problem situation is already required in order to compile the Two Streams Model, while VSM resulted in a greater understanding of the system in focus and its subsystems. The ability of the SSM to reveal political processes appears to be largely dependent on the skills of the observer and not solely on the tools provided by SSM.

If used early on in the analysis of a problem situation, perhaps the Two Streams Model would serve to focus attention on the problem situation from a systems perspective. The bias of the researcher towards functionalism rather than interpretivism may also have influenced the preference of VSM over SSM, and perhaps a researcher from a social science background would find the SSM tool more useful and be able to extract more meaning from the SSM representation of real world case than was performed in this research.

The 7E's framework for performance measurement

Performance measurement was shown in the course of this research to be an area of development which has received little attention in the reform of fiscal cadastral systems. However, if a process of ongoing change is to be considered in the long term (as in repeat valuations cycles, and repeated cycles of property tax determination), and if critical interventions geared at improvements (continued viability and evolution in response to environmental change), are to be considered, feedback is required. Knowledge which can inform repeat cycles of change needs to be obtained through some strategic process. This is proposed to be the 7E's framework, which incorporates traditional information in the material/technical domain as well as incorporating social and personal aspects of any change process. It is a social systems framework which is based on that of Checkland

(1999) (3E's and 5E's) but extended with reference to Jackson's classification of systems methodologies (see sections 3.8, 5.3, 5.3.2, 6.3.7 and 7.3.7).

The 7E's framework was applied to the case of the GV2000 Project and shown to be inclusive of usual material/technical methods of measuring performance. It has the advantage of facilitating a more holistic approach to performance built on a social systems approach. Its application as an ongoing framework for performance measurement throughout an intervention, allows for feedback during the course of a project, and not simply at its end.

10.3.3. Conclusions relating to the methodological framework proposed

The multi-methodological framework for fiscal cadastral systems reform is proposed. The "real" structures, processes and relationships of a fiscal cadastral system are best modelled using VSM, while SSM models cognitive systems elements. Hard systems thinking is used predominantly in understanding the material/technical aspects, as well as to analyse goals of reform, risks, and forces driving the reform process. The framework for fiscal cadastral systems reform is premised on a strategic structured process model largely after Kotter (1996) and accommodated within a spiral cyclical process of continual change and feedback informed by the 7E's social systems framework for performance measurement. The strategic staged process framework is illustrated in Figure 9.20, while Figure 9.19 illustrates the spiral process of continual reform. The methodologies, methods and tools which have been identified as useful in the course of this research are linked to this staged process framework in Table 9.1, Table 9.2, Table 9.3, and Table 9.4.

10.4. CONCLUSIONS

A framework has been developed to describe, analyse and guide the process of reform of a fiscal cadastral system. This framework is built upon a critical realist paradigm, which appears to be the first time it has been used in research or practice within the cadastral, or property valuation and taxation communities. The exploration of the theoretical foundations

of these fields of study is a significant contribution. The philosophical assumptions about the nature of reality and the creation of knowledge within the cadastral domain appear, prior to this research, to have been minimally researched. The systems and multi-methodological approach to reform of fiscal cadastral systems offers a new appreciation of the system. It advocates the use of a range of methodological tools in order to appreciate the current situation, to model the desired state, and to identify interventions which will facilitate the desired system reform, in a holistic manner, with a stage of performance measurement which provides feedback for further change processes.

Finally, this research extends the fiscal cadastral data and property valuation and taxation process methodology to a fiscal cadastral systems framework. The benefits of viewing the fiscal cadastre and processes of property valuation and taxation as a fiscal cadastral system are that:

- The irreducible properties and structure of the fiscal cadastral system can be modelled and its sensitivity and response to material, social and personal aspects is facilitated.
- Links to the broader society are accommodated – the relationship between the system and the environment can be modelled.
- Links to higher levels of management are accommodated, as well as relationships with sub-systems.
- Auditory and regulatory functions relating to higher and lower levels than the individual operations of property valuation and taxation are possible.
- A holistic analysis of the system is possible, which is likely to reduce uncertainty in complex fiscal cadastral system reform projects.
- A view of the fiscal cadastral system over time facilitates a systems appreciation of ongoing processes of reform.
- An approach to performance measurement which relates to many aspects of the fiscal cadastral system provides essential critique on which to base further reform.

The major impact of this study is therefore a contribution in terms of theoretical and methodological theory in the field of fiscal cadastral systems and their reform. The notion

of a fiscal cadastral system prepares the way for future development in viability modelling and the recursion of systems within the land information sector as well as extension of general cadastral systems theory.

10.5. RECOMMENDATIONS FOR THE CITY OF CAPE TOWN

The analysis of the case study of the GV2000 Project of the City of Cape Town has revealed some areas of potential improvement in the processes to be employed in subsequent valuation cycles, as well as in future reform projects, possibly including reform initiatives outside of the fiscal cadastral area of application.

Most of the recommendations for the City of Cape Town stem from their focus on international "best practice" which has been analysed and critiqued in Chapter 7 of this thesis and found to be deficient in a number of areas.

10.5.1. Critical Realism

An understanding of the philosophy underpinning fiscal cadastral practices, in particular modelling as viewed from a critical realist perspective, is recommended. This conceptual understanding of the processes of CAMA may assist in communicating the principles to all roll players, including valuers.

10.5.2. Holistic approach and inclusive worldview

A world view which proactively includes the personal and social aspects of fiscal cadastral systems is advocated. This is particularly useful in understanding the problem situation and involving all roll players. To a large extent, this was achieved in the GV2000 Project as revealed in section 9.4.4. However, the case study narrative reflects that there was some considerable opposition to the changes brought about through the GV2000 Project, and that communication efforts could be improved.

10.5.3. IS approaches and CAMA in Cape Town

Approaches to CAMA by the City were a combination of instrumental and technologically determinist approaches (see section 9.4.2). In the long term, a structuration approach could complement these in the analysis of the effects of the CAMA as a catalyst for change.

10.5.4. Processes of Reform of the Fiscal Cadastral System

The framework shown in Figure 9.20 should be considered by the City as an inclusive, strategic process framework for fiscal cadastral systems reform within a spiral process of change illustrated in Figure 9.19. This spiral process can be interpreted in terms of the cycle of repeat valuations which are performed every few years. Of particular relevance to the City are Processes A, B and D, which were not a particular focus of the GV2000 Project. Process D – Performance Review is critically important now that the City has moved beyond the GV2000 Project to the GV2006 Project and is in the process of completing this next cycle of valuation. The processes of performance measurement used in "best practice" and by the City have been shown to be narrow, somewhat arbitrary, and inadequate to provide feedback on all aspects of the fiscal cadastral systems and its reform.

The use of all of the recommended tools in Table 9.1 - Table 9.4 may be too great a task for the City with its focus on delivery within budget and time constraints, and with limited staff resources. However, the 7 E's framework, should be explored as a mechanism to develop a set of indicators of performance on a far broader range of aspects than is currently measured by the City. Only once these indicators have been developed can data be collected to feed into such a measure and provide useful information to improve processes in subsequent valuation cycles. There may other tools within this range presented which the City could explore as useful management tools.

10.6. RECOMMENDATIONS FOR FUTURE WORK

This research has highlighted the need for research in theory underlying cadastral systems and their reform. Scientific enquiry into the philosophical assumptions about the nature of reality and the creation of knowledge has been explored in this research, but requires further application and extension. The foundation for future work has been laid in the identification and contribution of cognate research disciplines, and in highlighting the potential of a pluralist approach. The critical realist framework and associated multimethodological approach (with the identified methodologies, methods and tools) to research in fiscal cadastral systems should be extended to the broader field of cadastral systems in general, as the contribution of such knowledge in this domain is expected to be significant.

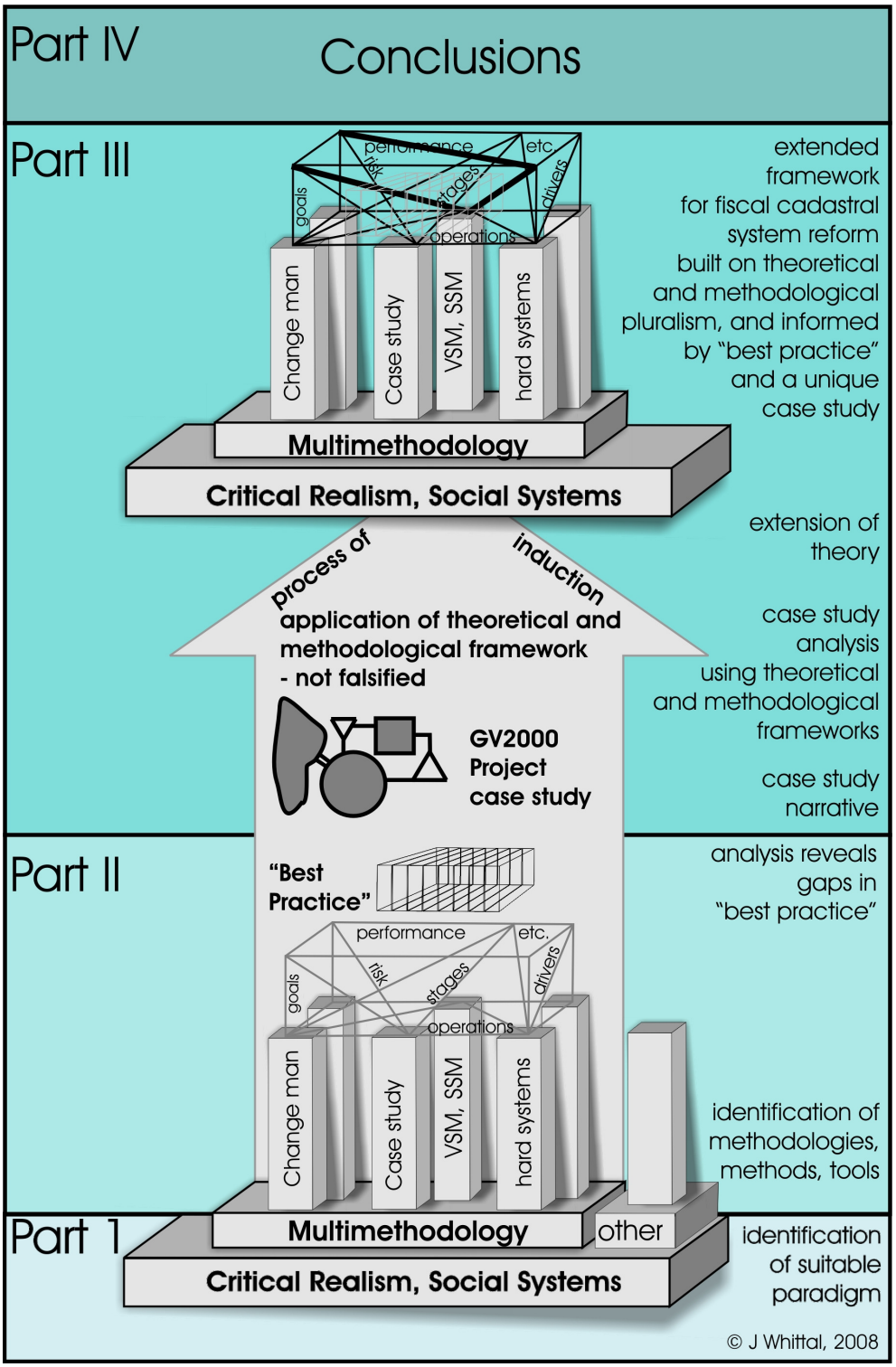


Figure 10.1 Progression of research logic – Part IV

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Confidential Correspondence A – G

Interviews A – M

Sources are protected for reasons of confidentiality. In a number of cases more than one reference letter is associated with one interview or confidential correspondence to prevent revelation of sources. A list of informants cross-referenced to these codes is retained in the possession of the principal researcher.

APPENDIX A: DATA SOURCES

Key Informants (information provided is not in the public domain):

Surname	First name	Institution Association	Job Title	Section/ Dept	Interviewed	Information Provided
Aanstett	Andy		Independent Audit.	IPTI		Audit Report
Bosomworth	Robin	RAG			27 Jun 2002 24 Jul 2002 30 Jul 2002 27 Oct 2003 (court case)	Personal and RAG views on the GV2000 and the High Court Cases: 4995/02 and 9507/02
Bowen	Paul	University of Cape Town	Professor	Construction Economics and Management	27 Jun 2002	Property Valuation material
Cronradt	Ann	Cape Town City Council	Secretary of Valuation Courts	Property Valuations	27 Jun 2002	Appeals Process and Dates
Dalgleish	Robert	City of Calgary	Cama specialist	Assessment	27 May 2003 23 Jun 2003 29 Jun 2004	CAMA processes in Calgary
Dewar	Mike	Africon	Project Manager		22 Feb 2002 18 Aug 2004	Project Management
Eckert	Joe				22 Feb 2002	International Property Tax Consultant
Fagan	Roy	City of Calgary	Deputy City Assessor	Assessment	27 May 2003 23 Jun 2003	CAMA processes in Calgary
Kadalie	Achmat				2 Feb 2001	Project team – data collection management ?
Kamaar	Frydie	Africon	Office Manager	Project Office	22 Feb 2002	Project Management

			Also in charge of Formal Review process		11 Jun 2002	Formal Review/Objection Process
Hetheringto n	Sarah	String Communi-cations	Contract communi-cations		16 Aug 2001 28 Feb 2002	Communicat ions in English and Afrikaans
Jacobs	Rosemary		Communi-cation: BLA's		24 Jun 2002	Communicat ions in Xhosa speaking areas
James	Ken	City of Cape Town	Director: Revenue Services SP			Property taxation
Le Roux	Pieter		BLA valuations/ modelling???			Valuations information - processes
Leonard	Sean	Seconded to Africon	Communi-cations: Call Centre	GV2000 project office	11 Jun 2002	Call Centre Processes
Lindsey	John	City of Calgary	Strategic Planning, Reporting - legislative processes	Assessment	27 May 2003 23 Jun 2003	CAMA processes in Calgary
MacLaugh-lin	Nico	City of Cape Town	Chair: GV Steering Committee		22 Feb 2002	General Project management information
MacKenzie	Katharine	String Communi-cations	Contract communi-cations	Call Centre/Publi cations	16 Aug 2001 28 Feb 2002	Communicat ions in English and Afrikaans
Malan	Roline	City of Calgary	Business Process Analyst	Assessment	27 May 2003 4 Jun 2003 23 Jun 2003	CAMA processes in Calgary
McAlpine	Scott	City of Calgary	Executive Assistant	Office of the City Assessor	27 May 2003 23 Jun 2003	CAMA processes in Calgary

McClung	Ian	City of Calgary	Chief City Assessor	Assessment	27 May 2003 23 Jun 2003 29 Jun 2004	CAMA processes in Calgary
McPetrie	James		Data Steward		6 May 2002	Valuation Processes in Calgary
Molner	Marnie	City of Calgary	Valuer	Assessment	23 Jun 2003	Valuation Processes
Moulder	Tim	Marriots	Valuation Manager		26 Feb 2003	Market Value Concepts
Partridge	Bob	City of Calgary	Assessment Research Specialist	Assessment	27 May 2003 4 Jun 2003 23 Jun 2003	CAMA processes in Calgary
Powers	Sally		CAMA Manager	Project Office	6 Aug 2001	CAMA management
Richardson	Mike		CEO of GV Project; Director: Finance			General Project management information
Robertson	Trevor	School Teacher	Plaintiff in case against the City		27 Oct 2003	Information regarding the case
Smoothey	Ian	City of Cape Town	CAMA modeller	Valuation and Property Taxation	Many times, informally and via email	CAMA modelling
Taczalski	Charlotta	South Peninsula	CAMA Co-ordinator	Seconded to Project Office	Jul 2001 6 Aug 2001	CAMA processes
Van Ryneveld	Philip	City of Cape Town	Director: Corporate Finance City of CT			Property taxation
Ward	Dick	Independent	Project Advisor	Consultant CAMA analyst	28 Aug 2001 17 Jun 2002 18 Jun 2002 20 Jun 2002 21 Jun 2002 6 Dec 2002	CAMA processes
Weichardt	Emil	Cape Town City Council	Property Valuations	Property Valuations	18 Dec 2000 2 Feb 2001	Property valuations,

			Manager		End Jul 2001 5 Oct 2001 11 Jul 2003 29 Jul 2003 25 Feb 2004	GV2000 Project, documentation
Wootton	Richard	Cape Town City Council	Legal Advisor	South Peninsula Legal Section	5 Mar 2003	Court cases, legal opinions given

Closed Project Meetings Attended

7 Feb 2001

21 Jun 2002

7 August 2002: Valuation Board member workshop.

3 Dec 2003

Organised Visits to Valuations Departments

18 Dec 2000: City of Cape Town

2 Feb 2001: City of Cape Town

End July 2001: City of Cape Town

6 Aug 2001: Project Office, City of Cape Town

5 Oct 2001: City of Cape Town

22 Feb 2002: Project Office, City of Cape Town

24 Oct 2002: City of Cape Town

27 May 2003: City of Calgary

6 June 2003: City of Calgary

23 Jun 2003: City of Calgary

11 Jul 2003: City of Cape Town

29 Jul 2003: City of Cape Town

25 Feb 2004: City of Cape Town

7 Apr 2004: City of Cape Town

29 June 2004: City of Calgary

Public Meetings Attended

22 Aug 2001: Muizenberg information meeting for councillors and rate payers associations of the South Peninsula

Informal Reviews:

28 Feb 2002: Visits to the informal valuation reviews at Langa, Khayelitsha, Portlands Mitchell's Plein, Cape Town, Stikland, Claremont, and Constantia.

Formal Reviews/Objections:

23 May 2002: Cape Town Podium Hall, Muizenburg Civic Centre (Pavillion)

Valuations Board Hearings Attended

5 November 2002

19 November 2002

20 November 2002

4 December 2002

3 July 2003

Cape High Court Hearings Attended

22 October 2003: Robertson/Truman Cases 4995/2003, 9507/02

27 October 2003: Robertson/Truman Cases 4995/2003, 9507/02

Primary Documents from the Property Valuations Office –

Confidential – list retained in the possession of the principal researcher.

Correspondence to and from the City –

Confidential – list retained in the possession of the principal researcher.

Confidential Correspondence between City and Project officials and the researcher – Confidential – list retained in the possession of the principal researcher.

Communications and Promotional Material

Title	Medium	Author/ group	Date
1999/2000 iNtegrated Serviced Land Project	Brochure	Caleb Consulting	
The City of Cape Town's Budget 2001/2002 Explained			June 2001?
Residents invited to review their values		T-Junction Communications Collective, Property Valuations Project	Nd – for informal reviews ± March 2002
Have your say on the new rates policy	Large format information sheet	T-Junction Communications Collective, City of Cape Town	
Draft Rates Policy Framework – advert	Cape Times	City of Cape Town	21 Mar 2002
How to calculate your rates and tariffs for 2002/2003	Southern Suburbs Tatler	City of Cape Town	6 June 2002
City of Cape Town 2002/2003 Tariffs and Charges – information and call for objections	Southern Suburbs Tatler	City of Cape Town	6 June 2002
Rates and Tariffs Policy	Cape Times and Cape Argus	City of Cape Town	20 June 2002
The City of Cape Town's new municipal account and budget 2002/2003 explained	Brochure	City of Cape Town	

Press Cuttings

Title	Newspaper	Author	Date
			1999
Rates rebellion looms for UniCity (front pg headline)	Cape Times		
Uys braves the prospect of a megacity	Cape Argus	Adrian Hadland	6 Aug 1999
Cape Town home owners face rates shock	Cape Argus	Troye Lund	11 Nov 1999
Cape Town home owners face rates shock	Originally in The Cape Argus	T Lund	22 November 1999, Published on Independent Online (IOL) http://www.iol.co.za
Expert Boost for Megacity land revaluing	Cape Argus	Troye Lund	13 Dec 1999
Expert Boost for Megacity land revaluing	Originally in The Cape Argus	T Lund	13 December 1999, Published on Independent Online (IOL) http://www.iol.co.za
			2000
Property owners fight rate increase law	The Star	Anna Cox	10 Apr 2000
New rates bill 'shock' awaits property owners	Originally in The Star	Na	1 August 2000, Published on Independent Online (IOL) http://www.iol.co.za
ANC's 'Robin Hood' plan will shift resources	Originally in The Cape Argus	M Williams	19 August 2000. Published on Independent Online (IOL) http://www.iol.co.za
Property tax reform has to be debated	Cape Times	R Bosomworth	21 Nov 2000

			2001
All suburbs to face 7% rates increase (front pg headline)	Cape Times	Ashley Smith	30 May 2001
All suburbs to face 7% rates increase	Cape Times	A Smith	30 May 2001
Rates decision a step backwards	Cape Times	Comment	31 May 2001
UniCity Budget targets the needy	Cape Times	Ashley Smith	31 May 2001
Rates Question needs analysis	Cape Times	Robin Bosomworth	1 June 2001
Rates question needs analysis	Cape Times	R Bosomworth	1 Jun 2001
GV Project set to make deadline	GV News, Internal Newsletter of the Property Valuation Project	GV Project Management Team (GVPMT)	May-June 2001.
Cape residents gang up against rates hike	Originally in the Cape Times	A Smith	17 June 2001. Published on Independent Online (IOL) http://www.iol.co.za
Rates rebellion looms for UniCity	Cape Times	A Smith	18 June 2001.
Tight controls leave little room for error	PVP News Vol 1. No. 4, The official newsletter of the Property Valuation Project	K MacKenzie	July/August 2001.
High praise as call centre strikes right note on resident queries	PVP News, Vol 1. No. 4, The official newsletter of the Property Valuation Project	Na	July/August 2001
Taxing task of adjusting rates	Cape Times Property Times section	S Bosch	9 Aug 2001
			2002
Municipal valuation roll nears completion	GV News, Internal Newsletter of the Property Valuation Project	GV Project Management Team (GVPMT)	February 2002.
Details of new property valuations to be available at end of this month	Cape Times	A Smith	15 Feb 2002
Days numbered for councillors who don't pay up	Cape Times	A Smith	15 Feb 2002

UniCity residents invited to see how their homes rate	Cape Times	na	15 Feb 2002
Death may not be the end of paying taxes	Originally in the Cape Times	A Smith	17 Feb 2002. Published on Independent Online (IOL) http://www.iol.co.za
Valuation runs into brick wall: 20% barred evaluators	The Cape Argus	E Sylvester	28 Feb 2002.
Check the value of your property	The Southern Suburbs Tatler	K Kotze	28 Feb 2002.
Cape Town residents nice – even when they're complaining	PVP News, Vol 1. No. 5, 3, The official newsletter of the Property Valuation Project	Na	Feb/Mar 2002
Mission accomplished – over 600 000 properties within the UniCity valued	PVP News, Vol 1. No. 5, 3, The official newsletter of the Property Valuation Project	M Saffer	Feb/ Mar 2002 not referenced?
Jobs may be cut to keep rates down	Originally in the Cape Argus	E Sylvester	5 Mar 2002. Published on Independent Online (IOL) http://www.iol.co.za
New valuations of all properties in UniCity to be posted on the net by next Thursday	Cape Times	T Weaver	6 Mar 2002.
Errors are the rule not the exception, Part 1	The Cape Times	"Goon2002"	7 Mar 2002
Errors are the rule not the exception, Part 2	The Cape Times	CMcShane	7 Mar 2002
Valuation process a Fiasco	The Cape Argus	P Van Der Spuy	7 Mar 2002
Taxing value of homes not a good idea	The Cape Argus	R Bosomworth	7 Mar 2002
City treads a fine line to create a fair rates policy that cares for the poor	Cape Times	M Nicol	11 Mar 2002
There are simpler alternatives for determining property rates	Cape Times	D Sparks	12 Mar 2002

Simpler, better	Cape Times	D Stephan	12 Mar 2002
It's time to debunk the urban myth of South Africa's culture of non-payment	Cape Times	D MacDonald	14 Mar 2002
Due process	Cape Times	R Bosomworth	15 Mar 2002
New rates policy is six months away but property owners have nothing to fear – multi-party team	Cape Times	E Ntabazalila	15 Mar 2002
Rates Fears	Cape Times	J Maxwell	20 Mar 2002
Mobilizing on rates	Cape Times	GT Robertson	19 Apr 2002
Public has its say on new rates policy	PVP News, Vol 1. No. 6, 1, The official newsletter of the Property Valuation Project	Na	May/June 2002
Citing city's most valuable properties	PVP News, Vol 1. No. 6, 3, The official newsletter of the Property Valuation Project	Na	May/June 2002
Thanks to valuers valuation process ran like clockwork	PVP News, Vol 1. No. 6, 3, The official newsletter of the Property Valuation Project	Na	May/June 2002
Provisional Property Valuation Roll set to be released for public inspection	PVP News, Vol 1. No. 6, 4, The official newsletter of the Property Valuation Project	Na	May/June 2002
After a successful valuation process the burning question moves to rates	PVP News, Vol 1. No. 6, The official newsletter of the Property Valuation Project	M Saffer	May/June 2002
Residents give thumbs-up to historic valuation project	PVP News, Vol 1. No. 6, 4, The official newsletter of the Property Valuation Project	M Saffer	May/June 2002
D-day for Cape Town's new rates regime	Cape Times	A Smith	8 May 2002.
Don't cause a rates panic	Opinion Article in the Cape Times	Na	9 May 2002.

New rates system may bring relief to the poor	Cape Times	A Smith	10 May 2002.
Rates policy challenged in high court	Cape Times	A Smith	10 May 2002.
Our R195bn city: Valuation puts Clifton on top of the pile	The Cape Argus	E Sylvester	13 May 2002.
Rates policy must strike a balance between conflicting interests	Cape Times	P Gabriel (ANC UniCity caucus Chief Whip) (2002)	14 May 2002.
Details of valuations are in the bag – so check your postbox	Cape Times	J Crocker	16 May 2002
Too taxing	Cape Times	M Sampson	16 May 2002
Valuation warning	Cape Times	DBM White	16 May 2002
Simple Solution	Cape Times	G Isaacson	16 May 2002
Implementation of valuation, rating system a victory	Cape Times	P Gabriel, S Mowzer, L Rencontre	17 May 2002.
Some sticky questions on our general valuation methodology	Cape Times	R Jensen	22 May 2002
Cape council deadlocked over new rates policy	Originally in The Cape Argus	E Sylvester	21 May 2002. Published on Independent Online (IOL) http://www.iol.co.za
Morkel calls off crucial rates indaba	Originally in The Cape Argus	E Sylvester	21 May 2002. Published on Independent Online (IOL) http://www.iol.co.za
Party politics threaten rates increases	Originally in The Cape Times	A Smith	21 May 2002. Published on Independent Online (IOL) http://www.iol.co.za
Valuations call centre answers most commonly asked questions	Cape Times	Cape Times Staff writer	24 May 2002
Putting the rand in the rates	Opinion Article in the Cape Times	Na	28 May 2002.
Cape Town faces challenge to rates policy	Originally in The Cape Times	A Smith	27 May 2002. Published on

			Independent Online (IOL) http://www.iol.co.za
New general valuation puts all property owners on equal footing	Cape Times	J Crocker	27 May 2002
Rates policy challenged in high court	Cape Times	A Smith	28 May 2002
New Western Cape rates announced	Originally in The Cape Argus	J Yeld	29 May 2002. Published on Independent Online (IOL) http://www.iol.co.za
New rates…nightmare or dream come true?	Cape Times	A Smith	30 May 2002
How to work out just how much you will now pay	Cape Times	Na	30 May 2002
Some homeowners may have to sell, estate agents warn	Cape Times	E Ntabazalila	30 May 2002
New rates will force us to sell, say some	Originally in The Cape Argus	L Johns	30 May 2002. Published on Independent Online (IOL) http://www.iol.co.za
Rates for poor slashed	Originally in The Cape Argus	na	30 May 2002. Published on Independent Online (IOL) http://www.iol.co.za
100 000 city properties will pay no rates at all	Cape Times	A Smith	31 May 2002.
Rates 'arbitrary'	Cape Times	B Keane	4 Jun 2002
Taxes just a land grab	Cape Argus	GT Robertson	4 Jun 2002
Unfair comparisons	Cape Times	N Bronte	6 Jun 2002
Rich tactics for rates	Cape Times	EW Vincent	6 Jun 2002
Ratepayers must unite	Cape Times	G Nixon	10 Jun 2002
Mysteries of Valuation	Cape Times	N Bronte	11 Jun 2002
New rates system gives uniform rebates to senior citizens, disabled	Cape Times	E Ntabazalila	11 Jun 2002
Old Tricks	Cape Times	E Kelly	12 Jun 2002
We are being taxed to death.	Cape Times	J Maxwell	13 Jun 2002

Cape Town rates increases erode the integrity of SA's tax system	Business Report	"Concerned ratepayer"	13 Jun 2002
Rates justice comes home to roost	Cape Argus	Joe Klaasen	14 Jun 2002
Elderly suffering	Cape Times	L O'Neill	18 Jun 2002
Equal rights for bins	Cape Times	"W H Eelie"	18 Jun 2002
Nice recovery	Cape Times	L Hunter	20 Jun 2002
'Fair' rates system is riddled with anomalies	The Southern Suburbs Tatler, Off My Trolley	B Joss	20 Jun 2002
Parliament seeks to close loophole in rates legislation	Cape Times	SAPA	20 Jun 2002
Valuation Vagaries	Cape Times	S Strasser	24 June 2002
Friday deadline to challenge new rates	The Cape Argus	Metro Reporter	25 Jun 2002
Rates complaints	Cape Times	Mike Richardson, GV Project Manager	26 Jun 2002
Flat owners to get new rates rebate immediately	Cape Times	Eric Ntabazalila	26 Jun 2002
Arbitrary tax	Cape Times	R Bosomworth	28 Jun 2002
Council delivers on rebates and levies	Cape Argus	E Sylvester	28 Jun 2002
Flat footed	Cape Times	R Jensen	28 Jun 2002
Valuation blackout	Cape Times	RCD Hutchings	3 Jul 2002
Inaccurate Valuations lead to shock rates hikes for some	Cape Times	L Van Zilla	29 Jul 2002
Time for a rethink	Cape Times	Des White (RAG)	17 Jul 2002
Rightfully ours	Cape Times	R Marais	17 Jul 2002
Council found out mistake cost R38 m	Cape Argus	E Sylvester	23 Jul 2002
Hidden costs	Cape Times	EJ Tyson	26 Jul 2002
Residents angry at 'mistakes' in rates	Cape Argus	M Gophe	26 Jul 2002
City relents on sectional title rebates	Cape Argus	Metro Correspondent	27 Jul 2002
Inaccurate valuations lead to shock rates hikes for some	CapeTimes	L Van Zilla	29 Jul 2002
Rebate rethink will be a mistake	Cape Argus	Na	31 Jul 2002
Deferring payment of disputed rates would store up trouble	Cape Times	Mike Richardson, Director of	31 Jul 2002

		Finance, CCT	
Cape Town to go ahead with 'unlawful' rates	Cape Times	E Ntabazalila	5 Aug 2002 Published on Independent Online (IOL) http://www.iol.co.za
Fees or taxes	Cape Times	A Logue	6 Aug 2002
Council is confused	Cape Argus	N Beattie	6 Aug 2002
Overpriced rubbish	Cape Times	N Behardien	14 Aug 2002
Our rates are a rip off	Cape Argus	Unfairly charged	20 Sep 2002
4500 evade rates net	Cape Argus	M Gophe	20 Sep 2002
Cape Property Court slashes municipal values	Cape Times	A Smith	25 Sep 2002
Cape Town Rates Dispute Goes to Parliament Today		RAG	Week of the 21st Oct 2002/
New Tax	Cape Times	R Bosomworth	28 Oct 2002
Property Bill aims to consolidate systems	Business Report	R Cokayne	22 Nov 2002, Published on Independent Online (IOL) http://www.iol.co.za
New rates bring equity based on property values	Cape Argus	J Manche, Dept Dir-Gen, Dept Prov and L.Government	2 Dec 2002 Published on Independent Online (IOL) http://www.iol.co.za
For sale: your personal details	Cape Argus	E Sylvester	23 Dec 2002 Published on Independent Online (IOL) http://www.iol.co.za
			2003
Homeowners unhappy with valuations will have to pay to have them redone	Cape Times	A Smith	15 Jan 2003
Property owners object to bill's valuation system	Business Report	R Cokayne	12 Feb 2003 Published on Independent Online (IOL)

			http://www.iol.co.za
Rates increase unacceptable	Atlantic Sun	H Benjamin	22 May 2003
Countrywide property rates plan mooted	The Mercury (Natal)	B Madlala	18 Jun 2003 Published on Independent Online (IOL) http://www.iol.co.za
Fury over 100% rates rise in the Western Cape	Cape Argus	L Johns	2 Jul 2003 Published on Independent Online (IOL) http://www.iol.co.za
Cape Town home values soar 30% in a year, survey finds	Cape Times	A Smith	28 Jul 2003
Cape rates officials working back to front	Cape Times	L Van Zilla	30 Jul 2003
Ratepayers see red over steep hike in sewerage charges	Cape Times	L Van Zilla	30 Jul 2003
City council must come clean on reason for 'sewerage' rate increase	Cape Times	H Farrow	11 Aug 2003 Published on Independent Online (IOL) http://www.iol.co.za
This is why there is a new sanitation tariff	Weekend Argus	Councillor Saleem Mowzer	30 Aug 2003
Vote with your wallet on rates charges	Weekend Argus	M Frontini	30 Aug 2003
Interim municipal valuations followed correct procedure	Weekend Argus	Alderman Maatje Ellman	30 Aug 2003
Soaring sewerage charges enough to make you "sewercidal"	Southern Suburbs Tatler	B Joss	18 Sep 2003

APPENDIX B: INFORMAL AND FORMAL REVIEW FORMS

CITY OF CAPE TOWN PROPERTY VALUATION PROJECT

INFORMAL REVIEW OF RESIDENTIAL PROPERTIES9

To the: Interim Valuation Manager

FEEDBACK ON ANY MATTER ENTERED ON THE DRAFT PROVISIONAL VALUATION ROLL

Name of owner: .....

Erf number and address of property:

Erf no.: .....

Address: .....

E-mail address: ..... Daytime tel no: .....

I consider the valuation of the property to be incorrect and request that the valuation be replaced by the following entry:

Value of property: R .....

The folowing data in respect of the property is incorrect:

Tick item in dispute	***Correct data***
☐ Common walls	
☐ Dwelling Extent	
☐ Dwelling Storeys	
☐ External Walls	
☐ Roof Covering	
☐ Living Areas	
☐ Bedrooms	
☐ Bathrooms 4+ Fixtures	
☐ Bathrooms 3 Fixtures	
☐ Bathrooms 2 Fixtures	
☐ Bathrooms 1 Fixtures	

	Attach	*Detach*
☐ Garage		
☐ Granny Flat		
☐ Servants Quarters		
☐ Swimming Pool		

Remarks: .....

.....

.....

DATE: ..... SIGNATURE OF OWNER: .....

CITY OF CAPE TOWN
STAD KAAPSTAD
ISIXEKO SASEKAPA

Property Valuation Project
Eiendomswaardasieprojek
Projekthi Yoqingqo Maxabiso Ezindlu

P O Box 4522 • Cape Town • 8000 • Telephone (021) 415 - 8460 Fax (021) 421 – 1004

Olu nxibelelwano luyafumaneka nangesiXhosa xa ulufuna

Name and address of owner / Naam en adres van eienaar:

Mrs Jf Whittal
21 Marne Avenue
Claremont
7708

LOCAL AUTHORITY: CITY OF CAPE TOWN

PLAASLIKE OWERHEID: STAD KAAPSTAD

NOTICE TO OWNER OF PARTICULARS OF PROPERTY ENTERED ON THE PROVISIONAL VALUATION ROLL FOR THE FINANCIAL YEAR 2002/2003.

(REGULATION 14)

In terms of the provisions of section 15(2) of the Property Valuation Ordinance, 1993, I herewith furnish the particulars as stipulated in section 9 of the Ordinance, which are applicable to the under mentioned property included in the above-mentioned provisional valuation roll.

KENNISGEWING AAN EIENAAR VAN BESONDERHEDE VAN EIENDOM WAT OPGETEKEN IS IN DIE VOORLOPIGE WAARDASIELYS VIR DIE BOEKJAAR 2002/2003.

(REGULASIE 14)

Ingevolge die bepalings van artikel 15(2) van die Ordonnansie op Eiendomswaardering, 1993, verstrek ek hiermee die besonderhede, soos in artikel 9 van die Ordonnansie bepaal, wat van toepassing is op die onderstaande eiendom wat in die bogenoemde voorlopige waardasielys ingesluit is.

1)	Registered or other description of the property: (e.g.: Unique Reference number, Allotment and Erf number)	CCT0108064 CAPE TOWN50783	1) Geregistreerde of ander beskrywing van die eiendom: (bv: Unieke Verwysings nommer, Toekennings gebeid en Erf nommer)
2)	Extent of the land	743	Grootte van die grond
3)	Improved value	R. 450000	Verbeterede waarde
4)	Site value	R 190000	Terreinwaarde
5)	Value of improvements	R 260000	Waarde van verbeterings

Yours faithfully / Die uwe,

CITY MANAGER / STADSBESTUURDER

10 May 2002
DATE / DATUM

(Owners are advised to bring this notice when visiting venues to assist with identification of property.)

(Eienaars wat lokale gaan besoek word aangeraai om hierdie kennisgewing saam te bring om identifisering van eiendomme te vergemaklik.)

0252661

CITY OF CAPE TOWN
STAD KAAPSTAD
ISIXEKO SASEKAPA

Property Valuation Project
Eiendomswaardasieprojek
Projekthi Yoqingqo Maxabiso Ezindlu

P O Box 4522 • Cape Town • 8000 • Telephone (021) 415 – 8460

Olu nxibelelwano luyafumaneka nangesiXhosa xa ulufuna

LOCAL AUTHORITY: CITY OF CAPE TOWN

NOTICE CALLING FOR OBJECTIONS TO THE PROVISIONAL VALUATION ROLL: 2000 GENERAL VALUATION

(REGULATION 12)

NOTICE is hereby given that in terms of section 15(1) of the Property Valuation Ordinance, 1993 the Provisional Valuation Roll of the City of Cape Town for the financial years 2002/3 is open to inspection at the venues as reflected on the reverse side of this document.

(1) The owner of any property recorded on such roll may, in terms of the provisions of section 16 of the said Ordinance, object to the valuation placed on his property, and such objection must reach the City Manager before the 28th June 2002. The prescribed form for the lodging of an objection is available at the venues mentioned on the reverse side. Your attention is specifically focused on the fact that no person is entitled to raise any objection before the Valuation Board unless he has lodged an objection in time on the prescribed form.

An owner also includes a proxy, as defined in section 1 of the Ordinance.

2) Address of local authority:

The City Manager
For attention: The Valuation Board
Secretary
P.O. Box 4522
Cape Town
8000

PLAASLIKE OWERHEID: STAD KAAPSTAD

KENNISGEWING WAT BESWARE TEEN VOORLOPIGE WAARDASIELYS AANVRA: 2000 ALGEMENE WAARDASIE

(REGULASIE 12)

KENNIS word hierby ingevolge artikel 15(1) van die Ordonnansie op Eiendomswaardering, 1993 gegee dat die voorlopige waardasielys vir die boekjaar 2002/2003 ter insae lê in die lokale soos vermeld op die agterkant van hierdie dokument.

1) Die eienaar van enige eiendom wat in sodanige lys opgeteken is, kan ingevolge die bepalings van artikel 16 van genoemde Ordonnansie beswaar aanteken teen die waardasie wat op sy eiendom geplaas is, en sodanige beswaar moet die Stadsbestuurder voor 28 Junie 2002 bereik. Die voorgeskrewe vorm vir die indiening van 'n beswaar is by die lokale soos op die agterkant vermeld, beskikbaar. U aandag word spesifiek gevestig op die feit dat geen persoon geregtig is om enige beswaar voor die Waardasieraad te opper nie tensy hy 'n beswaar op die voorgeskrewe vorm betyds ingedien het.

'n Eienaar sluit ook 'n gevolmagtigde soos omskryf in artikel 1 van die Ordonnansie in.

2) Adres van die kantoor van die plaaslike owerheid:

Die Stadsbestuurder
Vir aandag: Die Waardasieraad Sekretaris
Posbus 4522
Kaapstad
8000

.....
CITY MANAGER / STADSBESTUURDER

10 May 2002
.....
DATE / DATUM

CITY OF CAPE TOWN

PROPERTY VALUATION PROJECT

OBJECTION PROCESS

The values reflected on the City's valuation roll are primarily based on sales of properties that took place around the date of valuation, namely 1st January 2000. The approach of using comparable sales to determine the market value of property is accepted by the Courts in South Africa.

Whilst the City Council cannot assume the role of advisor to property owners wishing to submit objections to valuations, it is aware of the difficulty confronting property owners in dealing with this process.

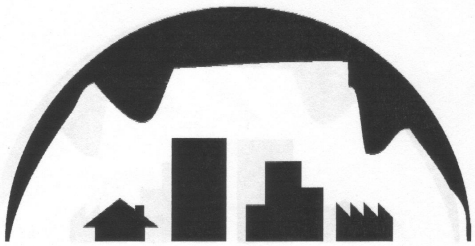
To assist property owners, the City Council can only provide advice to the extent that primarily the success of an objection lies in the merits of comparisons drawn between properties sold and the property to which the objection is raised. What must be proved to the Valuation Board is that the value is incorrect. Comparisons between your property and neighbouring properties do not necessarily provide evidence that your value is incorrect. Property owners should therefore use comparable sales in the area to formulate and substantiate objections.

To assist owners with the aforementioned process, all sale transactions between 01/01/1999 and 30/06/2000 have been made available at the venues.

Although the amount of rates that you will pay is based on the valuation of your property, the increase in value does not necessarily mean that the rates will increase proportionally. However, the fact that you are unhappy with the amount of rates that you will be asked to pay does not constitute grounds for objecting to the valuation and any objection must be levelled at the actual valuation and must comply with the terms of the official objection form.

Once an objection has been lodged, the property will be inspected by an official of the City Council to verify all data held on our records. If the Council supports the objection, the property owner will be contacted and the Council will request the Valuation Board to make the necessary changes.

The closing period of objections is 28/06/2002. Objection forms are available at the published venues and the City's six Valuation Offices.



Olu nxibelelwano luyafumaneka nangesiXhosa xa ulufuna

Owners Address: .....

.....

.....

.....

Phone No: .....

City Manager – For attention Valuation Board Secretary

OBJECTION TO ANY MATTER ENTERED ON THE PROVISIONAL VALUATION ROLL

Name of objector: .....

Registered description or other description of property in respect of which an objection is lodged –

.....

Property Reference No: .....

Name of township area/agricultural small holding/ farm:.....

I object to the following entry on the provisional valuation roll as contemplated in section 16 of the Property Valuation Ordinance, 1993:

Improved value : .....

Site value: .....

Value of improvements: .....

Extent of land: .....

I request that the above-mentioned entry be replaced by the following entry:

Improved value : .....

Site value: .....

Value of improvements: .....

Extent of land: .....

My objection is based on the following grounds:
(Full reasons must be given in support of any objection and an annexure may be used if necessary)

.....

.....

.....

.....

I declare that I purchased the property on ...../...../..... with improvements/without improvements

for R .....

IT IS MY INTENTION TO APPEAR IN PERSON/BY PROXY

....

SIGNATURE OF OBJECTOR DATE

Notes:

1. The information requested regarding the purchase price of the property must be given, whether or not registration of transfer has taken place.
2. A separate form must be completed for every taxable property on the provisional valuation roll in respect of which an objection is lodged.
3. The objection can be rejected if this form is not duly completed or contains false information.
4. A person who willfully furnishes false information on this form is guilty of an offence in terms of section 16(4) of the Ordinance.

(NOT TO BE COMPLETED BY THE OBJECTOR).

Decision by valuation board: OBJECTION NO. .....

Improved value: .....

Site Value: ....

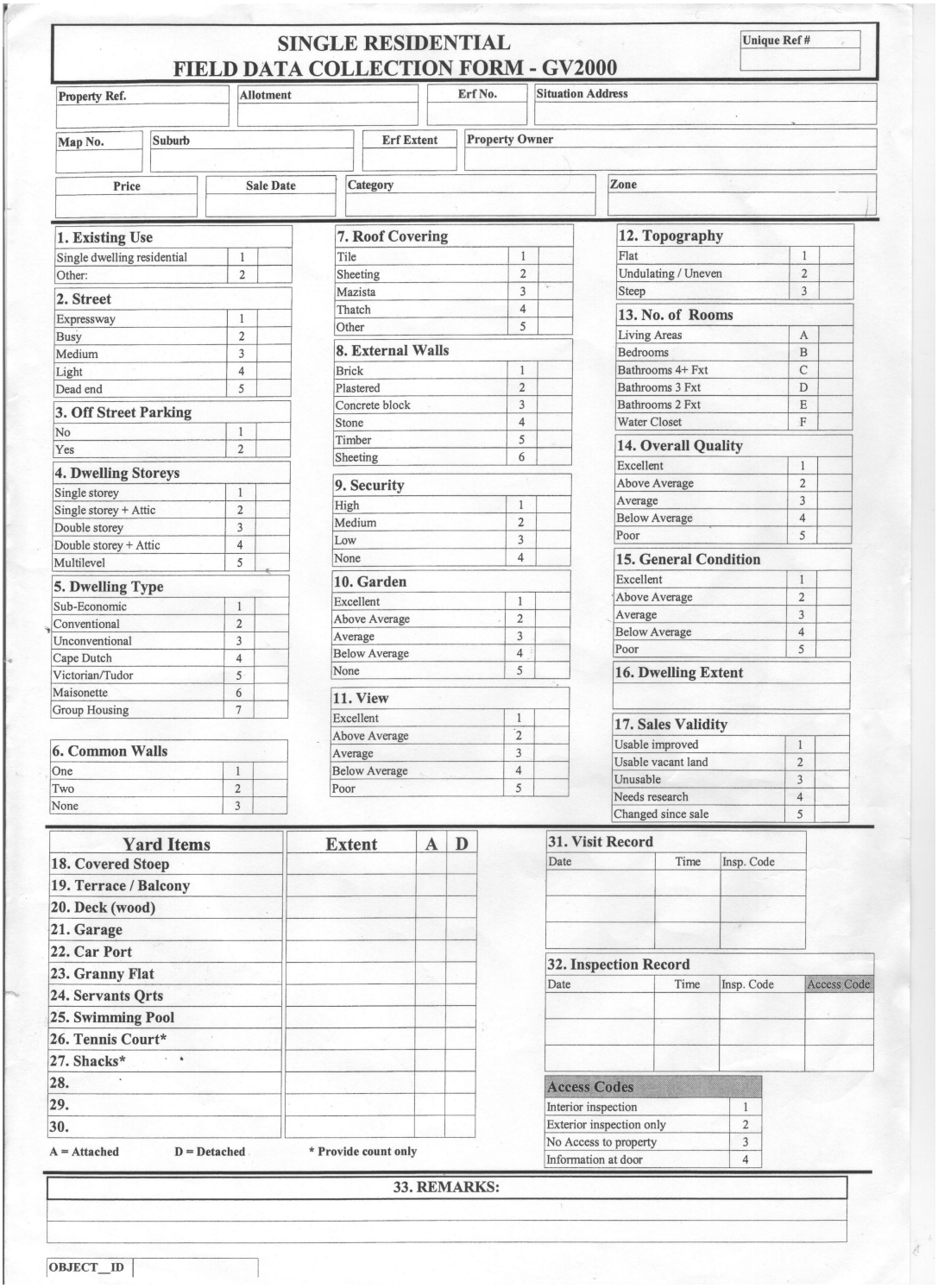
Value of Improvements: ..... CHAIRMAN OF VALUATION BOARD

Extent of land: .....

.....

DATE

APPENDIX C: DATA COLLECTION FORM



SINGLE RESIDENTIAL
FIELD DATA COLLECTION FORM - GV2000

Unique Ref #

Property Ref.	Allotment	Erf No.	Situation Address

Map No.	Suburb	Erf Extent	Property Owner

Price	Sale Date	Category	Zone

1. Existing Use

Single dwelling residential	1	
Other:	2	

2. Street

Expressway	1	
Busy	2	
Medium	3	
Light	4	
Dead end	5	

3. Off Street Parking

No	1	
Yes	2	

4. Dwelling Storeys

Single storey	1	
Single storey + Attic	2	
Double storey	3	
Double storey + Attic	4	
Multilevel	5	

5. Dwelling Type

Sub-Economic	1	
Conventional	2	
Unconventional	3	
Cape Dutch	4	
Victorian/Tudor	5	
Maisonette	6	
Group Housing	7	

6. Common Walls

One	1	
Two	2	
None	3	

7. Roof Covering

Tile	1	
Sheeting	2	
Mazista	3	
Thatch	4	
Other	5	

8. External Walls

Brick	1	
Plastered	2	
Concrete block	3	
Stone	4	
Timber	5	
Sheeting	6	

9. Security

High	1	
Medium	2	
Low	3	
None	4	

10. Garden

Excellent	1	
Above Average	2	
Average	3	
Below Average	4	
None	5	

11. View

Excellent	1	
Above Average	2	
Average	3	
Below Average	4	
Poor	5	

12. Topography

Flat	1	
Undulating / Uneven	2	
Steep	3	

13. No. of Rooms

Living Areas	A	
Bedrooms	B	
Bathrooms 4+ Fxt	C	
Bathrooms 3 Fxt	D	
Bathrooms 2 Fxt	E	
Water Closet	F	

14. Overall Quality

Excellent	1	
Above Average	2	
Average	3	
Below Average	4	
Poor	5	

15. General Condition

Excellent	1	
Above Average	2	
Average	3	
Below Average	4	
Poor	5	

16. Dwelling Extent

17. Sales Validity

Usable improved	1	
Usable vacant land	2	
Unusable	3	
Needs research	4	
Changed since sale	5	

Yard Items	Extent	A	D
18. Covered Stoep			
19. Terrace / Balcony			
20. Deck (wood)			
21. Garage			
22. Car Port			
23. Granny Flat			
24. Servants Qrts			
25. Swimming Pool			
26. Tennis Court*			
27. Shacks*			
28.			
29.			
30.			

A = Attached D = Detached * Provide count only

31. Visit Record

Date	Time	Insp. Code

32. Inspection Record

Date	Time	Insp. Code	Access Code

Access Codes	
Interior inspection	1
Exterior inspection only	2
No Access to property	3
Information at door	4

33. REMARKS:

OBJECT_ID

APPENDIX D: COMPUTER ASSISTED MASS APPRAISAL (CAMA)

Single property appraisal is the valuation of a particular property at a given date, whereas mass appraisal is the systematic appraisal of a group of properties as at a given date using standardised procedures. Mass appraisal is preferred to single appraisal because it provides a platform for a uniform and consistent approach in the valuation process, and the potential for cost reduction is high (McCluskey *et. al*., 1997; Ward, 2001).

The aspects of market analysis, valuation, and particularly quality control are different with single versus mass appraisal. Quality control is performed using sales comparison, no matter what method of valuation (cost, income, and capital) is used, in the case of single property appraisal. In the case of mass appraisal, statistical methods of quality control are applied. However, in both methods, disputes are resolved using evidence of sales comparison – statistical output from mass appraisal is not sufficient evidence of market value in court. Therefore mass appraisal requires dual expertise.

Interested and affected parties in single appraisal are the property owner and the local authority, whereas in mass appraisal interested and affected parties are all taxpayers and taxing bodies and fairness/equity and legality across large areas must be shown.

Mass appraisal comprises of three functions which are (Eckert *et al.*, 1990):

- *Reappraisal* – it enables an existing appraisal system to be upgraded based on past performance (i.e. sales ratio studies). The ratios assist decision makers to assess whether a reappraisal is necessary or not.
- *Data Maintenance* – involves capturing and maintaining property data. Re-inspection of properties is conducted after a period of time to check if data in the database is consistent with what is on the ground.
- *Value Updates* – it involves the revaluation of property values and is usually conducted on an annual basis, using market trends such as inflation or deflation.

The use of computers to manage mass appraisal systems gives rise to what is termed Computer Assisted Mass Appraisal (CAMA) systems (Eckert *et al.*, 1990). CAMA is conceptualized as a system whose main purpose is estimating the value of certain real property using statistical analysis techniques such as Multiple Regression Analysis (MRA) and Adaptive Estimation Procedure (AEP) (Eckert *et al.*, 1990). Mathematical models, which can be thought of as a function relating the sale price to the property variables, are the "backbone" of CAMA systems. CAMA is a relational database management system (RDBMS), which comprises subsystems (Eckert *et al.*, 1990):

- *Data Management System* – this section is responsible for data collection, manipulation and storage.
- *Sales Analysis System* – sales collection, screening, processing, ratio studies, sales reporting.
- *Valuation System* – here model specification and calibration are performed – uses MRA/AEP/automated sales analysis
- *Performance Analysis System* – this section monitors the effectiveness of the mass appraisal system through sales ratio analyses.
- *Administrative System* – this system is responsible for planning, taxation and appeals from the public.

A CAMA system is understood to include all aspects of information (collection of real data) management analysis and modelling for the purposes of property valuation. A CAMA system is thus a part (subsystem) within the fiscal cadastral system. This conception of the CAMA system is purely material/technical, and falls within our understanding of information technology (IT) rather than information systems (IS). It is thus impoverished in its inability to take into consideration adequately the subjectivity in data collection, modelling and analysis – all of which have strong elements of subjectivity inherent in their operation.

Property characteristics data is essential in CAMA modelling and can be qualitative or quantitative. Most qualitative variables are subjective in that they rely on a human being ascribing meaning to what he or she perceives of the real world situation. This perception is classified into predefined, non-ranked classes, such as would be used when describing variables such as the type of wall structure as wood, brick, or corrugated iron. Such data is termed nominal data. Ordinal data is classified in a system in which rank is important. The observer ascribes meaning to his or her perception by classification into a predefined class. An example is the building quality variable which is classified into 5 classes with rank: excellent, above average, average, below average and poor. Binary classifications can be ordinal or nominal, and consist of only two classes – yes and no, for example whether a property has a garage or not. Qualitative data is mathematically transformed from its discrete form (e.g. from excellent to poor) into scalar (linear) values for effective manipulation with the quantitative variables in a mathematical model such as is used in CAMA (see Musekiwa, 2004).

Quantitative variables are empirical and ideally objective (when correct tools and procedures are used), and can be classified into two groups, discrete data and continuous data. Discrete data is generally an integer count of certain features such as bathrooms, whereas continuous data can have any real value, such as floor area. Quantitative variables are also often transformed in order to improve their usefulness in mathematical modelling. Transformations such as multiplicative, reciprocal, logarithmic, quotient and exponential are often used (Musekiwa, 2004).

For reliable estimates of the market value of property to be arrived at there is a need to evaluate the quality and quantity of the data used in the estimation process. Data quality refers to the currency, completeness and accuracy of the data collected, and can never be entirely objectively measured when understood from a critical realist perspective. Data quantity, however, simply refers to the amount of data available or that needs to be collected (Gloudemans, 1999). Obviously a sample of 100% of the data required will lead

to the "best possible" (not perfect) model, and as the data set shrinks from this ideal, the predictive ability of the model is expected to deteriorate.

Exploratory data analysis is conducted on the sales and property characteristics data. This is reflective, and aims to increase the structural coupling between the modeller, and the real world environment he/she is attempting to model. It is therefore a theoretically very important step in the process of CAMA. Further, it allows for erroneous data to be filtered out. The purpose of this step is to obtain sales data which reflect accurately the arms length sales prices paid for real property. The actual sales data are sometimes recorded by a branch of government most often only if the sale itself is taxed. They must be verified as "good" i.e. that they were true arm's length sales and are considered indicative of market value. All bad sales are excluded from the estimation process. Various mathematical and statistical processes such as stratification, multivariate analysis, and correlation are used in this phase, and are well explained in Musekiwa (2004). In order to perform this function as well as possible, an in-depth knowledge of the social, economic, and political features of the area are important, and the modeller should ideally be of local origin in order to have this awareness and sensitivity. So, although objective methods are used in the exploratory data analysis phase, additional subjective knowledge is required in order to effectively filter out unwanted data.

Valuations are usually based on the market value at a particular date. This is by nature retrospective, as actual sales data is always historic. As few actual sales would have been effected on that date, a range of dates either side of the chosen base date is used, within which sales are used for that valuation cycle. These sales are then reduced back or forward to the chosen base date using a suitable property value inflation indicator which describes the typical increase, or decrease, in value which can be expected over that time. A compound, or constant (straight line) approach can be used, the former being accepted as more useful.

As the information on property sales is modified from its original form, I will hereafter refer to them as quasi-sales data. Literature on the subject does not make this rather important distinction. Obviously these time adjustments are a primary phase of modelling, and essentially lead to a quasi-sales data set on which property value modelling is performed. Decreased model precision and additional errors are thus expected particularly as inflation indices are averages, and certain classes of property may be adversely affected by their application.

CAMA and mathematical modelling

Mathematical models vary from being simple verbal or algebraic statements, to very complex mathematical equations. A model consists of a dependent variable, and at least one independent variable. In CAMA, models are used to estimate the market value of real property. The sale price (SP) of real property is the dependent variable, while the property characteristics are the independent variables. A simple property valuation model is represented below:

$$MV = IV + LV$$

This can be further extended to include land and building factors as below:

$$MV = GQ\left[\left(BQ * \sum BA\right) + \left(LQ * \sum LA\right) + \sum OA\right]$$

In which

MV estimated market value

IV improvement values

LV land values

GQ general qualitative factors such as location

BQ building qualitative factors such quality of dwelling

BA building additive factors such as total living area

LQ land qualitative factors such as topography

LA land additive factors such as property extent

OA other additive factors such as swimming pools

Model testing is generally performed by experienced valuers (noting that this acknowledges that the process has an element of subjectivity) through site visits and simple comparisons to actual sales of similar properties. However, there are two main processes involved with modelling for CAMA – those of model specification and model calibration. Model specification is the setting up of the mathematical relationship between the independent variables (property characteristics) in such a way that this relationship can be equated to the quasi-sales data set, and which is explainable in terms of knowledge of the real world situation (as judged by knowledge of experienced valuers). Model calibration is the process of ascribing coefficients to the independent variables using the quasi-sales data and property characteristics. There are two main CAMA modelling principles: explainability and accuracy. In other words, the model must be defensible from a logical valuation perspective and must yield small residuals when applied to the quasi-sales data and property characteristics data sets. There are three different types of valuation models, additive, multiplicative, and hybrid. These are covered in detail in Musekiwa (2004) and Gloudemans (1999). Multiple Regression Analysis (MRA) is usually used in model calibration, and is used in CAMA.

Multiple regression analysis is a standard mathematical/statistical technique for model calibration and is used to analyze the straight line relationship between two or more variables. Quasi-sales data is analyzed to determine individual contributions to market value, which are expressed as the coefficients of these variables, and are given by the b_i terms below:

$$\hat{S} = b_0 + b_1 x_1 + ... + b_n x_n$$

Where the x_i terms represent the independent (predictor) variables, and $\hat{S}$ is the estimated sale price. The methods of least squares is a common approach to solving the MRA problem, and involves determining the set of coefficients (*b's)* which minimize the sum of the squares of the residuals – the residuals are given by *e* and are formed by differencing

the quasi-sale price with the model-generated market values, for that dataset. In general, this can be expressed by the following formula:

$$\sum_{i=1}^{n} e_i^2 = \sum_{i=1}^{n} \left(S_i - \hat{S}\right)^2$$

Where

$\hat{S}$ is the estimated market value of the property.

S is the sale price

e are the residuals

Obviously, with a perfectly consistent set of data, a perfect model can be generated, and the residuals will become zero. So, the smaller the value of $\sum_{i=1}^{n} e_i^2$, the better the regression analysis.

As modelling is essential based on predictive ability, it favours the typical case and prejudices the atypical case. Thus properties with similar characteristics are likely to be better represented by the model than properties which are quite different.

MRA models are sensitive to certain conditions which, if not met, can lead to instability of the model generated, and hence poor predictability of the model. One of the most fundamental of these is that the data (including the quasi-sales data) should be both complete and accurate. Linearity is a condition in which the coefficient is constant over the range of that variable – i.e. data for that variable should plot as a straight line over the applicable range. Unfortunately, various variables contribute to market value in non-linear ways. Bivariate (two variables) scatter plots of variables of interest will reveal non-linear relationships. Relationships which are non-linear are linearized using a logarithmic transformation. Another important condition for MRA is that of additivity – i.e. that each variable is independent from the others in its contribution to market value. This only affects

additive models, and not multiplicative or hybrid ones, in which this assumption is included. In an additive model which exhibits non-additivity of the variables, a quotient or multiplicative transformation can be applied. Normally distributed (Gaussian) residuals are inherent in the assumptions underlying least squares as a solution to multiple regression problems. Non-normal error patterns may be caused by incorrect model specification or poor data. Homoscedasticity is a term used to describe the equal treatment of the model over the full range of property variables – i.e. the model is equally good (constant variance) no matter what property it is being applied to (Eckert, 1990). A plot of the regression residuals against any independent variable will reveal if homoscedasticity is an issue – the plot of the points should form a cloud of equal width either side of the straight regression line over the range of the variable. If this is not true, the model is said to exhibit hetereoscedasticity, and predictability at certain ranges of the variable in question will be poor. Non-colinearity is a further condition for MRA, and if certain variables are not independent, multicollinearity will result. This occurs more easily if too many variables are added to the model, and is revealed in the analysis of the correlation matrix which results from the least squares MRA solution. Representativeness is perhaps the most philosophically interesting precondition for MRA, in that it refers to the closeness of the model design to the real situation. Poor representativeness of the model specification and calibration is due to the subjective understanding of the modellers of the factors, and their interrelationship, which contribute to property value in the real world. Representivity can never, in accordance with critical realism, be perfect as it is always a function of the structural coupling of the observer (or group of observers) and the real world. This understanding of the nature of real world relationships as they pertain to property valuation is improved by a process called stepwise regression, as well as by correlation analysis. These processes are well covered in Musekiwa (2004) and Eckert (1990).

Statistical Evaluation of MRA Results

This section focuses on the mathematical evaluation of the accuracy of predictive CAMA models. Eckert *et al.* (1990) gives a detailed description of the calculation and meaning of various measures of evaluation. In single property valuation, evaluation of the assessment is

in terms of small sample (about 5) comparative properties which have sold recently. In mass appraisal however, statistical measures are used to evaluate the quality of the assessment, and enable evaluation of the model as a whole. The most well known method of determining the predictive strength of the model is comparison between the determined market value and the quasi-sales data for each property. These values are divided and are hence termed ratio studies. The ratio of the estimated market value ($\hat{S}$) to the actual sale price (S) is calculated as $\left(\frac{\hat{S}}{S}\right)$, and thus a good model will achieve ratios close to unity. From the ratio studies, equity can be interpreted, as well as where performance of the model is good and weak. Ratio studies are conducted before the final valuations are produced and made public as then any serious deficiencies can be addressed.

Eight statistics are used for assessing regression results and can be split into two groups: goodness of fit statistics and individual variable statistics (Eckert *et al.*, 1990). Goodness of fit statistics are those used to assess the predictive accuracy or quality of the model and are the coefficient of determination (R^2), standard error of estimate (SEE), coefficient of variation (CoV) and the average percent error. The other group of statistics is used for assessing the significance of individual variables in the model and comprises the coefficient of correlation (r), the t-statistic, the F-statistic and the beta coefficient tests.

Goodness of fit statistical measures

Coefficient of multiple determination (R^2) - a measure of central tendency

The coefficient of multiple determination *(R^2)* is the percentage of the variance in the sale price explained uniquely, or jointly, by the independent variables in accordance with the model. It is called the Coefficient of Determination in simple linear regression. The range of R^2 is from zero to one. When it is equal to zero it implies that none of the variation in the estimated market value is accounted for by the independent variables, whereas if the value

is equal to one then all variation is due to the independent variables and the sum of the variances is zero that is $\sum_{i=1}^{n} e_i^2 = 0$.

The difference between the estimated market values and the mean sale price is given by

$$R^2 = \frac{SSE_{EX}}{SSE} = \frac{\sum_{i=1}^{n} (\hat{S}_i - \overline{S})^2}{\sum_{i=1}^{n} (S_i - \overline{S}_i)^2}$$

Where

$\hat{S}$ is the estimated market value of the property.

S is the quasi-sale price (quasi because it is reduced to base date)

e are the residuals

$\overline{S}$ is the mean quasi-sale price

This new value, $\overline{R}^2$, is preferred – it is adjusted for the fact that when one has a large number of independent variables, the value of R^2 can become artificially high because some independent variables will explain small parts of the variance of the estimated market value (it is an adjustment for degrees of freedom).

$$\overline{R}^2 = 1 - \frac{(n-1)SSE_{UN}}{(n-p-1)SSE}$$

Where

n is the sample size

p is the number of variables.

R^2 values are dependent on the variance differences in variance of the independent variables and dependent variable, and so should only be compared between models dealing with similar numbers of properties and similar levels of complexity/variance.

Standard Error of the Estimate (SEE)

The standard error of the estimate measures the difference between the quasi-sale price and the determined market value – i.e. the standard deviation of the residuals (square root of the variance of the residuals). It has units of value (R, $ etc) and the ratio of SEE to the property value gives an indication of the acceptability of the result.

$$SEE = \left[\frac{\sum_{i=1}^{n} \left(S_i - \hat{S}_i \right)^2}{(n - p - 1)} \right]^{\frac{1}{2}}$$

Coefficient of Variation (CoV)

The CoV is equivalent to the ratio SEE to the average sale price expressed as a percentage.

$$CoV = \frac{SEE}{\overline{S}}.100$$

If data is normally distributed, and ratio studies are being conducted, the COV is a good predictor of uniformity.

Average Percent Error

The average percent error is the average absolute error between actual and predicted sales prices.

$$APE = \sum_{i=1}^{n} \frac{\left(\left| S_i - \hat{S}_i \right| / S_i \right)}{n}.100$$

Coefficient of Dispersion (CoD)

The CoD is the amount of spread or variation from the typical ratio and is computed by dividing the average absolute deviation (AAD) by the median ratio.

$$AAD = \frac{\sum \left| (\text{ratio - median ratio}) \right|}{n}$$

$$COD = \frac{100 \times AAD}{median\_ratio}$$

It measures the average percentage by which individual ratios vary from the median ratio. A low COD indicates uniformity of appraisal – horizontal equity. A high COD indicates that properties are being appraised with inconsistent percentages of market value – horizontal inequity. The coefficient of dispersion (CoD) range that is expected is 5% to15%. Lower values under 5% are rare but can be achieved in homogenous jurisdictions, whereas heterogeneous areas will initially produce CoD values of up to 20% but should be reduced to 15% or less.

The COD cannot be used to determine probability (e.g. of an appraisal being above a given level, say).

Price Related Differential

The price related differential (PRD) is also used as a measure of the uniformity of an assessment. It enables a check of whether higher and lower valued properties are assessed at the same level (vertical equity). Firstly a weighted mean ratio is generated from the ratio of the total market value estimates to the total sales prices of the entire sample. It usually has an upward bias and should range between 0.98 and 1.03, except in a situation where they are a few sales (SDAT, 2001). Then the mean ratio (predicted to actual sale price) is divided by the weighted mean ratio.

$$\text{Weighted Mean} = \frac{\sum_{i=1}^{n} \hat{S}_i}{\sum_{i=1}^{n} S_i}$$

$$PRD = \frac{\sum_{i=1}^{n} \frac{\hat{S}_i}{nS_i}}{\text{Weighted Mean}}$$

Statistical measures of the significance of individual variables in the model

Coefficient of Correlation (r)

Coefficient of correlation is a measure of the degree of linearity between two variables, and it ranges from +1 to –1. A correlation of zero does not mean that no relationship exists between the variables but that there is no linear relationship between them (see Fig 10, 331, Eckert, 1990). A correlation matrix can be used to analyse the relationship that exists between two or more variables. If two independent variables are highly correlated, that is with a correlation coefficient close to one, then care must be taken in using both of them in the model, since they may behave unpredictably (i.e. multicollinearity).

The regression coefficient is not the correlation coefficient and explains how much the variables change in relation to each other (Dollar/Rand) – slope of the regression line.

t-Statistic

The *t*-statistic is used to assess the significance of the individual regression coefficients, b_i, specifically testing the null hypothesis that the regression coefficient is zero.

F – statistic

The *f-statistic* is used to test the significance of R^2. Since R^2 is used to measure the "truth" of the model, the f-statistic is an overall measure of the validity of this.

Beta coefficients

Beta coefficients, β_i, are generated from the variable coefficients scaled by the ratio of the standardised deviation of the independent variables to the standard deviation of the dependent variable. Regression coefficients are useful for assessing the relative importance of the independent variables in a model – this effectively means that the quasi-sale price and independent variables are transformed such that they have a mean of zero and variance of one. Beta coefficients are useful in determining the relative importance of variables.

$$\beta_i = b_i\left(\frac{s_i}{s_S}\right)$$

Where s_i and s_s are the standard deviations of the independent and dependent variables respectively.

Statistical Measures of Central Tendency

Median:

This is the midpoint of the sample dividing it into two equal groups and is not sensitive to outliers. The Median is used in the calculation of coefficient of dispersion (COD).

Mean:

This is the average of the sample and is affected by outliers. A sample mean is therefore a biased estimator of the mean of the entire population.

Weighted Mean:

This is calculated by dividing the sum of the appraised values by the sum of the sales prices for the entire sample. In other words, the assessed values are weighted according to their sale price avoiding the bias in favour of more valuable properties. This is required in the calculation of PRD. The disadvantage of the weighted mean is that it is sensitive to high valued properties which are inequitably appraised, while being insensitive to problems with the appraisal of low valued properties.

Geometric Mean:

The geometric mean is the n^{th} root of the sum of the sample. In ratio studies, the ratios are summed and the n^{th} root taken. This mean is not particularly useful (Eckert *et al.*, 1990)

APPENDIX E: ETHICS APPROVAL

UNIVERSITY OF CALGARY

CONJOINT FACULTIES RESEARCH ETHICS BOARD
Annual Renewal / Progress / Final Report
Research Services, ERRB Building, Research Park
Submit by email to: blwebber@ucalgary.ca

1. Applicant: (USE RESTRICTED: Faculty, students, staff from the UofC)

Name **Jennifer Whittal**

Department/Faculty **Geomatics Engineering**

E-mail Address **jwhittal@ebe.uct.ac.za** | Telephone: **+27 21 6503575**

If you are a student, include your supervisor's name and email address here **M Barry, barry@geomatics.ucalgary.ca**

2. Other Participants: If another person is involved in the project, please provide their name, department or other details as required to identify them. Use an attachment, if necessary **none**

3. Project Details:

3.1 Exact Title of the Project (and File No., if available):

Analyzing and Measuring Effectiveness of Fiscal Cadastral Reform – Study of Cape Town – Applied to a Case Study of the General Valuation Project 2000 in the City of Cape Town

3.2 Have you commenced this research? Yes When did it commence? Date: **6/2000 initial investigations, actual commencement mid 2004 after ethics approval was granted.**

3.3 Is the study completely closed to all research activity? **No**

If the study is not completely closed, what is the expected date? Date: **June 2006**

3.4 How many people participated in the research? **1 Investigator**

3.5Have all modifications been reported? **N/A**

3.6 Have the results been published or presented? **Yes**, if yes, indicate where results can be located.

FIG website; **www.fig.net;**

conference proceedings of the Conference on Promoting Sustainable Land Management in Africa, March 2006, Bagamoyo, Tanzania

3.7 Have there been any complaints about the research? **No**

Signature of Applicant: **J Whittal**

Thank you for submitting your report on the above protocol.

As Chair of the Conjoint Faculties Research Ethics Board, I am pleased to advise you that ethical approval for this