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Le cas d'un zoo

Par Annelies Hodge

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Organisational change towards sustainable development In small and medium enterprises The case of a zoo

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"We are faced with an extraordinary situation. Never before in the history of the world has the viability of much of the life on this planet been under threat from humanity; never before have so many of the world's people experienced such material wealth and so many others lived in such abject poverty; never before have so many had such interesting and fulfilling work and so many others such degrading work or no work at all. If we are to live healthy, fulfilling lives on this planet in the future, we must find new life affirming values and forge new patterns of living and working together." (Dunphy *et al.*, 2003)

This quote, perhaps more than any other, sums up the underlying motives of my reflections over the last few years. I would like to express my gratitude to all the wonderful people that have supported me on this journey. Above all I would like to thank my thesis director Marie-France Turcotte (who always received me in her office with enthusiasm and humour despite her incredibly busy schedule) and my thesis co-director Danielle Desbiens (whose ongoing efforts and clairvoyant abilities have assisted me immensely). To all the wonderful people from Granby Zoo that I had the pleasure to meet, observe and/or interview - especially Serge Drolet (who provided me with so much information and *savoir-faire*), Joanne Lalumière (for allowing this study and for finding the time to speak with me despite her hectic schedule), and Mireille Forand (for always being a great help whenever needed) - *merci beaucoup.* My fellow colleagues, friends and badminton buddies at the Research Chair in Social Responsibility and Sustainable Development at UQAM - Ana Isabel Otero, Emma Champion, Gisèle Belem, Julianna Priskin and also Khalil Roukoz – thank you very much for your fun, humour, advice and encouragement throughout this adventure. To my wonderful partner Manfred Fussi, thanks just for being you and for being with me. And to my parents Olga van Baren and Jim Hodge, thank you so much for all your support throughout my years of education, without which I would certainly not be finishing this thesis today. I would like to express my sincere gratitude to the institutions of Quebec too, for having supported me in learning the beautiful French language and studying in one of its great universities. Last, but definitely not least, to the wonderful Quebecois and other spirited souls who I have had the privilege of meeting in this great nation, *merci infinement* for welcoming me into your hearts and your lives. Thanks to you this special place called Montreal has truly become my "home away from home".

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LIST OF ACRONYMS

AZA	American Association of Zoos and Aquariums
BPR	Business Process Engineering
CAZA	Canadian Association of Zoos and Aquariums
CEO	Chief Executive Officer
CIDA	Canadian International Development Agency
CSR	Corporate Social Responsibility
ISIS	International Species Information System
ISO	International Standards Organization
IUCN	International Union for the Conservation of Nature
MNC	Multinational Corporation
NGO	Non-government Organization (i.e. Non-profit)
ONE	Organizations and the Natural Environment researchers
SME	Small and Medium Enterprise
SSP	Species Survival Plan
TQM	Total Quality Management
UNCEDUN	Conference on Environment and Development
UNEP	United Nations Environment Program
UQAM	University of Quebec in Montreal
WAZA	World Association of Zoos and Aquariums
WBCSD	World Business Council for Sustainable Development
WCED	World Commission of the Environment and Development
WCS	Wildlife Conservation Society
WWII	World War II
ZSG	Zoological Society of Granby

RÉSUMÉ

En tenant compte du fait que le développement durable ne peut se réaliser sans changements dans les organisations et de la nécessité de comprendre des mécanismes permettant aux petites et moyennes entreprises (PMEs) d'effectuer cette transition, cette étude cherche à comprendre le changement organisationnel d'une PME ayant déjà fait des contributions significatives dans ce domaine. Plus précisément, cette étude de cas ethnographique analyse les dynamiques spécifiques de ce changement afin de comprendre les processus ayant contribué au développement durable, les facteurs ayant influencé cette évolution dans le temps et la manière dont ces changements ont été implantés.

La conservation des animaux, une fonction maintenant directement liée à la raison d'être de l'organisation, est sans doute la plus grande contribution du zoo pour le développement durable. L'éco-efficacité, qui pourrait être considérée comme une extension des objectifs de conservation est le deuxième levier utilisé par le zoo afin de se rapprocher du développement durable. Ces sous processus du changement ont permis au zoo d'évoluer du musée vivant qu'il était vers un réel centre de conservation. Durant cette période, l'organisation est passée par la prise de conscience de la nécessité d'un tel changement avant de façonner sa propre vision de ce changement et de la direction à prendre. Il en a découlé une planification des actions à réaliser afin de permettre un changement progressif, en concrétisant un projet à la fois. Lorsque la conscience et la vision étaient partagées au niveau organisationnel, le changement était significatif ; lorsque le changement était seulement partagé par des individus moins influents, le changement était mineur. Cette prise de conscience fut influencée par de nombreux facteurs internes et externes qui ont facilité un tel changement d'une façon croissante avec l'évolution des valeurs dans le temps. Certains employés ont particulièrement encouragé ce processus, en prenant en charge l'un de quatre rôles d'*agent de changement* : instigateur, constructeur, coordinateur, ou facilitateur. Ces constats ont amené à la formulation de plusieurs hypothèses, modèles et leçons qui pourraient aider aussi bien des agents de changements que des chercheurs, à comprendre et à faciliter un tel processus.

Mots clés: développement durable et soutenable, changement organisationnel, gestion de changement, leader ou agent de changement, PME, zoos, valeurs.

SUMMARY

Given the necessity of organizational change towards sustainability and the need for more understanding on how small and medium enterprises (SMEs) are making such a transition, this research sought to understand the organizational change of one SME that has already made significant contributions towards sustainable development. In particular, this ethnographic case-study analysed the specific dynamics of this change process in order to understand: what changes occurred that are contributing towards sustainable development; which factors influenced this evolution over time; and how such changes were implemented.

The greatest contribution that the zoo made towards sustainable development was through animal conservation, a function tied intimately to the *raison d'être* of the organization. Eco-efficiency, the second way in which the zoo has moved towards sustainability, can be seen as an extension of its conservation goals. This process allowed the zoo to evolve from a living museum to a centre of conservation, as it passed from awareness and acceptance of the need to change, to a vision of what to change or where to go, planning on how to get there, and action to realise changes one project at a time. When the awareness and vision was shared at the organizational level, change was significant; at times when awareness and vision were shared by only a few less powerful individuals, change was minor. This awareness was influenced by a number of internal and external factors that increasingly facilitated sustainability efforts as values evolved over time. Individual employees in particular actively encouraged such change, taking on one of four change agent roles: change instigator; change builder; change coordinator; and change supporter. In periods when a change builder was present (who built awareness and acceptance of the change especially with upper-management) change was major. At other times when the change instigator was not a leader (unable to build the change and get the organization to follow) change was minor. These principle findings have led to numerous hypotheses, models and lessons to assist would-be change agents and researchers alike in organizational change towards sustainability efforts.

Key Words: Sustainable Development, Sustainability, Organizational Change, Change Management, Leadership, Change Agent, SME, Zoo, Values.

INTRODUCTION

Whilst many agree that organizational change is required to succeed in overcoming the environmental and socio-economic challenges facing our world, most organizational progress so far has been relatively modest. Many organizations remain focussed on short-term economic values, either unable or unwilling to change towards a more sustainable development. With few examples of truly sustainable organizations, there is also a lack of role-models to assist other organizations in envisaging or enacting such change. This is particularly the case for SMEs, as most research and tools for effecting such change have been developed with large enterprises and do not take into account the specific dynamics of smaller ones. Thus, numerous calls have been made for case-studies on SMEs that are effectively moving in this direction.

The objective of this research is to study the specific dynamics of this change process as a continuous phenomenon, in order to understand: what changes occurred that are contributing towards sustainable development; which factors influenced this evolution over time (including the role of values, leadership and/or change agents); and how they were more or less successfully implemented in one SME that is successfully moving in this direction.

This thesis is divided into six chapters. Chapter 1 presents the research context outlining the concept of sustainable development as well as the concept of organizational change, before discussing what organizational sustainability may entail and why further research is needed, and arriving at the research problem. The 2nd chapter outlines the methodology that will be used to answer this problem, an ethnographic case-study approach. Chapter 3 presents the findings of one particular SME's evolution towards sustainability. The 4th chapter is the discussion of this case-study, identifying what can be concluded from the change process. Chapter 5 discusses how these findings contribute to literature. The 6th chapter concludes the thesis, offering suggestions to managers or would-be change agents and researchers wishing to conduct further research on organizational change towards sustainability.

CHAPTER 1

LITERATURE REVIEW AND PROBLEM STATEMENT

'Where shall I begin, please your Majesty?' he asked.
'Begin at the beginning,' the King said, gravely,
'and go on till you come to the end: then stop.'
Lewis Caroll (Alice in Wonderland)

The purpose of this chapter is to present the research context and objectives. It aims to do this by outlining the problems with human development, discussing the concept of sustainability as a solution to such problems and the need for organizational change to achieve it. Then, it addresses the concept of organizational change, as well as the need for further research on such change towards sustainability, before arriving at the research problem and objectives.

1.1 The Necessity for Sustainable Development

1.1.1 Problems with Current Human Development

Whilst the Earth is estimated to have existed for around 4.6 billion years, the development of humans only began around 5 million years ago (Larousse, 2003). Our species, *Homo sapiens*, has been around for approximately 100 000 years of the Earth's history (Larousse, 2003). Yet, since agriculture developed about 10 000 years ago, and especially since the industrial revolution began a few hundred years ago, the story of human activity has been the destruction of the natural world (Newton, 2005). Aided by food security, technological innovations (such as electricity, rapid transportation, automated and mechanical production) and advanced information systems, humans (particularly those in the north) have been able to raise their standards of living, access and consumption of goods and services, and wealth like never before. Paradoxically, these same achievements have profoundly altered the physical and biochemical make-up of Earth and produced a bevy of environmental and social problems which are threatening the prosperity of future generations and all species. Climate change, ecological degradation and pervasive poverty in developed and developing nations are some of the most troublesome results of the industrial era (Doppelt, 2003).
According to a study conducted by a scientific committee of 200 scientists from 50 countries, five interrelated environmental problems (see Table 1.1) were considered the most pressing at the end of the 20th century (Gendron, 2004). These problems are directly related to human activity, in large due to the socio-economic problems listed in Table 1.2 which represent the most commonly cited reasons for the current environmental crisis (Gendron, 2004):

Table 1.1 Major Environmental Problems

Climate change – the temperature of Earth could rise by an average of 3 – 7°C in the 21st century. Some challenges this would pose include the relocation of hundreds of millions of individuals as water levels rise, increased natural catastrophes and alimentary disruptions with changing water currents amongst other things (Gendron, 2004).
Biodiversity loss – although the natural rate of species extinction is around 3 per year, the current rhythm has passed 1000. 11% of birds, 25% of mammals, 34% of fish, as well as 32% of amphibians, are threatened or facing imminent extinction (UNEP, 2005).
Deforestation – during the 1980s forests covered 28% of Earths emerged surface, in 1990 they covered less than 26% (Gendron, 2004).
Desertification - each year, 6 million hectars (twice the area of Belgium) are lost to irreversible desertification, whilst a further 20 million hectares are degraded to the point of being infertile (Gendron, 2004).
Urbanisation – in 1900 only 10% of the world's population lived in cities, by 2000 it was 50%, and by 2025 it could be more than 60% (Gendron, 2004). According to Gendron (2004) this rapid growth is: sterilising millions of hectares of fertile land yearly; causing health risks due to smog from cars; creating significant waste and water pollution; and consuming massive amounts of energy (75% of energy and 50% of petrol products are consumed in cities producing 30% of total CO_2 emissions).

Table 1.2 Major Socio-Economic Problems

Population growth – although it took thousands of years for the world's population to reach 1 billion, it grew from 5 to 6 billion in just 12 years. Today over 6.3 billion people live on Earth, and a further 80 million are added each year. It will grow to 8-10 billion by 2050 (UNEP, 2005), tripling in the 50 poorest nations who already struggle to meet their current population's needs (CIDA, 2005).
Poverty and disease– more than 1.1 billion people live in extreme poverty (i.e. on less than US$1 a day), more than 2.8 billion live on less than $2 a day, and 28 countries (all in Africa) have a life expectancy of less than 50 years with some as low as 32 years and worsening due to the AIDS epidemic that affects 38 million individuals (CIDA, 2005).
Poor distribution of wealth and resources – the 30 richest countries consume 70% of energy, 75% of metal, 85% of wood, and 60% of food resources, and are responsible for 80% of the worlds' pollution (Gendron, 2004). The US (with 4.6% of the world's population) uses 24% of the world's commercial energy, whilst India (with 17% of the world's population) uses around 3% of the world's commercial energy (Newton, 2005).
Over-consumption of resources - human consumption today is 30% more than Earth's carrying capacity with most of this over-consumption occurring in Western nations, and if all humans consumed like North Americans 3 planets would be needed (Doppelt, 2003). The average Canadian uses 30-50 times more resources than a developing country citizen (Gendron, 2004).
Disparity in education access – 800 million adults and 115 million children are illiterate, the majority being female, who have never and will probably never be able to go to school. Several hundreds of millions more have only very limited schooling (CIDA, 2005).

Given the nature of just some of the environmental and socio-economic problems that the world is facing, it is clear that current human development is unsustainable and destructive. Many of the current ecological challenges have a time-fuse of 50 years or less (Diamond, 2005). The ecological footprint of the human species, that is the load of the human race on the environment (ecological footprint = population + consumption + technology), is now well beyond nature's capacity to rejuvenate itself (Hart, 1997). A UN report produced by 1 360 experts worldwide (UNEP, 2005) offers a "stark warning…human activity is putting such strain on the natural functions of Earth that the ability of the planet's ecosystems to sustain future generations can no longer be taken for granted". Considering these biophysical limits

of our Earth, the transition to a more sustainable development is urgent and necessary (Goodland, 1995). In such a context sustainable development has emerged as a possible solution to current development problems.

1.1.2 Emergence of Sustainable Development

Whilst the concept of "development" is largely a western idea that can be traced back to Aristotle and his theory of the natural cycle that was later applied to the history of man by Saint Augustine, Pascale and Darwin, the concept of "sustainable development" emerged much more recently in the context of a growing global environmental crisis. In 1948 following World War II (WWII), the newly formed United Nations (established to maintain international peace and security) founded the International Union for the Conservation of Nature and Natural Resources (IUCN), otherwise known as the World Conservation Union. In 1951 the IUCN published a report on the state of world nature protection in 1950, one of the principal precursors of the Brundtland report, and organised a series of meetings to discuss the environment and development such as the 1972 assembly of the IUCN on conservation and development in Banff and the 1972 UN Environment Conference in Stockholm (Vaillancourt, 1995). As a result of the Stockholm propositions – discussing the necessity of developing in a manner that respects the environment and efficiently manages natural resources – the UN Environment Program (UNEP) was established. During its first meeting the UNEP director Maurice Strong insisted on promoting "eco-development", a type of development which accounts for environmental constraints over the long term (Vaillancourt, 1995).

The term "sustainability" gained favour during the late 1970s and 1980s, in light of increasing environmental constraints and questions regarding the new international economic order (Vaillancourt, 1995). Whilst the term "sustainable development" can be found in the 1980 IUCN world conservation strategy and other literature dating back to at least 1976, it wasn't until the vast international consultation of the World Commission of the Environment and Development (WCED) created after the failed 1982 UN Conference on the Environment in Nairobi, that the term became widely recognized (Vaillancourt, 1995). The Commissions 1987 Report titled "Our Common Future" but often referred to as the Brundtland Report, popularized the term and offered the most widely quoted definition (Gibbs, 2002). This vision of sustainable development goes beyond eco-development, reconciling not just economic development and environmental conservation, but also implying social-political dimensions such as social equity, democracy, human rights and peace (Vaillancourt, 1995).

The Brundtland Report became the basis for a multitude of conferences and diverse research, the most important being the 1992 UN Conference on Environment and Development (UNCED) also known as the "Earth Summit" in Rio de Janeiro. During this meeting the assembled leaders adopted the Framework Convention on Climate Change, the Statement of Forest Principles, and Agenda 21 (a 300-page plan for achieving sustainable development in the 21st century). One of the principle features of Agenda 21 was the call for partnerships between businesses and environmental groups (Redclift, 2005). The UN Framework Convention on Climate Change and the Convention on Biological Diversity were opened for signature. The Commission on Sustainable Development was also established with the mandate to monitor and review the implementation of Agenda 21.
From this conference an "official" corporate response emerged which represented the views of over 100 international companies. It conceptualised the phases through which corporate environmental involvement had passed, from the prevention of pollution in the 1970s, and measures to encourage self-regulation in the 1980s, to a concern to internalise sustainability into business practices in the 1990s. This marked a turning point in the relationship of business towards the environment, with environmental concerns becoming a central part of corporate governance by at least the largest global players (Redclift, 2005). A number of

think-tanks (like the International Institute of Sustainable Development), consultants, and non-government organizations (like Quebec's Equiterre) began emerging too, assisting organizations and individuals in finding local solutions towards sustainability.

Thus international, national and local efforts gained momentum in the late 1990s, following growing support from ecologists, governments and enterprises (Gendron, 2004). They applauded the engulfing nature of the concept which allows considerable consensus (Daly, 1999), and offers an interesting approach to deal with the environmental, economic and socio-political challenges of our times (Vaillancourt, 1995). The UN advanced the sustainable development agenda in the 1997 five year review of the Earth Summit, and the 2002 World Summit on Sustainable Development in Johannesburg, amongst others. Countries put national measures in motion, such as the Commission of the Commissioner on Environment and Sustainable Development that was mandated through legislation to audit the federal Canadian government's implementation of its sustainable development commitments. Canada also signed agreements such as the Millennium Development Goals and the Kyoto Protocol, created the recently scrapped "one tonne challenge" to reduce greenhouse gas emissions, put grants and programs in place for everything from energy efficiency to environment management, and hosted the 2005 conference on global warming. Many companies, academics and consultants began making advances in this direction too. Rather than moving blindly ahead they asked industries to become more sustainable, recognising the need for a new economics that redefines economic capital to include nature and people (Dunphy *et al*, 2003). Hence the growth of corporate related disciplines such as Corporate Social Responsibility (CSR), Industrial Ecology, Ecological Economics, Corporate Citizenship, and Sustainability Reporting amongst others.
Despite such efforts and more, Canada as a nation has made few marked inroads towards sustainable development though it is not alone. Despite a growing discourse surrounding sustainable development world-wide over the last 20 years, most experts would agree that progress towards sustainability has been, at best, modest (Doppelt, 2003). Canada remains the third worst country in terms of its ecological footprint or its total "load" on nature at 21.1 acres per capita, with the sustainable level estimated at 4.6 acres per capita (ENS, 2004). Other indicators are equally troubling. Since ratifying the Kyoto Protocol where Canada agreed to reduce its CO2 emissions to 6% below 1990 levels, its emissions have actually risen to 25% above this mark (Demers, 2006). The apparent lack of progress that Canada has made towards achieving sustainable development highlights the difficulties involved both defining and applying the concept and its principles.

1.1.3 Definition and Principles of Sustainable Development

Sustainable development is a term which means different things to different people, hence no universally accepted definition of "sustainable development" exists (Gillis and Vincent, 2000). However, a common foundation was laid in the Brundtland report (Schmandt and Ward, 2000). This report, which established the phrase firmly in the lexicon of environmental politics (Elliott, 2004), also offers the most commonly cited definition (IISD, 2005) as: "*development that meets the needs of the present without compromising the ability of future generations to meet their own needs"* (WCED, 1987). Thus, "sustainable development" is the behaviour required to achieve "sustainability" (Doppelt, 2003). This rather ambiguous and anthropocentric definition alludes to three goals: balancing economic and environmental priorities, considering short-term and longer-term costs and benefits, and diminishing the stark differences in income and resource access between rich and poor countries (Schmandt and Ward, 2000). However realising such goals, and indeed even estimating the needs of current and future generations, poses significant challenges and has led to much debate. Despite the lack of consensus, most scholars allude to the following principles (Gibbs, 2002):

- Quality of life (including and linking of social, economic and environmental aspects);
- Care for the environment;
- Thought for the future and the precautionary principle;
- Fairness and equity;
- Participation and partnership.

Since the Brundtland Report, and especially since the Earth Summit, sustainable development has been increasingly defined as a balance between the environment, society and the economy. This tri-poled concept has been described as the triple bottom line, the three Ps (profits, planet and people) and the three Es (economy, environment, equity) by various authors. Whilst this vision appears more complete than early concepts like eco-development, it still poses significant challenges for decision-makers as it offers no guidance in weighting or measuring social, environmental and economic priorities. For example, how does one evaluate a mining project which increases economic wealth but destroys habitats and the livelihood of local people in the process? In order to more easily facilitate the use of this tri-poled vision, Gendron (2004) proposes ordering it as shown in Table 1.3. Here the environment is a condition of sustainable development acknowledging the ecological limits of our biosphere (on which human life and the economy is dependent), social development is the objective, and the economy the means by which such development is achieved. Thus profit maximisation, and the invisible hand which supposedly redistributes wealth, are replaced by the search for improved quality of life. Finally, the concept of equity between and within generations implicit in the Brundtland definition is understood to touch all elements of sustainable development constituting both an objective, condition and a means.

Table 1.3 Ordering of Sustainable Development Elements (Gendron, 2004)

Environment (respect its capacity to rejuvenate)	Condition
Society (development or improved quality of life)	Objective
Economy (efficiency)	Means
Equity (between and within generations)	Condition, objective and means

Whilst such classifications and sustainable development principles may assist in more clearly defining the concept, and allow it to respond to the challenges of our time (Schmandt and Ward, 2000), they imply or require different values than those on which our current development is based. Values are defined as the stable, long-lasting beliefs about what is important in a variety of situations, which dictate our priorities, preferences and desires (McShane, 2004). Sustainable development attempts to reconcile and values not just economic development with environmental protection, but also implies social-political dimensions such as social equity, democracy, human rights and peace (Vaillancourt, 1995). The goal of individual enrichment needs to make way to communal solidarity, coherence, and sharing (Schmandt and Ward, 2000). In order to reach this aim, people must most likely adopt radically different mindsets, values and patterns of behaviour (Schmandt and Ward, 2000). In essence the environmental challenge is one of change within and between individuals, organizations and society at large (Winsemius and Guntram, 2002).

1.1.4 The Necessity for Sustainable Organizations

Although there are many contributing factors to the current predicament, many people blame businesses. This is because a large part of the destruction one sees is either directly attributable to business activities, or indirectly to the consumption of products and services

that businesses provide (Nattrass and Altomare, 1999). Corporations especially - appearing during the Roman Empire and proliferating with the industrial revolution - generate enormous wealth whilst using substantial resources, shaping the physical and social world in which we live in today (Dunphy *et al.*, 2003). Their focus on profit and the needs of their investors - particularly since the acceptance of the corporation as "one person in law" in the late 19th century and the prevailing virtues of neo-liberal economics - has led to the institutionalization of organizational values and practices which are largely non-sustainable (Dunphy *et al.*, 2003). Ironically, the superbly successful engine and the values on which it was based that drove development since the beginning of the industrial revolution more than two centuries ago, now carries in it the seeds of destruction with maximising income, profit and consumption becoming counter-productive (Schmandt and Ward, 2000).

In a world where many enterprises are wealthier and more powerful than individual nation states (Anderson and Cavanagh, 2000; Dunphy *et al.*, 2003), exploiting and controlling much of the natural and human resources around the globe, it is clear that achieving sustainability will not be possible without the widespread implication of enterprises. Whilst the Brundtland Report does not explicitly address enterprises, its call for a new sort of economic growth, a reorientation of technology, and a better management of the Earth's resources, require the direct participation of enterprises. Elkington (1997) also states that enterprises are the only organizations with the resources, technology, global reach, and ultimately the motivation to achieve sustainability. Sustainable organizations, much like sustainable development in general, have not only the potential to reverse the ecological and social damage caused by their operations, but also to improve the world we live in (Sharma and Starik, 2002).

Indeed many organizations, defined as groups of people working inter-dependently towards some common purpose (McShane, 2004), are aware of sustainability issues. One survey of American and European business leaders found that 95% view sustainable development as genuinely important and 83% of them believe that they could derive business value from such initiatives (Willard, 2002). A KPMG study found that 87% of enterprises see the environment as increasingly important, although studies of Small and Medium Enterprises (SMEs) in Quebec and France have shown that the degree of awareness is much lower (Gendron, 2004). Regardless of the level of awareness, the majority of businesses continue operating in non-sustainable ways (Redclift, 2005), making it clear that more organizational change is still required. In order to understand the difficulties in achieving organization change towards sustainability, the next section will look at theories on organizational change, why organizations are undertaking such change (that is the change drivers), and what tools exist for conceptualising and enacting such change within organizations.

1.2 Achieving Organizational Change towards Sustainability

1.2.1 Conceptualising Organizational Change

In the widely unpredictable and rapidly changing nature of today's competitive environment, Heraclitus' claim that "nothing is permanent save change" (Poole *et al.,* 2000) has become widely accepted. In fact, managing change is one of the most important and difficult issues facing organizations today (Dunphy *et al.,* 2003), leading to a plethora of studies in organizational change and the emergence of a number of different characterisations for understanding it. These include (Cao *et al.,* 1999): Lewin's three stage model of 'unfreezing', 'moving' and 'refreezing'; three forms of change (identity, coordination and control); the planned or emergent nature of change (otherwise characterised as planned, guided or spontaneous change); the human-centred classification of change at the individual, group,

inter-group and organizational level; and the ever popular distinction between incremental (the ongoing change that is routinely necessary for any organization to adapt to what is going on in its environment) and radical or quantum change (the change that necessitates a thorough re-examination of all the facets of an organization).

In fact, much literature on organizational change towards sustainability is still dominated by discussions on incremental versus radical change. Some authors - like Gillis and Vincent - believe that sustainability is achievable through incremental change (Schmandt and Ward, 2000). Others - such as Hart, Milstein and Hammer - support the fact that only radical change will create a sustainable world (Dunphy *et al.*, 2003). Schmandt and Ward (2000) as well as Doppelt (2003) support this view, stating that nothing short of transformation is needed. Despite its popularity, such a classification can cause confusion, as in retrospect incremental change may appear transformational (when studied over long time periods). Also change can occur at different levels or between different levels of the organization, and change different dimensions of the organization, at the same time in both incremental and transformational ways (Mintzberg and Westley, 1992).

An immense number of theories to explain organizational change have also emerged, often borrowed from other disciplines such as evolutionary theory from biology, population ecology from ecology, and the chaos theory from physics. Several authors have attempted to simplify the masses of information by categorizing organizational change in different ways, with Demers (1999) offering perhaps the most coherent overview of the different theories and their definitions of organizational change. She arranges them into three groups according to the context in which they emerged: post WWII until the end of the 1970s (whose theories focus on growth and adaptation); the end of the 1970s until the end of the 1980s (whose theories focus on decline and organizational transformations); and the late 1980s until today (whose theories focus on learning and evolution). In order to facilitate this comparison, Demers (1999) article has been placed in a table format (see Table 1.4).

Using this classification one can see two tendencies emerging in organizational change studies: those that focus on managing organizational change (the focus of the first two groups), and those that focus on the capacity of the organization to manage organizational change (the focus of current research). This classification also assists understanding why different organizational theories have emerged and why conceptions of organizational change have varied over time. Furthermore, by studying the evolution of organizational change theory in Table 1.4, one can see that up until the early 1980s organizational change was viewed as the domain of a wise and rational manager who could steer their organization out of the unknown and adapt it to the changing environment. In other words, it was assumed that the head of an organization could plan and force an incremental or radical organizational change. Many authors thus proposed a number of steps or models that “should” be followed by such managers in order to transform their organizations. Today the manager is no longer seen as a hero but rather a guide or facilitator that ensures the conditions necessary, which are specific to each organization, for change (Demers, 1999). Thus the accent is now on collective action, focussing not just on managers but on all change agents no matter where they are in the organization.

Table 1.4 Evolution of Organizational Change Theory (adapted from Demers, 1999)[1]

	Period 1 (WWII – late 70's)	**Period 2 (late 70's – late 80's)**	**Period 3 (late 80's – today)**
Context	• Economic boom and the era of social liberalisation; • Belief that anything is possible; • Environment relatively predictable and stable; • Organizational strategies focus on growth by geographic expansion, diversification, or adaptation.	• Petrol crises and the arrival of new Asian competitors on the international scene affect growth; • Government debts grow and they question their function, leading to market liberalisation and privatisations; • Efficiency logic to reduce costs and improve competitiveness.	• Globalisation of markets leads to an acceleration of economic cycles with growing competition; • Work insecurity, loss of government influence and growing enterprise power leads to social fragmentation and greater individual responsibility; • New communication technologies revolutionise human interactions worldwide.
Definition of Change	Seen as synonymous with positive progress, a gradual process of development induced by the organization itself under the guidance of a rational manager who reacts to a relatively predictable and favourable environment.	Change is seen as a rare revolutionary process, a dramatic event resulting from an organizational crisis, where heroic managers simultaneously and radically transform the organizational culture, strategy and the structure in a rational and symbolic manner.	Change seen as a daily reality or a continual process of learning, innovation and evolution. It can be incremental or radical, be proactive or reactive in nature under the guidance of all organizational members, and is a dynamic specific to each enterprise.
Approach	Mostly interested in the "what" (i.e. the structures, systems and changing strategies) than the "how" (i.e. the change dynamics).	Mostly interested in "how" to change an organization, using the big levers of top managers like strategic reorientation. The focus is on managing change above all else.	A holistic and integrative concept of change, simultaneously interested in the "what", "how" and "why" of change by examining the evolution of enterprises over long periods in the context of the organizational evolution. The focus is the capacity of an organization to change.
Main Change Theories and Authors	• Growth (Haire, 1959; Penrose, 1959) – caused by the natural tendency of managers to maximise profits, leading to more complex organizations	• Population ecology (Hannan, Freeman, 1984) – the process of environmental selection is the principle mechanism of change, with over bureaucratic organizations too	• Learning theories (Glynn, Lant, Milliken, 1994; Nonaka, 1994) – organizations change continuously in reaction to their context but also by a process of experimentation (reflecting and doing by

[1] The authors cited in this table have been taken directly from Demers (1999) and are not referenced separately.

	and only limited by the availability of managerial resources. • Life-cycle (Moore, 1959; Whyte, 1961) – the organization is seen as a living organism with change a natural and progressive phenomenon that follows distinct phases. • Contigency (Burns, Stalker, 1961; Thompson, 1967) – sees the organization as an open system whose survival and performance requires coherence between the internal and external context of the organization. • Organizational development (Benis, 1969; Chin, Benne, 1990). – otherwise known as planned change, is interested in models that explain how and why an organization "should" change.	inert to rapidly adapt to a turbulent environment. • Configurational approach (Miller, Friesen, 1984; Allaire, Firsirotu, 1985) – focusses on strategic change of organizations by strategic managers that succeed in radically transforming their organizations during periods of crisis. • Cultural and cognitive theories (Schein, 1985; Bartunek, 1984) – change is not just structural and strategic but also cultural, as new visions of the world (i.e. new values and beliefs) cause inevitable ruptures and thus major change, with managers becoming visionaries who guide change. • Punctuated equilibrium theory (Tushman, Romanelli, 1985) – change characterised by long periods of stability (where change is gradual in-line with an established management), and short periods of crisis generally due to environmental changes (where a new team of directors makes abrupt changes that cause a reorientation).	all organizational members) that produces innovations. • Evolutionary theories (Burgelman, 1996) – based on the evolution of species whereby variation caused by organizational experimentation leads to selection and, depending on the results, retention. Stability (retention) and change (variation) are seen as parallel currents in an organization, a dynamic that is at once programmed and spontaneous. • Complexity theories such as the chaos theory (Stacey, 1995; Thietart, 1993) – organizational change is dynamic and non-linear, moving between order and disorder, leading to organizational renewal. • Constructivist approaches (Orlikowski, 1996; Tenkasi, Boland, 1993) – change is inherent to daily activity. The organization is viewed not as an entity but a process of interaction that responds to and modifies the organization and actors' behaviour at the same time. Thus it underlines the importance of change agents and different practices depending on their situation.

Despite all the years of research in this field, several surveys show that most planned organizational efforts fail. As many as 70% of reengineering efforts result in failure (Stanton *et al.*, 1993), whilst 80% of chief operating officers regarded their TQM efforts as disappointing (Jackson, 1995), and 75% of all major change initiatives fail to fully meet their initial objectives (Haines *et al.*, 2005).

Cao *et al.* (1999) and Haines *et al.* (2005) amongst others blame this failure on the "impoverished view" of such change programs that lack a systemic perspective. Such approaches tend to be linear and simplistic, ignoring the dynamic and complex nature of today's organizations. The multitude of literature that criticises traditional approaches to managing organizational change addresses 3 concerns: the tendency that a single approach is normally employed to manage organizational change; the domination of "engineering" and "reductionist" methodologies; and the fragmented and often conflicting theoretical frameworks which have developed independently and therefore are unlikely to produce a single, unified, coherent theory (Cao *et al*., 1999). TQM for example addresses largely incremental change to processes whilst BPR addresses transformational change to processes, both largely ignoring the necessary structural, cultural and political changes which also need to be made to ensure success (Cao *et al.*, 1999). Increasingly it is argued that such single methods towards managing organizational change are inadequate for today's complex organizational problems (Cao *et al.*, 1999). There appears to be no single, correct environmental strategy applicable to all companies (Winsemius and Guntram, 2002). Companies must examine their own circumstances, understand their choices, be wise in their approach, have a clear view of their own capabilities, and then clearly define their environmental strategy (Winsemius and Guntram, 2002). Others argue that the primary reason why TQM, strategic planning, BPR and downsizing programs fail to achieve their goals is that they fail to change the underlying thought patterns, outlooks and behaviour of employees (Doppelt, 2003). In other words, change programs which include technical aspects of change must be combined with efforts to change the culture of the organization, in order to facilitate acceptance by employees if they are to be successful (Doppelt, 2003; Palmer, 2003).

Organizational change has moved in this direction, aiming to not just understand "what" or "how" but also the "why", as described in Period 3 of Table 1.4. As such it has moved away from the idea that change can be managed, towards trying to understand the specific dynamics of change in each organization (Demers, 1999). Thus, rather than proposing models or theories centred around an omnipresent hero that contemplates and manages their organization's change, today's focus is primarily on ensuring the capacity of organizations to change (Demers, 1999). This requires understanding the individual organization intimately (i.e. its structure, culture, systems, history etc.) and what conditions are necessary for it to succeed in adapting with its environment, requiring examining the evolution of organizations over long periods in a contextual manner. This supports findings from other change researchers such as Mintzberg and Westley (1992), who state that for any change to be really understood it must be viewed holistically and contextually as well as retrospectively. Thus, studies need to involve comprehensive descriptions over significant periods of time in order to appreciate: the richness of the multitude of factors from the organizations' history, inner and outer context; the levels in which change occurred; the balance of visionary and planner types; and the progress of organizational change and learning. This requires observing the organization from inside and not just from the top, adding new more subtle and informal tools (such as observation, dialogue and listening) to the traditional ones which studied strategy, structure and systems (Demers, 1999).

1.2.2 Change Drivers of Organizational Sustainability

Many authors have researched why organizations go "green", that is why they undertake strategies to improve their environmental performance. Some discuss multi-stakeholder forces (Turcotte and Pasquero, 2001) and the importance of carefully assessing organizational stakeholders when attempting organizational change (Savage *et al.*, 1991). Several studies show that enterprises' environmental initiatives are above all motivated by environmental regulations and the attached legal responsibility with financial repercussions (Gendron, 2004). Other studies have shown that commercial pressures (leading to the optimisation of resources and cost reductions) and marketing advantages are also real motivations towards environmental performance for a number of enterprises (Gendron, 2004). Also, actors themselves play a more or less important role (especially employees, but also shareholders, clients and the public) depending on the companies size, industry, social visibility, and its situation in the value chain (Gendron, 2004). Dunphy *et al.* (2003) note both external drivers of change (such as globalisation forces and corporate consolidation; social and environmental impacts of globalisation; the increasingly networked society; dangers of "greenwashing"; investor pressure; new reporting requirements; and eco-opportunities), and internal drivers of change (such as the costs of non-compliance; employee awareness; leadership and risk management; the knowledge-based organization; a culture of innovation; and business advantage). Sharma and Starik's (2002) book into research on organizational sustainability also highlights internal and external factors studied by various researchers as summarised in Table 1.5.

Table 1.5 Why Organizations Go Green (Sharma and Starik, 2002)[2]

- Institutional Forces (Hoffman, 1997, 1999)
- Regulations (Majumdar and Marcus, 1999; Rugman and Verbeke, 2000)
- Stakeholders (Henriques and Sadorsky; Turcotte and Pasquero, 2001)
- Collective Action Perspective (King and Lenox, 2000)
- Greening of the Value Chain (Green *et al*., 2000)
- Private-public partnerships between NGOs and businesses (Hartman and Stafford, 1997; Rondinelli and London, 2001)
- Competitive drivers (Aragon-Correa, 1998; Christmann, 2000; Dean and Brown, 1995; Hart, 1995; Nehrt, 1998; Russo and Fouts, 1997; Sharma and Vredenburg, 1998)
- Organizational context and design (Sharma *et al.*, 1999; Ramus and Steger, 2000)
- Organizational learning (Marcus and Nichols, 1999)
- Role of leadership values (Egri and Herman, 2000)
- Environmental champions (Andersson and Bateman, 2000)
- Managerial attitudes (Cordano and Frieze, 2000)
- Managerial interpretations of environmental issues as threats of opportunities (Sharma, 2000; Sharma *et al.*, 1999)

Lesourd and Schilizzi (2001) reduce these influences somewhat, stating that organizations become more "green" for both ethical and economic reasons. For example the CEO from Interface, Ray Anderson, set a goal of becoming the world's first truly sustainable enterprise after realising that firms are today's modern pirates. It was thus an ethical choice, which at the same time had significant economic benefits. Between 1995 and 2002 Interface's waste reduction initiatives generated savings of over $200 million whilst sales increased by $200 million with practically no additional input of extracted materials or extra harm to the

[2] These authors have been taken directly from the Sharma and Starik (1999) text and are not referenced separately.

biosphere (Doppelt, 2003). This suggests that sustainability measures can provide substantial savings and be competitively advantageous (Doppelt, 2003).

Arnold and Day (1998) provide three reasons for such change: morality (used interchangeably here with ethics), compliance, or opportunity. The moral motivation, often an outgrowth of key executives' personal values, is based on the assumption that businesses improve peoples' lives and the environment in exchange for the privilege to operate (Willard, 2002). The compliance motivation is driven by the threat of current or anticipated environmental or social regulations that may affect the enterprise (Willard, 2002). The opportunity motivation is led by companies desire to enhance their reputations, build trust and connections with their communities and employees, and ultimately prosper (Willard, 2002). Other opportunities include fewer risks, lower insurance premiums and loan rates, inclusion in ethical investment portfolios, improved stakeholder relationships, and enhanced due diligence protection (Nattrass and Altomare, 1999).

Thus, there are a combination of external and internal factors that push or pull organizations to become more socially or environmentally responsible. Whilst some organizations may just be reacting to the new global reality (including reputation and litigious risks associated with the increasingly global reach of corporations, the actions of internationally mobilized human rights and environmental activists, or to international and national agreements and regulations concerning environmental protection and social and economic justice), other managers are taking more proactive measures to conserve resources, minimise waste and contribute to social renewal (Dunphy *et al.*, 2003).

1.2.3 Conceptualising Organizational Change towards Sustainability

Many authors point to the difficulties in defining or conceptualising sustainability in organizations, with most finding it very difficult to turn the concept of sustainable development into practical policies and programs (Doppelt, 2003). In order to facilitate this process a number of tools and concepts have been developed. Willard (2002), for example, offers a rather simple vision insisting that sustainable organizations sustain nature's resources as well as the company's by acting as a three legged stool (representing economic prosperity, environmental stewardship, and social responsibility), that doesn't function properly unless all three legs are cared for.

Economic prosperity, ensured by the long-term health of global, local and corporate economies - is easily understood and accepted by companies. *Environmental stewardship* requires that the companies do not harm the environment (from the production through to consumption and disposal of their products). It thus involves: reducing the material intensity of goods and services; reducing the energy intensity of goods and services; reducing toxic dispersion; enhancing material that is recyclable; maximising the sustainable use of renewable resources; extending product durability; and increasing the service intensity of products (DeSimone *et al.*, 1997). *Social Responsibility* calls for a global view of society, seeking to ensure that resources and wealth are more equitably shared amongst citizens of the world. For companies it may involve: observing human rights; improving working conditions or relations; adhering to business ethics; making charitable contributions; reducing negative impacts of commercial sites on the local community; helping employees develop transferable skills; supporting public health; and fostering community relations (Willard, 2002).

Overriding frameworks have also been developed to assist organizations in envisaging sustainability, many of them focussed on using resources more efficiently, by reducing waste

and improving operational processes (refer to Natural Capitalism, The Natural Step, and Zero Waste in Table 1.6). That is, they focus on reducing pollution and damaging processes within the existing industrial paradigm. The implementation of environmental management systems like ISO 14000 or EMAS encourage such incremental improvements in environmental or social performance. Others go even further, suggesting that sustainability requires not only using resources more efficiently, but also reducing the stocks and flows of the natural capital that humans consume (see 3 or 5 Rs and Ecological Footprint in Table 1.6), and changing the entire model on which economic production is based (see Eco-Effectiveness in Table 1.6). Whilst these frameworks may assist in raising recognition of our biosphere's limits in providing resources and absorbing waste, they are often difficult to apply and it is unclear how useful they actually are to organizations (Doppelt, 2003).

Table 1.6 Sustainability Frameworks (adapted from Doppelt, 2003)

3 or 5 Rs	**Zero Waste (ZERI)**	**Eco-Effectiveness**
Sustainability requires reducing, reusing, recycling or redesigning, replacing, reducing, refining and re-circulating.	Sustainability requires technological breakthroughs that would lead to manufacturing without any waste (zero emissions).	Rather than the take-make-waste lineal model, eco-effectiveness proposes a circular borrow-use-return or a "cradle-to-grave" approach.
The Natural Step	**Ecological Footprint**	**Natural Capitalism**
Sustainability requires that the rate in which disorder (waste/pollution) is created must be in balance with the rate in which nature can break that waste down and restore order so that the biosphere does not degrade.	Sustainability requires reducing the "load" of a population (individual or organization) on nature, so that it is within the long-term resource-provision and waste-assimilation capacities of the global commons.	Sustainability requires increasing productivity in natural resource use; shifting to biologically inspired production models/materials; moving to a "service-and-flow" business model; and reinvesting in natural capital.

Some authors have also suggested different phases that organizations progress along in their efforts towards environmental practices or sustainability, which can assist in understanding current and potential organizational performance. Gendron (2004), for example, suggests 4 phases: marginal (absence of environmental strategy), conforming (follow laws and rules only), leading (above average regarding the environment, seen as a source of competitive advantage) and ecological (use the organizational structure as a means to achieve social/environmental ends). Winsemiums and Guntram (2002) also suggest 4 phases: reactive, functional, integrated, and proactive. Dunphy *et al.* (2003) suggest 5 phases: rejection, non-responsiveness, compliance, efficiency and strategic pro-activity.

1.2.4 Enacting Organizational Change towards Sustainability

Many companies are involved in eco-efficiency efforts that are necessary for achieving sustainability, such as reducing their energy consumption, increasing their recycling, or investing in more efficient technologies. Often they are moving beyond compliance with government regulations towards accreditation under voluntary schemes like ISO 14001. Those enterprises that are often presented as paragons of sustainability – the original Ben & Jerry's, Patagonia or the Body Shop amongst others – have gone much further espousing "principles before profits" and committing themselves to make the world a better place (Willard, 2002). At the end of the 1980s these companies signed up to the CERES principles, aiming to reduce and eliminate waste, economise energy and other resources, reduce risk to the environment, produce safe and secure products, inform the public, engage upper management, provide reports and verify progress (Gendron, 2004). Some have gone even further, undertaking humanitarian efforts, lobbying governments, or encouraging conservation in other ways such as Mountain Equipment Coop and American Apparel. Nevertheless such leading companies remain far from sustainable (Nattrass and Altomare, 1999), and are heavily criticised for some of their practices (Entine, 1995). Thus, they do not offer a clear map for other organizations to follow.

Given the difficulties of organizational change in general and the significant challenge that applying sustainability evokes, many consultants and researchers have proposed a number of models to assist companies with such change (see Table 1.7). Whilst such models have been created with sustainability in mind, they have essentially the same elements as other organizational change models. For example, some highlight the need for upper management commitment, others note the need for a vision and making a diagnostic of the current state, others suggest creating a sense of urgency or underline the need to communicate effectively. These are all common elements in other organizational change models (such as Allaire and Firsirotu, 1985; Kotter, 1995; Michigan, 1961; and Palmer, 2003). They stem largely from the organizational development or configurational approach described in Table 1.4. That is they focus on how an organization "should" change; proposing a series of generic steps about how such change should be planned and enacted by a strategic leader.

Table 1.7 Certain Sustainability Change Models

Change towards Sustainability (Doppelt, 2003)	**The Transformational Path (Dunphy *et al*., 2003)**
1. Change the dominant mind-set 2. Rearrange the parts of the system 3. Alter the goals of the system by crafting a vision and principles of sustainability 4. Restructure the rules of engagement of the system 5. Shift the information flows by tirelessly communicating the need, vision and strategies for achieving sustainability 6. Correct the feedback loops of the system by rewarding learning and innovation 7. Adjust the parameters of the system by aligning the structure with sustainability	1. Know where you are now 2. Develop a vision - the dream organization 3. Identify the gap 4. Assess the readiness for change 5. Set the scene for action 6. Secure basic compliance first 7. Move beyond compliance 8. Establish the performance criteria for "compliance plus" 9. Launch and manage the transformational change program 10. Maintain the rage

A Road Map to Organizational Change (Hoffman, 2000)	ISO 14001 (Gendron, 2004)
1. Establish a sense of urgency 2. Form a powerful guiding coalition 3. Create a vision 4. Communicate the vision 5. Empower others to act 6. Plan for and create short-term wins 7. Consolidate, improve and produce still more change 8. Institutionalize new approaches	1. Engage upper-management with an affirmed environmental policy 2. Plan objectives associated with this policy 3. Put the plan into action 4. Verify and evaluate the results and the progress obtained 5. Review to constantly improve the system

Without prescribing a fixed model as such Mintzberg and Westley (1992) suggest a change sequence, stating that a full process of change (at any level) proceeds through three steps. Conceiving the change (learning) gives rise to a change in the mindset (vision or perspective) often driven by a visionary leader, and evokes programming the consequences (planning) where necessary. They suggest that whilst the planning stage can be bypassed (as in an informal change process), attempts to bypass both learning and vision (by importing learning without internalising the concept of the change in the mindset of organizational members) by going straight to planning tends to be dysfunctional (Mintzberg and Westley, 1992). By pondering the suggested steps in the change models shown in Table 1.7, one can envisage how this change sequence could be achieved allowing for a new perspective to emerge. Certain steps in these change models – such as knowing where you are now or communicating the need – would allow for inductive learning (the first sequence of change). Other steps in these models - such as identifying the gap and planning objectives – would probably give rise to a new vision (the second sequence of change). Others still – such as creating an environmental policy, empowering others to act, or planning for short-term wins – may evoke procedural planning (the third change sequence).

Whilst understanding the sequences of a change process may facilitate its implementation, it is not enough to guarantee successful results. Other studies of organizational change provide common elements, rather than fixed steps, that are common to successful initiatives. Porras and Hoffer (1986) identified communicating openly (sharing intentions, listening) and collaborating (making decisions in teams) as most strongly related to successful change efforts. Covin and Kilmann (1990) found communication, widespread participation, demonstrated visible and consistent support from top management, and tying the change to business needs to be important. Doppelt (2003) notes that effective governance systems and sufficient leadership are the two key elements of successful change efforts towards sustainability. Nattrass and Alomare (1999) highlight the importance of many of these elements in their nine key lessons for such change as summarised in Table 1.8.

Table 1.8 Nine Key Lessons for Organizational Change towards Sustainability (Nattrass and Alomare, 1999)

1. A proactive attitude towards change is the most effective approach to ensure the changes necessary in the corporations culture; 2. Endorsement and active support from the top is fundamental, as leadership is the cornerstone of any major change initiative, and it ensures that sustainability will be resourced; 3. A corporate culture that supports experimentation is a necessity, so that initiatives can be accepted, tested and learnt from; 4. A well articulated and aligned vision with the visions and values of individuals in the company is necessary to inspire commitment; 5. Involving employees and ensuring a common knowledge base about sustainability and what it means for the company accelerates involvement, innovation and learning;

6. Measuring and feedback at every level of the process reinforces learning and involvement and helps move ideas into action;
7. Promoting the company's sustainability agenda with all stakeholders accelerates the move towards sustainability;
8. Moving from a linear configuration to a cyclical process in harmony with natural systems usually takes place in a step-by-step process that seeks to safeguard corporate financial sustainability as it moves towards ecological and social sustainability;
9. Efforts towards sustainability are most effective when using a framework (i.e. the Natural Step) together with other tools/methodologies such as audits and management systems.

Many of the key lessons in Table 1.8 highlight the fundamental change in values that is necessary for organizations embarking down this road, an element also recognised by other authors on organizational change and sustainability. Doppelt (2003) states that most sustainability efforts fail unless the cultural beliefs, thinking and behaviour that are inconsistent with sustainability are altered. According to Piasecki (2000), organizations must be based on values of restraint, quality and devotion. Schmandt and Ward (2000) note that sustainability requires the changing of values whereby profit maximisation and the invisible hand are replaced by the search for improved quality of life, and the goal of individual enrichment makes way to communal solidarity, coherence, and sharing. This would mean uprooting the assumptions on which many organizations were originally built, questioning their entire *raison d'être,* and explaining why such change is so challenging.

The key lessons in Table 1.8 also highlight the fundamental importance of leadership in change efforts, a finding which is widely supported in literature too. Management support and communication consistently rank as the two most important success factors for organizational change (Palmer, 2003). According to Clement (1994), management leadership (especially top management) is probably the most critical element in a major organizational change effort, although other authors suggest that its importance depends on the complexity of the organization. Hafsi and Demers (1997) note that leadership is a key factor in SMEs but gives way to culture and structure in larger enterprises. For Piasecki (2000), organizational change towards sustainability requires leaders who are able to inspire the discussed value changes on a global scale. They would have to help their organizations rethink the way in which products and processes are designed, produced, distributed, used and discarded. Rather than the traditional take-make-waste model where resources are extracted and waste or pollution is returned into the environment, truly sustainable companies would need to adopt a borrow-use-return approach whereby materials are easily re-circulated and waste reused so that no harmful pollution enters the environment (Doppelt, 2003). However according to Doppelt (2003) few leaders grasp the deep-seated paradigm shift inherent in sustainability or know how to stimulate widespread cultural change. Most popular management literature describes how leaders spend their resources on making sure their organizations have strong financial goals and is essentially bankrupt regarding the topics of personal restraint and professional devotion (Piasecki, 2000). Thus, it remains unclear how the radically different mindsets, values and patterns of behaviour that this would require could be applied (Schmandt and Ward, 2000), although literature does note the ability of ethical, charismatic, value-based or transformational leaders to alter the values of their followers (see Ciulla, 1998; Burns, 2003; and Northouse, 2004).

Certain literature speaks not only of leaders but also of change agents, often interchangeably (as in Dunphy *et al.*, 2004), or when there is a distinction made change-agents are described in a manner which necessitates leadership qualities (see Allaire and Firsirotu, 1985). For

those wishing to study the roles of individuals in enabling organizational change this may pose confusion, as it is not clear as to whether the two should or could be distinguished.

Despite all the knowledge that already exists on enabling organizational change towards sustainability, most organizations still face considerable challenges in doing so. Few organizations today fully embody the socio-and ecocentric ideals of sustainability, nor do most actively support the application of sustainability principles throughout the rest of society (Dunphy *et al.,* 2003). Even if every company on the planet were to adopt the environmental and social practices of the supposed (although disputed) best-practice companies – like the original Body Shop, Patagonia and Ben and Jerry's - the world would still be moving towards environmental degradation and collapse (Hawken, 1993). With few examples to follow, it is difficult to measure how useful approaches intended to facilitate organizational change towards sustainability (such as models and frameworks) actually are, or the role of individuals in enabling this process. This is particularly the case for SMEs, as most of the approaches have been developed from research on large enterprises. In the following section the need for research to assist in clarifying such issues will be discussed.

1.3 The Need for Research on SME Change towards Sustainability

1.3.1 The Necessity of Further Research

Many authors highlight the need for further research on organizational change towards sustainability. Doppelt (2003) states that in order for companies to become truly sustainable more knowledge is needed on the sustainability change process to assist companies in applying sustainable development (Doppelt, 2003). In their book on sustainability research under the broader context of Organizations and the Natural Environment (ONE) studies, Sharma and Starik (2002) indicate that more empirical studies are needed using inductive and descriptive research to explain how organizations are changing (or not changing) in recognition of their interface with the natural environment. They and their collaborators discuss a broad range of avenues that have not been greatly explored by management scholars to date, particularly in North America. Some of the specific avenues that relate to organizational change towards sustainability are summarised in Table 1.9.

Table 1.9 Potential Research Areas on Organizational Change and Sustainability (adapted from Sharma and Starik, 2002)

Organizational Level • Contingency perspectives on organizational drivers and outcomes of environmental strategy (e.g. competitive advantage) to explain when/ how it pays to be green and the evolution from reactive (pollution control) to proactive (pollution prevention); • Relationship between organizational structures and proactive environmental strategy; • How structure/design affects environmental performance, and whether certification leads to changes in organizational forms/structures and competitiveness; • Defining and applying sustainable organizations.
Individual or Managerial Level • The role of individuals in affecting environmental change in organizations (such as theories of planned behaviour and charismatic leadership as drivers of corporate environmental strategy); • Environmental decision theory including non-traditional utility functions, negotiations, collective behaviour and social dilemmas, mapping and learning from the decision-making processes that balance economic, social and environmental factors

simultaneously; • Connections between rewards, incentives and information that may influence employees' environmental decisions and actions.
Other • Integrative studies examining the interaction of institutional and organizational variables, as well as organizational and individual ones, in influencing the evolution of organizational "greenness'' (i.e. the factors at various levels of analysis that influence the adoption and evolution of organizational environmental strategies and practices).

Many of the potential research areas identified by Sharma and Starik (2002) are also highlighted by other authors. Cao *et al* (1999) and Haines *et al.* (2005), by criticising the impoverished view of change programs that lack a systemic perspective and ignore the dynamic or complex nature of today's organizations, point to the need for contingency perspectives on change that are adapted to organizational contexts. Piasecki (2000) also notes the lack of research on the role of individuals or leaders, especially in regards to effecting value changes necessary to create sustainable organizations. Thus it remains unclear as to how leaders are influencing the establishment of radically different mindsets, values and patterns of behaviour (Schmandt and Ward, 2000), which would aid the transition of organizations from purely economic goals.

Doppelt (2003) notes that discussion about *what* to do dominate the public dialogue on sustainability – for example, which technologies and policy instruments to apply - however practitioners place comparatively little emphasis on *how* organizations can change their internal thought processes, assumptions and ingrained behaviour to embrace new tools and techniques. He claims that this void accounts for many of the problems organizations face when seeking to apply sustainable development, and further studies of how organizations are doing or not doing this could shed light on the area. The work of other change researchers seems to suggest that this void also applies to organizational change in general. Mintzberg and Westley (1992) state that much work remains to be done in attempting to understand the relationships between the actor in a change situation and the patterns of activity which at the macro level inform the researcher that change has occurred. What are the mechanisms of emergence and feedback that connect the experience of change at the individual level with the manifestations of change at the structural and cultural levels?

Other authors suggest that more such studies are required to build the business case for change towards sustainability, noting that the lack of an appropriate business case to sell sustainability is one of the reasons why businesses have been slow in changing (Willard, 2002). A 1999 study found that in most cases environmental initiatives only sustain themselves and grow within a particular company when they deliver specific, measurable business benefits, particularly with regard to a company's core business functions (AEI, 1999). In parallel, other authors have called for research to aid the integration of diverse theoretical perspectives and methods of inquiry; agreeing that the extant research on corporate sustainability is mainly theoretical, extremely limited, and an extremely promising area for future inquiry on a number of topics (Sharma and Starik, 2002).

1.3.2 The Importance of Research on SME Sustainability Efforts

The recognition of the need for SMEs to become more sustainable and play a role in creating a more sustainable society is growing. Traditionally these organizations have been left behind the momentum of larger corporations, and are being called on particularly by governments to become more engaged in ethical business, corporate social responsibility and sustainable development (Castka *et al.*, 2004). Accounting for more than 99% of Canadian businesses

(Industry Canada, 2005), and often dynamic and innovative solution finders with longstanding bonds to local communities, SMEs are ideally placed to progress the sustainability agenda. Thus, a broad spectrum of reports - including those by the European Commission (2001), UK Department of Trade and Industry (2002), and World Business Council for Sustainable Development (1999) - call for further research in this area to provide SMEs with guidance and tools that will incite and enable them to become more sustainable.

Despite growing calls for SME involvement, most methods and guidelines to assist companies in becoming more sustainable have been developed for large multinationals and do not focus enough on the specific problems of SMEs (Cramer, 2003). Apart from a few exceptions - such as Jones (2000), Castka *et al* (2004), and the work of the Geneva state in Switzerland[3] - most studies about organizational strategies for sustainability have been conducted on large organizations. As such they do not take into account the quite different dynamic of smaller firms. SMEs usually have more simple structures with few hierarchical layers, a simple or unified chain of command, little horizontal differentiation and fewer locations (Ackroyd, 2002). They also often operate in a more hostile environment - challenged by much higher costs of capital, little government support, and predatory corporate groups - which often force them to take a short-term profit horizon (Ackroyd, 2002). A Five Winds International and Pollution Probe study (2005), in collaboration with multiple actors such as the Canadian government, concluded that specific tools are needed for SMEs because the concepts and tools utilized by larger organizations are not easily transferred to them. They recommend simple tools with step-by-step procedures linked directly to customers, offering clear and immediate business benefits. Others suggest that specific analyses of factors common to SMEs that have become successfully engaged could be produced to help create a common framework for other SMEs embarking on this journey (Castka *et al.*, 2004). Yet other authors like Doppelt (2003) claim that their methods are applicable for all sized organizations as long as they are tailored to fit their unique nature, raising doubts about the need for such SME specific approaches.

Thus, whilst the concept of sustainability and the related models or tools offer interesting insights, it is unclear how applicable they are to SMEs. Do SMEs' moving towards sustainability actually need such models, frameworks or tools? And considering their limited resources and shorter-term horizon, how and why are they moving towards sustainability (Ackroyd, 2002)? What can one learn from SMEs successfully heading in this direction? Specific studies of progressive SMEs could show the benefits of change towards sustainability, how and why they did it, and provide encouragement or support for other SMEs towards achieving such ends.

1.3.3 The Research Problem and Objectives

Given the necessity of organizational change towards sustainability and the need for more understanding on how SMEs are making this transition, this present research aims to understand the organizational change of one SME that has already made significant contributions towards sustainable development. In particular, this research aims to answer the following questions with regards to one organization:

What has changed to allow the organization to become more sustainable?
Why did such changes occur i.e. what factors have influenced this change?

[3] The state of Geneva outlines their strategy for SME change towards sustainable development at http://www.geneve.ch/agenda21/pme/welcome.asp. Their method includes: creating a strategic project; implicating all personnel; measuring; adjusting; structural change; institutionalising by daily action; discussing with stakeholders; evaluating and communicating; promotion and partnerships.

How have such changes occurred and what have been the results?

Thus the objective of this research is to study the specific dynamics of this change process throughout the organization's history, in order to understand: what changes occurred that are contributing towards sustainable development; which factors influenced this evolution over time (including the role of values, leadership and/or change agents, which is not clear in much literature and at times confusing or contradictory); and how they were more or less successfully implemented (aiming to also understand whether sustainability frameworks or models are useful for SMEs, which will help to clarify debates in literature regarding their applicability for smaller enterprises and the appropriateness of such generic approaches). Finally, this research aims to build on the relatively small body of knowledge on SME change towards sustainability, contributing towards sustainability and organizational change literature in order to eventually assist or encourage both researchers and practitioners in enabling such change.

1.4 Conclusion

Given the mounting evidence that living systems throughout the world are in jeopardy, it is clear that a different and more sustainable development is not only desirable but necessary. Sustainable development, a solution to the current problems with human development, requires the implication of organizations if it is to be achieved. Nonetheless, it remains unclear as to how organizations should change, with few examples or tools to use and follow. Thus, further research is required on organizational change towards sustainability particularly with regards to SMEs, which have been neglected by most studies on the topic despite the fact that they represent the majority of organizations. This research thus aims to make a modest contribution to this void, seeking to understand the organizational change process of one SME that is successfully moving towards sustainability. The exact methodologies of this research are discussed in the following chapter.

CHAPTER 2:

RESEARCH METHODOLOGY

We shall not cease from exploration
And the end of all our exploring
Will be to arrive where we started
And know the place for the first time.
T.S. Elliot (Four Quartets)

Having already reviewed literature and defined the research problem (Chapter 1), this chapter aims to address the methodological aspects of the research. Firstly the ontological and epistemological positions are explained in order to place the research paradigm, an interpretativist one. Next the research design is presented, an ethnographic case-study approach, using multiple data collection techniques (document analysis, semi-structured interviews, and participant observation). Data analysis techniques are then presented, including the procedures used for coding and treating data. The way in which this research ensures the validity of findings - including the credibility, transferability, dependability and confirmability of the data - will then be discussed. Last, but not least, ethical issues are considered.

2.1 Research Paradigm

According to Girod-Séville and Perret (2001), before embarking on the quest for knowledge, one must ascertain clearly what one is looking for. Will such knowledge be objective? Will it be an accurate representation of a reality that exists independently of our experience or understanding of it? Or will it be our particular interpretation of reality? Is such knowledge a construction of reality? By recognizing the epistemological presuppositions on which their research is based, researchers can better control their research approach, increase the validity of their results, and ensure that the knowledge they produce is cumulative (Thiétart, 2001). The paradigm of this current research is interpretativist, positioned between positivism and constructivism (see Table 2.1).

Table 2.1 Epistemological Positions (Girod-Séville and Perret, 2001)

Epistemological Questions	**Paradigms**		
	Positivism	**Interpretativism**	**Constructivism**
Status of Knowledge	Ontological Hypothesis: The knowledge object has its own essence	Phenomenological Hypothesis: The essence of the object is multiple (interpretativism), cannot be attained (moderate constructivism) or does not exist (radical constructivism)	
	Independence of subject and object	Dependence of subject and object	
Nature of “Reality”	Determinist Hypothesis: The world is made up of necessities	Intentionalist Hypothesis: The world is made up of possibilities	

How is Knowledge Generated	Discovery	Interpretation	Construction
	The research question is formulated in terms of "for what reasons…"	The research question is formulated in terms of "what motivates actors to…"	The research question is formulated in terms of "to what ends does…"
	Privileged Status of Explanation	Privileged Status of Understanding	Privileged Status of Construction
What is the value of Knowledge? (Validity Criteria)	Degree of confirmation, Refutability, Logical Consistency	Credibility, Transferability, Dependability, Confirmability	Adequacy, "Teachability"
Paradigm of this Research	No	Yes	No

Whilst for positivists reality exists in itself with an objective essence that researchers must seek to discover producing a-contextual knowledge, for interpretivists and constructivists reality has a more precarious status (Girod-Séville and Perret, 2001). Radical constructivism declares that "reality" does not exist, but is invented, whilst moderate constructivists state that reality is never independent of the mind or of the consciousness of the person observing it. For interpretivists, multiple constructed realities exists that must be studied holistically so that some level of understanding can be achieved. Therefore, for constructivists and interpretivists, "reality" (the object) is dependent on the observer (the subject). This research is based on the same understanding, accepting that reality cannot be known objectively and that one can only represent or construct it.

For interpretivists and constructivists, the process of creating knowledge involves understanding the meaning actors give to reality (trying to understand it through actors' interpretations), rather than explaining it (Girod-Séville and Perret, 2001). This vision of reality lends itself to ethnographic research, that is, research based on listening and observing whereby questions and answers are discovered in the social situation being studied (Schwartzman, 1993). It also leads to the development of *grounded theory*, meaning theory derived from data, systematically gathered and analysed through the research process (Strauss and Corbin, 1998). Theories or hypotheses that are drawn from data are likely to offer insight, enhance understanding, and provide a meaningful guide to action (Strauss and Corbin, 1998). Unlike positivists and constructivists however, interpretivists draw a clear distinction between understanding and explaining. This research takes such an approach, maintaining that understanding behaviour must involve inquiry into local meanings (localized in time and place) that actors give to their behaviour in order to reveal their reality. Thus this research is contextual, involving research methods that allow an analysis of the functioning of one organization on-site (from within and without) as discussed in the next section.

2.2 Research Design: A Case-Study Approach

Studies that aim to understand the "what" or "how" and "why" or the specific dynamics of change, as this research does, need to know the organization intimately (Demers, 1999) and describe and analyse the evolution of change over time (Grenier and Josserand, 2001; Poole *et al.*, 2000). Thus, understanding organizational change requires understanding the individual organization (i.e. its structure, culture, systems, history, industry etc.), which requires examining the evolution of organizations over long periods in a contextual manner (Demers, 1999). This requires observation of the organization from the inside and not just

from the top, adding new more subtle and informal tools (such as observation, dialogue and listening) to the traditional ones (strategy, structure, systems).

Many authors highlight the importance of case-studies for such research. According to Yin (1984), case-studies are pertinent for empirical studies aiming to examine a contemporary phenomenon in its real life context. For Poole *et al* (2000), case-studies are the most sensitive way to analyse the many nuances of change. According to Merriam (1988), only a case-study can offer a means of investigating the complex nature of an organization consisting of multiple variables of potential importance in order to understand a phenomenon. They allow for a deeper and more detailed investigation which is normally necessary in order to answer "how" and "why" questions (Yin, 1984; Rowley, 2002). Thus, the case-study approach is consistent with a descriptive and non-experimental research design, where description and explanation (rather than prediction based on cause and effect) are sought, in order to make sense of the "big picture" that gives individual events and causes their significations (Merriam, 1988). It also allows the use of a wide variety of methods, assuring the validity of data found. Furthermore, inductive case-studies permit the building of abstractions, concepts, hypotheses, or theories by focussing on process, understanding, and interpretation, thus supporting an interpretivist research paradigm. Case-studies are also very useful in exploring new phenomenon (Roy, 2003) such as the process of organizational change towards sustainability, and particularly well suited to research areas where existing theories seem inadequate (Rowley, 2002). The reasoning behind the specific case-study chosen for this research will be discussed in the following section.

2.3 The Case of the Granby Zoo

The Granby Zoo has been chosen as the case-study in question for two main reasons. Firstly, it allows the answering of the research questions. This SME has already made significant changes towards sustainability, as was first demonstrated in their presentation at UQAM in June 2005. They were also willing to provide access to information for this research. Thus this case permits a detailed exploration of *what changes occurred towards sustainability*, *how they were implemented* and *why they took place* over a long period in a contextual manner.

Secondly, the case of the Granby Zoo fulfils the four essential properties of a qualitative case-study (Merriam, 1988). It is *particularistic*, in that it allows us to focus on a specific process – namely the organizations change towards sustainable development. It is *descriptive*, allowing a rich or holistic description of this journey by studying a wide variety of variables over time using information from a wide variety of sources. It is *heuristic*, allowing insights into a phenomenon that has not been previously documented: the Granby Zoo's evolution towards sustainability. It is also *inductive*, relying on inductive reasoning where new relationships, concepts, or understanding were discovered and hypotheses emerged from the data that was collected by several means, as discussed in the subsequent section.

2.4 Data Collection Methods

The data collection methods used for interpretivist and constructivist approaches consist of looking, listening, questioning, noting, recording and examining information (Schwandt, 1994). Qualitative instruments are particularly useful for researchers interested in insight, discovery and interpretation rather than hypothesis testing (Merriam, 1988). The three qualitative methods used in this research will be elaborated on as follows.

2.4.1 Document Analysis

Relevant documents were collected throughout the research (see Appendix A.1). These included historical records from the organizations archives (such as minutes of meetings, annual reports, announcements, administrative reports and other internal documents, as well as news-clippings, movies, and other articles appearing in mass media). Furthermore, investigations revealed other sources that supported hypotheses or introduced the researcher to new information, such as a book written by a former employee. Finally, more general books and reports were used in order to gather information on the changing macro context, and to allow for verification and clarity of the various external factors that influenced developments within the zoo. In total 103 documents, varying from single pages to several hundred pages, were reviewed to locate instances when comments were made regarding conservation efforts at the zoo. These documents were also used to understand how the context changed in the zoo over time, which issues were important for the zoo during different periods, and how factors like the organizations mission, vision, revenue, and visitor numbers evolved over time. They allowed the building of a detailed story about how eco-efficiency and animal conservation efforts grew in the zoo over time. Finally, they served to verify data collected using other methods and highlight new areas of interest.

2.4.2 Semi-Structured Interviews

This method is one of the most useful and popular in order to understand the perceptions and interests of different actors, allowing interviewees to freely express themselves verbally in detail once oriented towards certain subjects (Fenneteau, 2002). Preliminary interviews using open-ended questions were conducted with the key actors involved in the Green Zoo change process, namely the General Director and the Environmental Coordinator. This was done to get a general understanding of what went on and how it was progressing, as well as to find out which other actors would need to be interviewed to gain a holistic understanding of this process. After analysing the results, further interviews were conducted with a broader spectrum of actors involved in animal and resource conservation, two key areas of the zoo's process towards sustainability that emerged over time. When necessary, follow-up interviews were conducted to verify data or to gain further detail about new revelations.

In total formal interviews were conducted with nine employees (approximately 15% of total full-time employees) for an average duration of 44.6 minutes (see Appendix A.2). The actors chosen were those who: (1) played a major role in instigating or implementing animal conservation or resource conservation efforts; or (2) were most impacted by these changes. In terms of animal conservation, the major change instigator no longer works at Granby Zoo but was also interviewed as this actor played a crucial role and hence fell into the first category. The length of the interviews allowed ample time for actors to explain their perceptions and interests. Furthermore the significant amount of time that many interviewees have worked at the zoo (an average of 13.6 years), as well as the large variety of jobs which they have held, allowed for a rich understanding of the changing context from different perspectives.

All formal interviews were digitally recorded and transcribed to aid in analyzing the responses. They were based on a semi-structured questionnaire that included open-ended questions about the nature and perceptions of the change process (Appendix A.4 and A.5). The questions were adjusted as data was collected, so as to allow for further details to emerge and the clarification of conflicting evidence. They were also reviewed by experienced researchers native to Quebec, in order to ensure the clarity and appropriateness of language. Several shorter discussions were conducted on several different occasions with the Environmental Coordinator of the zoo, as well as various other employees some of which have worked in the zoo for over 20 years (from zookeepers to construction workers,

secretaries, buyers and coordinators), and recorded in a notebook. This was done to verify data and build understanding. Discussions were also conducted with key employees involved in the change effort to validate the findings - including the General Director, Environmental Coordinator and Assistant to the General Director (who worked with all the main change agents during the more than 25 years that she has been at the zoo) - after they were provided with the final chapter of results to review.

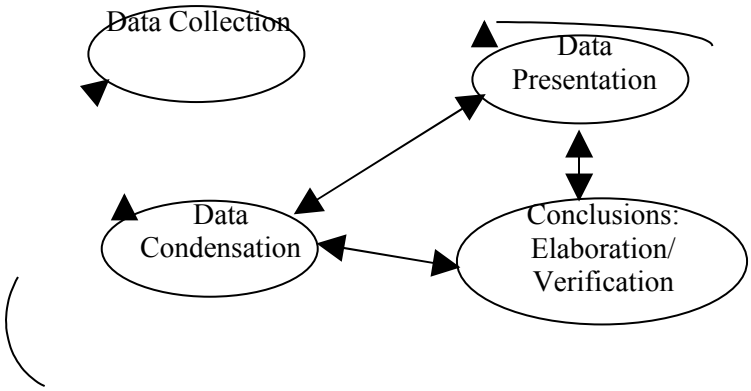
2.4.3 Participant Observation

Participant observation is a fundamental technique that constitutes the base of ethnographic data collection. The organization was observed in its real surroundings, as recommended by Schwartzman (1993), on 9 occasions for a total of 50 hours (see Appendix A.3). A certain number of meetings were observed, including the annual general meeting and the directors meeting. Furthermore, the various workplace areas were observed on numerous occasions, as was the site itself during both the open season and the winter season. This allowed insight into the zoo from a visitor perspective and an employee perspective regarding: the atmosphere of the zoo itself; the dynamics between different actors; employee roles, culture, and the formal and informal structure; decisions making processes; and other procedures. It also allowed the researcher to go behind the scenes and witness the handling of animals during the colder months when few visitors are present. Notes were taken on what was said, how participants interacted, and other more subtle signs such as body language and atmosphere. Observations, like the other data collection methods, were made throughout the data analysis, as will be explained in the next section.

2.5 Data Analysis

The analysis was based on the inductive compilation and interpretation of qualitative research findings, so the researcher did not enter the field with a preconceived theory or hypothesis. Rather, the researcher explored the phenomenon in question through a series of interviews, observations and document reviews, whilst refining and testing hypothesis and conclusions that emerged throughout the investigation as recommended by Miles and Huberman (2003) and shown in Figure 2.1.

Figure 2.1 Interactive Data Analysis Model (Miles and Huberman, 2003)



All data collected was ordered chronologically and filed into 5 categories (annual reports, presentations, articles, oral communications, and miscellaneous). This was done in order to ensure that all data was orderly, progressive, systematic, and easily retrievable for sorting and cross-referencing as recommended by Strauss and Corbin (1998). The initial investigation, based on observations, document reviews, and interviews with "descriptive" or "grand tour" questions, allowed the gathering of large amounts of information as recommended by Schwartzman (1993). Originally this investigation looked at the Green Zoo program and leadership only. However it soon became clear that the zoo was also contributing significantly to sustainability through animal conservation efforts too, and that eco-efficiency efforts began well before the Green Zoo program started. As evidence was condensed and presented for discussion 4 major themes or sub-processes became evident - animal management, energy management, water management and waste management - so data collection was then focussed into gaining more understanding of these four areas.
In order to ensure that these themes were clearly identified, interview transcripts, observation notes, and documents were inductively coded in the margin of the text as recommended by Miles and Huberman (1994). Since the majority of documents were historical and difficult to scan and order electronically, manual coding was the preferred method. Data collection continued into these four areas until data saturation was reached (meaning the same answers were being given from various sources and no new data was being found) and conflicting evidence was clarified or corroborated using multiple sources of evidence. Other information deemed important that did not fit specifically into any of these four areas, such as information on the financial health of the organization or visitor numbers, was also filed and coded.

The coded portions of the notes were translated, typed electronically, grouped and then ordered chronologically into the four themes. However following the condensation and

presentation of data, numerous overlaps in three of these themes emerged (namely energy, water and waste management), which led them to be regrouped under the umbrella of eco-efficiency; separately from animal management which was more accurately named animal conservation. The internal and external context of the organization, including its history, was also electronically typed and chronologically ordered to ensure that influential factors over time were not lost. Significant events in the external environment, particular those that were referred to through interviews and internal document reviews, were also noted to help situate the change within the larger context as recommended by Grenier and Josserand (2001). Through this work the length of these sub-processes, their periodicity, evolutionary trends, and the constitutive variables that influenced this development and are central to process analysis with a descriptive purpose emerged.

Findings or relationships in these two stories were verified or modified through further data collection and analysis, which enabled the researcher to organize materials and present a more complete and persuasive explanatory account of the phenomenon under investigation as recommended by Strauss and Corbin (1998). This description of "what has happened here?" is presented in chapter 3, separately from the discussion of "what can be concluded from all that?" in chapter 4 (Wolcott, 1994), so that it can be understood and analysed from various perspectives as recommended by Poole *et al.* (2000). Thus, whilst chapter 3 *describes the change*, chapter 4 discusses *its meaning and significance* through a systematic identification and interpretation of factors and key relationships. Chapter 3 is therefore built to provide a rich factual account of what changed, why it occurred, and how it was implemented, responding directly to the research questions in a rich, contextual manner. Following several presentations and reviews, the completed chapter was provided to three key individuals involved in the zoo's sustainability efforts who validated the results. Chapter 4 was built to trace the intricate web of connections that exist between the contextual factors (conditions/consequences or structure grouped at the environmental, organizational and individual level) and actions/interactions (process) as per Giroux (1993). They were analysed in four periods to understand their influence when change was more or less successfully implemented, and in what combinations, using tabular displays as recommended by Miles and Huberman (2003). This allowed numerous lessons and hypotheses to emerge, whose validity was assured through several means as discussed in the following section.

2.6 Validity Issues

Researchers can evaluate the knowledge they produce using different validity criteria depending on their epistemologies (see Table 2.1). Whilst such criteria are still a topic of debate for constructivists, for interpretivists validity criteria are those of trustworthiness (Girod-Séville and Perret, 2001). To establish the trustworthiness of knowledge generated, interpretivists criteria include credibility, transferability, dependability and confirmability (Girod-Séville and Perret, 2001). Each of these criteria, and how they have been addressed in this current research to ensure the validity of results, is discussed in turn.

2.6.1 Credibility

The internal validity of research projects, or credibility, is the guarantee that the conclusions reached about an experience reflect what happened in that experience (Mace and Pétry, 2000). Thus, it involves demonstrating that the reconstructions that have been arrived at via the inquiry are credible (Girod-Séville and Perret, 2001). In order to ensure that this is the case the following overriding principles discussed by Yin (1989) were followed:

1) Multiple sources of evidence – in collecting data through multiple interviews from different individuals, numerous direct observations, and documentation from various sources, the

researcher was able to verify conclusions and reduce subjectivity assuring construct validity;

2) Case-study data base – in creating and keeping a formal assembly of evidence distinct from the final case-study report, where case-study notes are organized and categorized in a complete and easily accessible manner, the reliability of the entire case-study was increased;
3) Chain of evidence – in formulating explicit links between the questions asked, the data collected, and the conclusions drawn, evidence presented can be easily verified. Furthermore, the main conclusions were verified through interviews with key actors, thus reducing the possibilities of bias and misinterpretation on behalf of the researcher.

2.6.2 Transferability

External validity, or transferability, is the certitude that the results of a research can be generalised and applied to other populations or cases (Mace and Pétry, 2000). As an ethnographic approach is being used, with one exploratory case-study about the particularities of only one organization, findings cannot be generalised as a sole case is not representative of an entire population. It does, however, allow for illumination and grounding of theoretical concepts (Westley and Vrendenburg, 1996), such as working hypotheses that can be abstracted depending on the degree of similarity between the contexts. Thus, certain understandings that have emerged over the course of this research should serve in advancing understanding of organizational change towards sustainability, particularly with regards to SMEs and especially such change in zoos.

2.6.3 Dependability

The conclusions reached are said to be reliable or dependable if, after undertaking the same research again in the same way, the findings and conclusions would remain constant. Reliability was addressed by developing a case-study database which clearly demonstrates the operations of the study through the documentation of procedures and appropriate record keeping (Rowley, 2002). This case-study database includes case-notes, case-study documents, interview notes or transcripts, and analysis notes. Using a descriptive framework where themes are clearly reflected, evidence was gathered by themes and compared so that descriptions could be corroborated from multiple sources of evidence (Rowley, 2002). Thus, another researcher would most likely reach the same conclusions upon investigating the data.

2.6.4 Confirmability

Interpretativists place the emphasis on data confirmability, that is whether or not the data found are confirmable (Girod-Séville and Perret, 2001). In this research the triangulation of methods, and therefore of data, was addressed using documentary analysis, semi-directed interview and participative observation methods. For example, information collected in one interview was compared with findings from other interviews, observations or documents in order to confirm or question its validity. Also, the study's procedures are described in detail in this chapter so that the sequence from initial questions to conclusions may be carefully considered, as recommended by Miles and Huberman (2002). Finally, key individuals who have been involved in the zoo's efforts towards sustainability were provided with the final chapter to review and confirm the findings. Such interactions were conducted in an ethically appropriate manner as discussed next.

2.7 Ethical Questions

When a research project involves human subjects, one must ensure that it respects certain ethical rules, which can be categorised into three groups (Mace and Pétry, 2000).

Firstly, the researcher must obtain the consent of the subjects. Both verbal and written approval was received before undertaking this research. All employees who were formally interviewed also signed a letter of consent where it was clear that they were not obliged to participate in this study, however no employees exercised this option. Finally, the organization was provided with the results chapter containing the data summary, which was reviewed and verbally validated by the General Director and other implicated employees.

Secondly, the researcher must respect the confidentiality and anonymity of the information collected. This was done in various ways. The researcher explained to each actor that their name will not be referred to in the report, so their titles rather than their names were used. They were also provided with a letter of consent that they signed at the beginning of the interview, which explained the nature of the research and how their data would be handled (see Appendix B). All interviewees were asked and accepted that their testimony be digitally recorded, under the assurance that this procedure was only to ensure that the researcher had correctly understood and could accurately record the conversation. Whilst they were told that the digital recording device would be switched off should there be certain details that they did not want recorded, no interviewees exercised this option. Also, the data itself is stored in a manner which minimises the chances of theft, reproduction or accidental diffusion.

Thirdly, the researcher must demonstrate that the advantages of their research outweigh the associated risks. Information on the objectives, needs and contact details of the researcher and their directors were provided via e-mail to the coordinating employee, during an oral presentation to the board of directors, and in an e-mail for all employees (see Appendix B) at the beginning of the data collection period. Therefore the various participants understood their roles and the importance of the research, as well as the research aims of the study. Finally, the research aims were again explained to every actor with whom the researcher interacted. Thus the advantages of the research - linked to their scientific pertinence, methodological rigour, and the importance of the expected results - were discussed with relevant actors, which is why they graciously accepted to participate in this study.

2.8 Conclusion

This research is based on an interpretativist paradigm, with knowledge generated inductively using a case-study method which allows for a deep understanding of organizational change towards sustainability. The SME chosen is the Granby Zoo, as this sample addresses the research problem whilst fulfilling the four essential properties of a qualitative case-study (being particularistic, descriptive, heuristic and inductive). Several research methods were used to collect data including document analysis, semi-directed interviews and participant observation. Data was collected, sorted, coded and analyzed throughout the study in a manner which allowed a rich account of organizational change towards sustainability to emerge, whilst ensuring the validity of findings (by addressing the credibility, transferability, dependability and confirmability of results), and satisfying ethical considerations. The following chapter details the results that were gathered based on this methodology, providing a detailed description of the Granby Zoo's evolution towards sustainability.

CHAPTER 3

RESEARCH RESULTS

"Lots of people talk to animals," said Pooh.
"Not that many *listen* though."
"That's the problem."
A. A. Milne (The Tao of Pooh)

Having described the methodological process employed in this research (Chapter 2), the purpose of this chapter is to present a rich description of Granby Zoo's evolution towards sustainability. It aims to do so by detailing the context within which these changes have occurred, and the factors that have influenced this evolution. Thus, this chapter begins with a general overview of the zoo followed by a historical one, in order to describe important details that are not necessarily directly related to sustainability efforts. It then describes the two main ways in which the zoo is contributing towards sustainable development – through animal conservation and eco-efficiency efforts – and how they have changed over time.

3.1 General Overview

Granby Zoo is located 100 km southeast of Montreal. Since its founding in 1953, it has remained a major Canadian tourist attraction. It is one of only two institutions in Quebec, and one of five in Canada, which has achieved the American Associations of Zoos and Aquariums (AZA) accreditation. It is also accredited by Canadian (CAZA) and World Association of Zoos and Aquariums (WAZA). During its summer open season it attracts more than 500 000 visitors, and a further 20 000 students during educational visits over the other months. Almost 20 million visitors have passed through its gates in just over 50 years (TVA, 2003). 73% of its visitors come from the greater metropolitan area of Montreal including Monteregie, Laval and the northern belt of Montreal, 13% come from the Estrie, Bois-francs and the Mauricie, and 6% come from other regions of Quebec. On 40 acres it holds a collection of 172 species, including 54 mammal, 37 bird, 43 reptile, 17 amphibian, 10 fish and 11 invertebrate species (ZSG, 2005a). With just over 60 full-time employees, and almost 500 during the summer months, Granby Zoo operated by the Zoological Society of Granby (ZSG) is classified a medium sized non-profit enterprise.
In 2004 the Granby Zoo began a major modernisation project that will continue until 2007, rebuilding or renovating much of its infrastructure. The cost of this project is estimated at $38 million, with $14.5 million being funded by the federal and Quebec government each, $2 million by the local government, $1 million by the zoo's foundation, and the remaining $6 million by the zoo itself. In 2005 the zoo made a profit for the sixth consecutive year of $1 484 098, which was reinvested in its facilities. Revenues also grew by 14.4% compared to 2004, reaching a record of $13.3 million. In total 521 372 visitors were received, more than the average of 519 000 over the last 5 years. Granby Zoo remains one of the most important economic drivers of the region generating over $30 million of economic spill-overs annually, and has remained the most visited or popular zoo in Quebec for much of its history.

3.2 Historical Overview

3.2.1 An Organization Founded upon a Larger Vision

Granby Zoo was founded by the industrialist and mayor of Granby for 25 years, Horace Boivin, who was a visionary and humanitarian with big plans for his city (TVA, 2003). He brought the idea of cooperatives and the feeling of solidarity from Europe, establishing communal gardens and cooperatives in his own factories for his employees (Historia, 2004). Leading by example, he distributed his mayor's salary to several charitable organizations, and sought the collaboration and donations from other members of the local bourgeoisie for community projects (Gendron *et al.*, 2001). He wanted Granby to be a beautiful city where all would feel happy, full of parks and fountains like London or Rome (Historia, 2004).

His most celebrated park, the Granby Zoo, grew from his natural love for animals. Initially a small menagerie in his parents' back yard when he was still a child that attracted ever local visitors, it was handed over to the Youth Chamber of Commerce once the Zoological Community was founded in 1946, and then to the ZSG in 1953 (Gendron *et al.*, 2001). On the 28th of May 1955, the zoo officially opened its doors and in just a few months it became one of the major tourist sites in Quebec and Canada (Gendron *et al.,* 2001), attracting nearly 300 000 people in its first season (Historia, 2004).

That same year the elephant Abrika arrived after a negotiation between Mr Boivin and the prime minister of India, Mr Nehru. As a first in Quebec it was "an extraordinary event which justified the closure of all the schools in the city", at a time when television was only beginning and elephants had only been seen in books (La Voix de l'Est, 2003). According to his daughter Line Boivin, the zoo became part of her father's strategy to attract many enterprises to Granby (Historia, 2004). During a period when the city of Granby needed an image to acquire new industries, the zoo was something which served Horace Boivin enormously (Historia, 2004). And succeed he did. During his mandate, the city grew beyond 30 000 inhabitants, obtained international notoriety due to its zoological garden, and earned the title "Princess of the Eastern Townships" (Gendron *et al.*, 2001). It was the 14th largest city in Quebec measured by population, but the 11th largest measured by the value of manufacturing produce and the 7th largest measured by the number of factory workers, demonstrating its industrial and economic importance.

3.2.2 An Organization Survives despite Financial Insecurity

Unlike other zoos in Quebec that benefit from continual financial support from the government (see Figure 3.1), Granby Zoo never established such a tradition. Mr Boivin's repeated demands for such support around the mid 1900s were not heeded by the government of the National Union, as Mr Boivin and his entourage were clearly identified as liberals (Gendron *et al.*, 2001). When the ZSG was founded as a non-profit organization in July 1953 to make a more serious zoo (Historia, 2004), it had the very modest budget of just $50 000 (Gendron *et al.*, 2001). Finances continued to be difficult as noted by the financial controller of the zoo for the first 35 years: "keeping a zoo alive with a population of 20 000 – 25 000 is impossible. A small city like Granby, theoretically can't support a zoo…each year we thought it would go bankrupt" (Historia, 2004). In fact, the zoo remains highly dependent on its visitors to finance its operations. Around 70% of revenues are derived from visitor admissions and a further 25% from related activities such as food or boutique purchases. Hence changes in visitor numbers - influenced by weather, competition, worker disputes and

publicity, as well as the quality of installations and the offer of new attractions - have a significant and compounded impact on profits or losses (see figure 3.2).

Figure 3.1 Revenue Sources for Quebec Zoos (Chaire de Toursime, 1999)

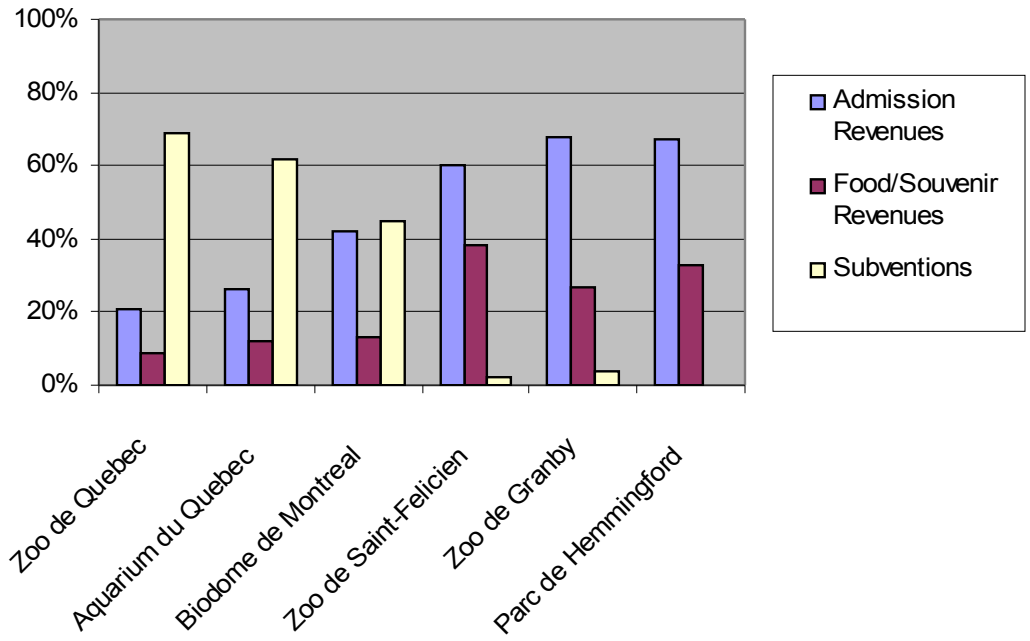
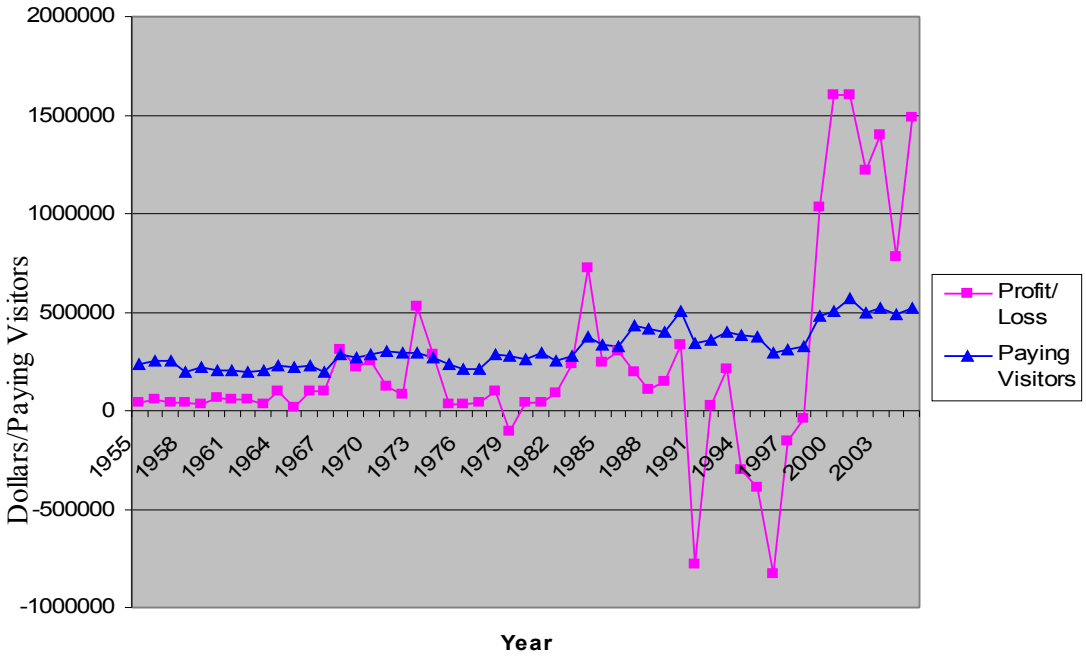


Figure 3.2 Profit/Loss and Visitors at Granby Zoo (from annual reports)



Since the construction of the Aquatic Park called Amazoo in 1999, the zoo was able to return to profitability and repay its debts within 5 years. In 1998, the Zoological Society of Granby

had a deficit of almost $2 million; by 2003 it had a surplus that exceeded $2 million (ZSG, 2005c). However, the situation at the zoo remained precarious: "the state of the exhibits deteriorated to the point that the zoo was obliged to part with popular species to avoid losing its accreditations" (RJ Marketing *et al.*, 2002). Financial difficulties for much of the 1980s and 1990s meant that the zoo was not able to invest sufficient funds in maintaining and improving its facilities. The situation was urgent (RJ Marketing *et al.*, 2002). By 2004, just after its 50th anniversary, the zoo received word that government funding totalling $30 million would be received, allowing the zoo to bring its facilities up to standard and undertake the biggest modernisation of its history. This was part of a larger investment of $105 million by the provincial and federal government in all Quebec zoos (Benoit, 2004), including the Quebec Zoo which was closed in 2006.

3.2.3 An Organization Built on Creativity and World Openness

The charismatic founder of the zoo, Horace Boivin, was described by his daughter as someone who was "passionate, overloaded with energy and always, always, always had new projects" (Historia, 2004). He used his international notoriety and talents of persuasion to find sponsors to help the zoo overcome its financial difficulties "armed with a speech that emphasised developing friendship between cultures in exchange for animals" (Gendron *et al.,* 2001). Some of his contributions include arranging:

- Donation of the land on which the zoo is located from the Parish of Notre Dame;
- Free animal food be provided, from hay to old bread, by certain companies;
- Donation of zebras, a leopard, penguins, a camel and 25 bird species from the London Zoo (Gendron *et al*., 2001), in exchange for a few beavers (TVA, 2003);
- Exchange a chimpanzee for two black bears with the Paris Zoo (Gendron *et al*., 2001);
- Donation of an antelope and a rhinoceros from a U.S. zoo (Gendron *et al*., 2001);
- Free transport of animals to the zoo from all over the world by Poseidon shipping lines in exchange for a street named after its owner Captain Kempf[4] (Historia, 2004);
- An agreement that Montreal would never have a zoo[5];
- Certain privileges from the local council from which it still benefits today, such as a waiver for municipal taxes, land taxes, rubbish collection and disposal, water, sewage transport and disposal costs.

Evidence of other employees' creativity can also be seen throughout the zoo's history. This includes several improvements made to animal procedures from the mid 1980s onwards, and technical innovations like the metal thatch roofs for Amazoo developed together with local craftsmen which withstand the climate whilst resembling traditional materials. Several ideas came from employees' interactions with other zoos, such as placing mirrors in the Flamingo enclosure which led to the first breeding of this species in small groups.

3.2.4 An Organization Develops Towards Sustainability

One of the difficulties with sustainable development is defining and applying it to enterprises, as discussed in chapter 1. The Wildlife Conservation Society (WCS), the world's largest system of urban and wildlife parks located in New York City, defines its sustainable

[4] His first unannounced visit led to a scramble to print and place the name "Kempf" on a street sign in the city. It was subsequently moved several times before finding its permanent position.

[5] This occurred with Montreal's mayor at the time, Jean Drapeau, as disclosed by Mr Pierre Bourque, Mayor of Montreal from 1993 until 2001 during a personal discussion on the 20th of February, 2006. It is important because ¾ of visitors to the Granby Zoo come from the Montreal area.

management as everything from renewable energy to green purchasing, pollution prevention to waste treatment, green building to habitat restoration (Greer, 2005). That is, integrating green thinking and environmental practices into all aspects of its operations. In effect, this vision of sustainable development is eco-efficiency, aiming to more efficiently use resources so that less waste is created. This vision of sustainable development remains dominant in literature and people's understanding of sustainability. It is, for example, the focus of sustainability frameworks that were described in the first chapter and that are used as the vision for many organizational efforts, and a key step according to the Brundtland report:

> "The most common theme throughout this strategy for sustainable development is the need to integrate economic and ecological considerations in decision making" (WCED, 1987, p. 62).

However zoos can, and do, contribute to sustainable development in a much more significant way: through animal conservation. Protecting species is an important element towards ensuring sustainable development, as noted by the Brundtland report:

> "The diversity of species is necessary for the normal functioning of ecosystems and the biosphere as a whole. The genetic material in wild species contributes billions of dollars yearly to the world economy in the form of improved crop species, new drugs and medicines, and raw materials for industry. But utility aside, there are also moral, ethical, cultural, aesthetic, and purely scientific reasons for conserving wild beings…. A first priority is to establish the problem of disappearing species and threatened ecosystems on political agendas as a major economic and resource issue" (WCED, 1987, p. 13).

Already several species which were extinct from the wild - such as the European bison, Arabian oryx and Przewalski wild horse - have been successfully reintroduced into nature due to zoos' breeding programs. The current amphibian crisis, accelerated by the spreading of a fungus infection that is wiping-out amphibians in certain areas, has led the IUCN and WAZA to call upon zoos to capture and house healthy species, like modern Noah arks, in order to ensure their survival. Also, with more than 10% of the worlds population visiting zoos each year (Lamontagne, 1995), zoos can act as vital areas to educate humans on the importance of protecting ecological diversity and other sustainability issues.

Whilst the Granby Zoo contributed significantly to the economic and social development of its region long before the concept "sustainable development" entered common usage – making the city of Granby famous internationally (Gendron *et al.*, 2001), attracting hundreds of thousands of visitors to the region yearly, providing many jobs, as well as supporting many local firms with financial spill-overs comparable to a flourishing enterprise and other products like manure - the zoo's focus on eco-efficiency and animal conservation began much later. The next section will describe the evolution of these two areas in the zoo, that is, it will look at how these sub-processes changed towards sustainability over time.

3.3 Animal Conservation

The Zoological Society of Granby was founded in 1953 in an effort to make a more serious zoo (Historia, 2004), following several troubling incidents that led two local papers to affirm that if an animal protection society existed at Granby they would have denounced the situation a long time ago (Gendron *et al.*, 2001). With minimal finances available, volunteers cared for wild animals with only their own goodwill and no appropriate expertise (Gendron *et al.*, 2001), confronted with premature deaths and sickness that they could not understand or manage (Historia, 2004). Shortly after the zoo officially opened, it proudly showed its newest facility for large mammals (elephants, rhinoceros and camels). Although they didn't realize then, today it is evident how inappropriate such enclosures were (see Figures 3.3, 3.4).

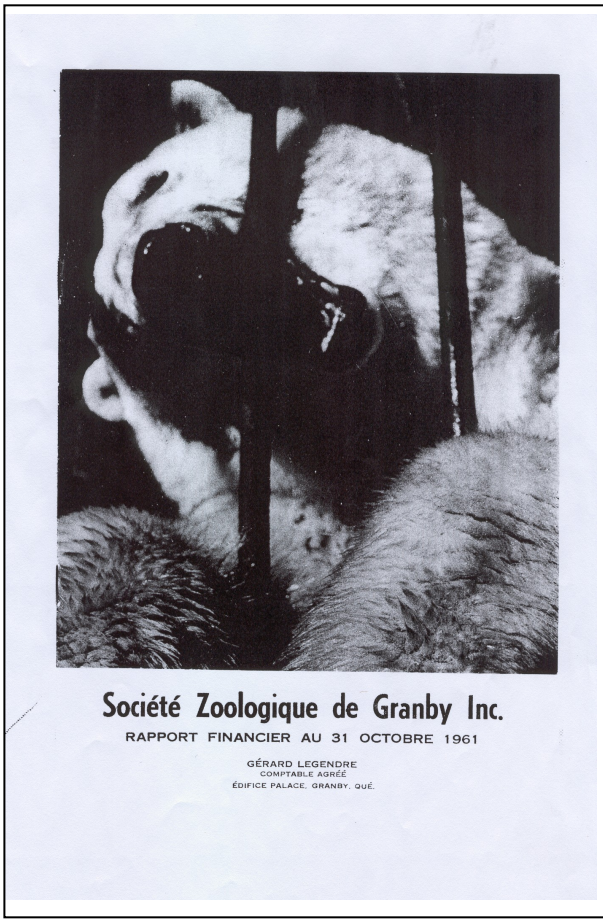
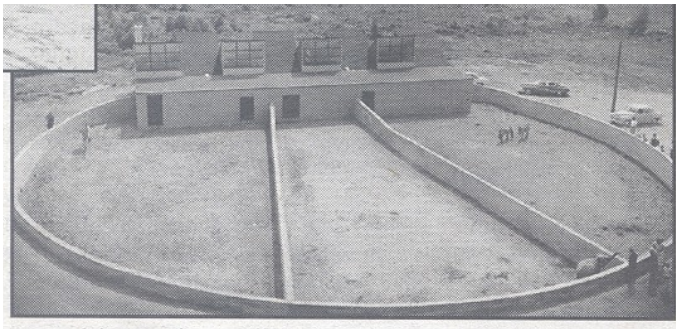


Figure 3.3 Front Cover of the 1961 Financial Report showing a Polar Bear biting the Bars of its Cage (ZSG, 1961).

Figure 3.4 The Elephant, Rhino and Camel Enclosure from 1956 until 1968 (La Voix de l'Est, 2003; ZSG, 1968)



At the time the zoo's animal practices were far from focussed on conservation. In 1964 the ZSG president, who like all board members is elected for a mandate of two years that can be extended twice, notes that the only reason for their work is to promote the success of the zoo for the benefit of the visitors that pay tribute to it from all over (ZSG, 1964). In 1965 the same president states that the sole objective of the zoo is the development of the garden so the attraction remains one of the largest and stable assets in the city (ZSG, 1965). Back then it was common to take endangered animals from the wild for entertainment purposes. The celebrated gorilla Mumba, now one of the oldest gorillas in the world at 45 years, was taken from the forests of Cameroon and raised by a Granby family before being used for a television show on Radio Canada (*La vie qui bat*) and then placed in the zoo (Gendron *et al.*, 2001). Other animals at the zoo were also used for show purposes (see images 3.5 and 3.6). Such animals had difficulties interacting with their own species following such close human contact. Mumba, for example, never attempted to mate and hence never passed his valuable genes on despite numerous efforts, more attracted to human females than his own species.

Figure 3.5 Cover of the 1959 Financial Report showing a dressed Chimpanzee performing on a Horse when Animal Spectacles were common in Zoos (ZSG, 1959).

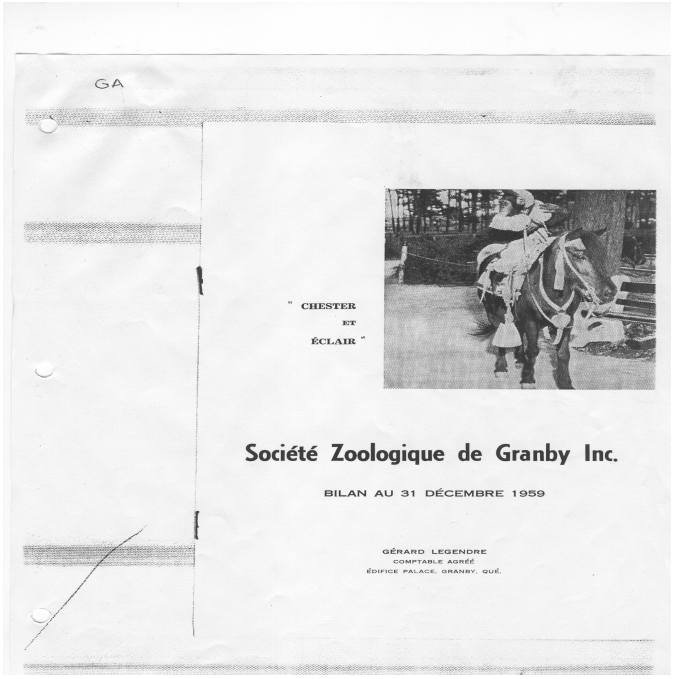


Figure 3.6 The Leopard Raja with the General Director he accompanied everywhere and a Friend touring Saint-Catherine St, Montreal in 1964 (La Voix de l'Est, 2003).

In the 1972 annual report the first official message of conservation appears: “it is the intention of our Society to promote education favouring the protection of fauna, with a scientific aim in the area of zoology”. The zoo was not alone; this was a growing tendency worldwide. In 1972 AZA introduced its certification, setting the standard for North American zoos, whilst other zoos in Quebec, such as St-Felicien, created natural habitats that were very popular with visitors and claimed to curb the evolution of traditional zoos (Lamontagne, 1995). The ISIS organization was also founded the year after, when 51 zoos in North America and Europe agreed to provide information for a databank called the International Species Information System (ISIS) to assist zoos in serving animal management and conservation goals. Such external organizations were pushing the conservation message – by assisting in breeding, research and education efforts - at a time when the rapidly declining number of animals in the wild meant that zoos were having more and more trouble procuring species and were under increasing pressure to get better at breeding their own stock. Thus, zoos’ emphasis switched from taking animals from the wild towards conservation, by breeding animals in captivity, to ensure resilience and continuity of the captive and wild populations as a whole (Wesley and Vredenburg, 1996).

Despite the zoo’s official conservation statement in 1972, and the emerging trend towards conservation in the industry, evidence suggests that Granby Zoo’s practices were far from focussed on conservation during the 1970s. Part of the reason could have been the fact that few funds were available to invest in animal care at that time, so management concerns were probably focussed on more urgent problems. The 1970s was a financially challenging period for the zoo. The zoo incurred one salary rise after another with its unionised workers, which resulted in drastic cuts to infrastructure investments (ZSG, 1977) and hence the attractiveness of the zoo, and/or involved negative publicity and strikes during the visitor season (ZSG, 1978). Such factors, coupled with several years of poor weather, led the zoo to make losses or near losses in 1975, 1976, 1977, 1978, 1979 and 1980. There were thus few funds that could be liberated for making this apparent conservation intention a reality, and management concerns were most likely focussed on the zoos survival. Notes from the veterinarians (vets) at Granby Zoo during the 1970s and early 1980s also suggest that conservation was not a priority at this time.

The zoo’s first full-time vet in the late 1970s and early 1980s noted the resistance from zookeepers and the zookeeper coordinator, who from lack of adequate education or otherwise systematically blocked improvement efforts or did not take adequate care. She describes how a baby wapiti died of hunger because his feeding trough was too high, how two European stags died of thirst because the water taps were frozen, how a Galapagos island tortoise died from organ damage several days after being dropped and not reported, and how animals from the same family (such as brothers and sisters) were allowed to breed (Beaudin, 1986). Furthermore, notes from the previous vet who worked on call for much of the 1970s, tell a disturbing story of a giraffe that died from complications after several falls on a slippery floor that zookeepers repeatedly refused to clean over several days, despite the vet’s repeated demands (Beaudin, 1986).

There also does not appear to have been full cooperation from the zoo’s upper management at the time either. They did not provide vaccines, uniforms or support practices to make sure that zookeepers or visitors were not contaminated from the animals despite the vet’s insistence (Beaudin, 1986). Medicines were out of date and few animal records or diagnostic equipment existed, making coupling and medical treatment difficult, and no quarantine was provided to isolate sick animals either (Beaudin, 1986). Also, few resources were available to improve diets, which at the time consisted of food unfit for human consumption, such as sick animal carcasses that risked passing on infections or old vegetables often cooked and discarded by restaurants (Beaudin, 1986). The zoo faced many premature deaths and breeding problems. Nonetheless the vet succeeded in convincing management to invest in

more expensive meats that were fit for human consumption despite financial challenges (Beaudin, 1986). Thus, the animals began receiving more of the nutrients they needed to help them be healthier, live longer and possibly breed.

Other concrete steps towards improving animal care were also taken at the end of the 1970s with the vet's encouragement. The zoo began recording animal data in ISIS in 1978. Previously no animal records existed making everything from treatment to diagnosis or long-term planning difficult. Access to such information is important for conservation too, providing a tool to survey and manage captive populations and trends, which aids in ensuring the resilience of populations over time. A new vet facility was built. The vet also pushed for zookeepers specifically trained in caring for wild or exotic animal species, rather than retired farmers used to caring for domestic animals only (Beaudin, 1986). By the late 1970s the first technician in animal health was hired and by 1982 the zoo had an official policy in place to hire zookeepers trained in animal health. The zoo was avant-garde in this regard, with certain Quebec zoos still not demanding this of their personnel (former Zookeeper in interview). New employees were aware of how inadequate animal care was and also set about pushing for change, as explained by one of the zookeepers:

> "In 1978 when I arrived, if I think of all the bars, the walls, it's incredible. I made them enlarge the space for the elephants by 5 or 6 times, inside and outside, because it wasn't adequate" (Historia, 2004).

Such employee led change was common across the industry at the time, when specialists trained in animal care, zoology and biology, animal medicine, and education were increasingly hired by zoos. With them knowledge about animals improved, and zoos began considering the precise needs of animals regarding movement, food, exercise and rest. Thus animals could move, reproduce and develop conquering characteristics as they do in the wild (Lamontagne, 1995). The development of such scientific fields led to an evolution from a primary interest in classification to a focus on behavioural elements and finally a concern with genetics (Westley and Vredenburg, 1996). It became clear that a number of species need to live in colonies in order to reproduce, thus requiring larger habitats where they could frolic freely and escape the looks of curious visitors when needed (ZSG, 1993b). Therefore enclosures, once constructed only with the pleasure of crowds in mind, changed significantly (ZSG, 1993b). Design criteria were established for the habitats (as the exhibits began to be called), following demands to establish such standards (Westley and Vredenburg, 1996).

Improvements in diets and hiring policies occurred during a time when Granby Zoo had returned to profits and was looking with confidence to the new decade, despite a general decline in tourism across Quebec (ZSG, 1981). A new record profit of $723 230 was posted in 1984 (ZSG, 1984). Much of the success was due to the construction of a reptile house, following a significant donation of $700 000 from the provincial and federal government (ZSG, 1984), which increased visitors by more than 100 000 (Beaudin, 1986). However problems with temperature regulation, filtration of water and parasites, cohabitation of species, and the lack of competent personnel, led to significant losses of reptile species and a series of employees being sick, fired or quitting their position (Beaudin, 1986). The vet, greatly unsatisfied with the level of commitment towards animal care, left the zoo in the early 1980s. So too did the zoo's first technician in animal health. In early 1985 the General Director and the manager who supervised construction, zookeepers and acted as the curator also departed. This meant that almost no managers were left to run the zoo as it was managed by a small team comprised of five or less employees at the time.

Facing a crisis with no management staff and the opening season only a few months away, the president of the zoo (an architect) sought to hire more professional staff. Just weeks before the 1985 season opening, the new vet was hired. He had to work closely with the

president to ensure that the zoo got through its summer visitor season despite the lack of administrators. He also had to take on two extra responsibilities that were previously not the responsibility of the vet: animal curator and zookeeper manager. This period allowed the new vet to gain credibility and network with the president and the entire board, as well as learn about the various weaknesses of the zoo's animal strategy. For example, on his first day on the job he received two expensive animals from an animal dealer: a snowy owl with a broken wing, and a supposed adult grand zebra that was obviously a juvenile. Upon phoning the animal dealer to report the problems the animal dealer said he'd come and kill the owl and replace it. Thus difficulties associated with using animal dealers became immediately apparent to the new vet and curator, who communicated his concerns to upper-management. The first annual general meeting speech after the arrival of this vet confirms the president's support of improvements in animal care:

> "We are focusing on our animal health service, OUR RAISON D'ÊTRE. With a full-time vet, this service is on its way to structure itself and focus on improving the quality of life of our animals, the quality of our species, and in improving their environments…in the short-term we need to establish an animal plan. We have a problem with the ageing of our animals which one must renew…" (ZSG, 1985).

With backing from upper management, the new vet was able to begin many obvious improvements in animal care and conservation efforts. The vet, together with one of the first zookeeper's educated in animal health that arrived just after the new policy was in place, set about hiring new zookeepers committed to improving animal care. Although getting old zookeepers who were mostly retired farmers to raise their standards was difficult, the new ones were the opposite. They were young, enthusiastic, and had very high expectations. New protocols were established with strict guidelines about how animals should be fed, how their enclosures should be cleaned etc. Some staff would sneak into the zoo in the evening when uncooperative unionized workers were not around to gather evidence, such as taking photos and samples, in order to prove that certain keepers were breaching protocols. Over the next five years around half of the zookeepers were replaced. The vet and his team also focussed on improving animal records (showing the medical history, birth and other specifics of each animal), many of which were poorly kept as the zoo had lacked the necessary permanent staff to keep good records for much of its history.

In his first year the vet chose to attend two conferences, one with leading zoos in Canada that were part of CAZA, and another with leading zoos in the U.S. that were part of AZA. These experiences provided important networking opportunities, and exposed the new vet to the movement of best practice zoos, including their focus on animal enrichment and breeding or exchanging animals as opposed to using animal dealers. It also led him to begin lobbying management to aim for CAZA certification. Using ideas from these conferences and zoo visits, the vet encouraged zookeepers not to limit themselves to just cleaning and food, but to also find tools that improve animal livelihoods known as enriching their environment (Historia, 2004). They began stimulating the animals with taste and odour, hiding food in boxes, improving diets, studying animal behaviour, and communicating with other zoos to learn about their programs (Historia, 2004). They also began setting up education tables in the zoo thereby raising visitor awareness about the behaviour of the zoo's endangered species (Beaudin, 1986).

From the mid 1980s the conception of animal spaces was completely reviewed too, with the new Director of Maintenance and Construction motivated to work with the vet in improving enclosures. Habitats were changed so that they increasingly resembled species' natural environments. Government grants provided funding for the construction of nocturnal caves and lion exhibits without bars. Certain employees even crept into the zoo after-hours to

improve concrete enclosures (by adding trees etc.), in order to get around resistance by unionized employees working in the maintenance or animal care departments. The zoo also began exchanging animals, a much cheaper alternative than using animal dealers, which provided another incentive to improve practices as it requires good record keeping and animal care practices (so that animals can be sent in good condition with all the necessary information). Encouraged by the advances already made, and probably also influenced by negative press regarding animal care practices at the zoo (following the publishing of a critical book by the previous vet[6]), upper management continued to support improvement initiatives. It agreed to invest in employee trips to conferences for all disciplines[7], and to seek CAZA accreditation. Standards at the zoo were not high enough for CAZA in 1987, however the review process and recommendations that followed proved an important blueprint for the zoo. Improvements made over the next 12 months allowed the zoo to succeed in receiving this certification the year after. In 1988 the zoo also sought AZA accreditation, and once again the inspectors refused the application and provided a list of why the zoo fell short. At this time the president noted the significant commitment that the zoo was making towards conservation stating "our mission…focuses on the conservation and reproduction of species threatened by extinction as well as the protection of their natural environment" (ZSG, 1988). The zoo made further improvements and achieved the AZA accreditation in 1989, having conformed to the norms and high standards demanded by the international zoology community. It was the first institution in Quebec and the fourth in Canada to have this accreditation (ZSG, 1990), which affirmed its commitment towards providing the highest standards in animal care and conservation:

> "North-American zoos regrouped under a dynamic and well structured association, the American Zoo and Aquarium Association (AZA), are considered the principal leaders in the world. These most highly regarded zoological gardens in North America influence the future of zoos in terms of both offer and demand" (Chaire de Tourisme, 1999).

Joining AZA as well encouraged the zoo to continue improving animal care even though certain changes, such as parting with charismatic animal species that attract large visitor numbers, caused negative impacts on much needed revenue[8]. For example, in 1989 the zoo lent its primates to other institutions until funding was available for the construction of habitats that better conformed to AZA norms. The "Island of Primates" habitat, constructed in 1969 so that visitors could see their favourite animals evolve in relative freedom on islands (ZSG, 1969), visibly stressed the animals who felt under attack (Historia, 2004). Without bars and only a moat in-between, visitors threw everything from nappies to scissors and cigarettes at the animals hoping to get a reaction (Historia, 2004; Beaudin, 1986). Parting with such charismatic species was not easy as noted by the president: "they are very difficult decisions to make, considering the impact that they will have on our future visitor numbers, but they are necessary to maintain operations and respect our missions" (ZSG, 1989). Other notes also highlight growing awareness and difficulties involved in such change:

> "As these are threatened species and our institution participates in international committees on managing endangered species, it is very important for us, whilst these animals are still of an age where they can reproduce and be integrated in groups of primates in other institutions, that we hurry and relocate them. We cannot, in too tight

[6] This book is called: "Zoo, Si les bêtes parlaient, si le public savait" meaning "If Animals Spoke; If the Public Knew" by Louise Beaudin (1986).

[7] During this period not only the vet attended conferences, but also the zookeepers, educators, and other employees too. This and other expenses were cut in 1992 to minimise costs, only reassumed once the financial situation improved at the end of that decade.

[8] AZA standards are significantly higher than CAZA standards, which may explain why currently 24 zoos in Canada hold CAZA certification but only 5 also hold AZA certification. Achieving AZA certification now allows Canadian institutions to be part of CAZA and WAZA.

> enclosures, assure their reproduction…Furthermore, the evolution of our knowledge and ethics towards animals has helped us realize that visitors, in wanting to make the primates react, quite bluntly assaulted them. Whilst not always on purpose, they set off auto-defence mechanism: the monkeys screamed and gesticulated. In the past we found that amusing; today a conservation institution can no longer justify such practices" (ZSG, 1993b).

> "Revenues have plateaued and expenses are rising. In order to increase revenues, one must increase the clientele. Therefore one must invest important sums in buildings in order to generate new interest centres for visitors, whilst at the same time following the objectives of the mission of the Zoological Garden of Granby, being: an educative mission, which consists of diffusing knowledge in cultural, scientific and research areas; a mission to conserve species, which aims to save rare or almost extinct species; a recreation mission, which allows the individual to profit from recreation; and a tourism mission, which is satisfied by delivering an attraction for visitors which benefits the region from the economic spill-overs of its activities" (ZSG, 1989).

With the conservation goals now also focussed on education, in-line with CAZA and AZA standards, significant commitments were made in this area. Previously education had been randomly conducted by zookeepers on site and focussed on animal behaviour. When the education department was created and an education director was hired in 1989, mentalities and the role of the zoo continued to evolve:

> "At the end of the 1980s we created educational services and from that point on we became a zoological institution that did research, conservation, and popular education. Before we just did tourism, from then on we did tourism and also zoology, popular education, and conservation" (former Education Director in interview).

By the early 1990s, visitor education had expanded beyond animal behaviour to look at human impacts in endangered rainforests, a project funded by government grants. Soon after, the zoo would become one of the first to ask for illegally traded animal products from the related IUCN convention, in order to educate visitors about the problems with demanding exotic artefacts made from endangered species. The department also set up a mobile zoo so that educators could visit schools to teach children about animals, a first for Quebec. In 2005 almost 20 000 school children benefited from this service, a new zoo record (ZSG, 2005a).

In the early 1990s the zoo also built a quarantine to restrict the risk of diseases spreading and improved several animal exhibitions, to better conform with AZA standards (ZSG, 1991). The zoo continued to enlarge its conservation role by focussing on research, quickly earning a reputation in the field due to its willingness to collaborate with external researchers. This creative approach allowed the zoo to rapidly participate in numerous scientific projects both *in situ* and *ex situ* with various universities and other research institutions despite its own limited funds for such initiatives. Conservation efforts had thus moved beyond the border of the zoo as noted by the vet:

> "Those who know me a little know that I firmly believe that zoos have an important role to play in the conservation of threatened species. This role doesn't limit itself to programs for reproducing in captivity and educational activities…It's a turn towards efforts to conserve species there where they are threatened, that is, in their habitats. More and more research on species with a threatened status is conducted in nature, partnership projects with national parks in disadvantaged countries and educational activities towards target populations are backed by zoos around the world. Animals in captivity have therefore become real ambassadors, and the wild populations in

> nature can benefit from the expertise acquired by zoos and the funds generated by them" (ZSG, 1998).

In 1992 the zoo participated in seven research projects with Canadian and American universities. In 1994 a project was piloted to study a threatened Quebec tortoise species, in cooperation with the Canadian Fauna Service and the Quebec Ministry of Environment and Fauna, as well as the Society of Natural History of the Saint-Laurent Valley. By the turn of the century this particular project had greatly expanded, involving the education department as well who toured the species' region to educate students and adults about the importance of protecting them. Artificial insemination was also tried on a giraffe in collaboration with the University of Montreal and the Toronto Zoo, aimed at overcoming difficulties with transporting this species to potential mates[9]. Furthermore, an animal collection plan was elaborated in the same year, a new training program for zookeepers was created, and the vet noted that their "preoccupation is to offer excellent animal care" (ZSG, 1994). By 1995 fourteen endangered species in the zoo were part of the Species Survival Plan (SSP), an international program which aims to maintain healthy, self-sustaining captive populations of species that are genetically diverse and demographically stable (AZA, 2006). Research associations and collaborations continued throughout the 1990s with institutions and zoos around the world such as the University of Sherbrooke, the University of Bremen, the Canadian Fauna Service, the Quebec Ministry of the Environment and Fauna, and the IUCN (ZSG, 1996). The zoos mission at that time highlights the focus on animal health, research and conservation despite the financial difficulties:

> "[Granby Zoo] has a mission of promoting a responsible attitude towards the natural environment by dedicating its efforts towards the understanding, appreciation and the conservation of living creatures and their habitats" (ZSG, 1994).

Improvements in animal behaviour and health were evident. According to one of the zookeepers at the time: "we began having animals that were so old they should be dead but were still living" (former Zookeeper in interview). The zoo succeeded in reproducing the highly endangered snow leopards, providing "**the** birth of the year" (ZSG, 1994). Recognition for its successes in animal conservation came in other ways too. In 1991 Granby Zoo received a certificate from AZA for having reproduced 25 lemur cattas, a threatened species (ZSG, 1991). In 1992, following the construction of a new cave area for nocturnal animals and a bear mountain, the zoo received the Baines Award from CAZA, the highest distinction for Canadian zoos (ZSG, 1992). Other species began reproducing at the zoo for the first time such as the giraffes, underlying their improved welfare as noted by the vet:

> "If we want to know whether their basic needs are satisfied we look at their reproduction because it is that which they will put aside, the least important thing" (TVA, 2003).

In 1992 Granby Zoo also became the first zoo in Quebec to succeed in reproducing pink flamingos in captivity. This rare event generally occurs in institutions situated in the tropics with a colony of around 40 birds. Whilst Granby Zoo had this species from its beginnings in 1955, they had never reproduced previously and had lost their pink colour. Around the beginning of the 1980s the new specialists began questioning whether their diet was correct, and began experimenting with their nutrition until colour returned to their feathers. A few years later the birds were provided with the materials they needed to make nests (a mixture of wood shavings, soil, hay, and water), and began doing so. By the late 1980s special

[9] This followed the death of a male giraffe the previous year, when the semen was taken in order to keep the genetic diversity of the animal for future use. A sample of the gorilla Mumba's genes has been taken and will be used if and when cloning techniques for gorillas develop sufficiently.

incandescent sodium lamps were installed in their enclosure, to recreate the same sunlight that these birds are acquainted with in their natural habitat. The result was that the pink flamingos began laying eggs, but infertile ones. Following a visit to a conference, employees decided to try installing mirrors in the enclosure to give the birds the illusion that they were living in a colony like in nature. Soon after fertile eggs were laid and baby pink flamingos followed. Granby Zoo pioneered reproducing these birds in small groups (TVA, 2003).
Another example from the early 1990s of employees' creativity was the world's first caesarean of polar bears, attempting to save babies who were continually eaten by their father (this is a common occurrence with polar bears when the distance between the father and the offspring is not sufficient). This experience gave the zoo important and unique information, and led AZA to ask the Granby Zoo to prepare the studbook or North American inventory on this species (ZSG, 1993b). This was an honour for the zoo, with species studbooks being integral to international efforts aimed at reproducing endangered species. Comments from the General Director at the time highlight the increasing focus of the zoo on animal conservation beyond visitor recreation:

> "This honour confirms the real *raison d'être* of our institution, which is the protection of endangered species…The tourism aspect of our zoo has become, in reality, a means of financing which allows us to achieve our role of education" (ZSG, 1993b).

Thus, the entertainment of visitors was no longer the principal mission of the zoo. In fact, by 1994 the recreational aspect of the zoo was no longer part of the mission. The mission was to promote a responsible attitude towards the natural environment by dedicating efforts to understanding, appreciating and conserving living creatures and their habitats (ZSG, 1994). Recreation had become an objective towards achieving the mission, but the client was no longer the focus, it was the conservation of animals that ensured the zoo's legitimacy:

> "I am often asked if the captivity of animals kept in zoological gardens is not a contradiction to the animal conservation message that we diffuse…The Granby Zoo is home to 91 rare or endangered species that often have no other refuge than in certain nature reserves and zoos. Agricultural pressures, urban development, deforestation, pollution, hunting, poaching and animal trading might be reversible and permit the future reintroduction of animals from zoos back into nature, which is why we participate in seven Species Survival Plans or international reproduction programs for species in precarious situations. Furthermore, with 223 animal species and 1041 specimens the Granby Zoo is a living laboratory, where the acquisition of knowledge on captive animal methods has implications on the reproduction, health, physiology and management of animals in captivity and in nature. Finally, the zoo provides a hands-on interaction with the visitor, educating in a way no book or video can. The keeping of animals in captivity is therefore no longer a question of choice, but rather a privilege for future generations of animals and humans" (ZSG, 1993a).

However commitments towards animal conservation, including AZA accreditation and participation in SSPs, involves donating considerable employee time to gathering information and collaborating with other zoos (Westley and Vredenburg, 1996), as well as other financial investments. Whilst the zoo wanted to do more, it was entering a difficult period. The mechanical dinosaur exhibition of 1990 was a much needed success, increasing visitor numbers by 25% and revenues by 35% compared to the previous year. But the tide turned the following year (ZSG, 1990), blamed on the recession and a long and difficult working conflict which caused visitor numbers to fall by 160 000, a loss of almost 1 million dollars, and cutbacks to all departments (ZSG, 1991). Even with the strong economic growth period beginning shortly after in the context of globalisation, whereby the population of Granby grew considerably to 45 441 in 2000 (Gendron *et al.*, 2001), the zoo's difficulties continued. In

1993 the much anticipated koala exhibition, a 1st for Quebec and only a 2nd for Canada, also didn't live up to expectations, due to the 350th birthday celebrations in Montreal and poor weather (ZSG, 1992). In 1994, the founder of the zoo and its inspiration (Horace Boivin, otherwise known as "Mr Granby"[10], who features in almost every second annual report since its beginnings), died. Growing competition and weather continued troubling the zoo in the following years too:

> "The drop in the number of visitors over the summer season can be explained by several non negligible elements. The diversity of tourism options, addition of major attractions (e.g. the Montreal Casino), numerous free activities, consecutive summer festivals in Montreal, difficult economic context that obliges people to choose among a number of leisure activities, mild weather (especially on weekends) and meteorological previsions (!) certainly had an effect on the overall number of visitors in 1994. In this context, it will be essential to search for new attractions which allow us to demark ourselves from the growing competition over the coming years" (ZSG, 1994).

Other initiatives, like the Fairy Lights winter visits that attracted 26 000 visitors to the zoo in 1993 and 27 500 in 1994 (ZSG, 1993a; ZSG, 1994) during the normally closed winter period, and the mechanical whales exhibition in 1995, didn't help alter the stagnation or decline in visitor numbers, and losses continued to accumulate. The ensuing restrictions on expenses and the rationalization of personnel (ZSG, 1992), which continued for much of the 1990s, had repercussions on the Department of Maintenance and Construction (ZSG, 1993a) and the Department of Animal Care (ZSG, 1997). They had few funds to invest in improving animal facilities in keeping with AZA standards, or to properly care for expensive species like polar bears or penguins, forcing them to part with many popular species throughout the 1990s as shown in the following quote and table 3.1:

> "We have to invest important sums in buildings in order to create and generate new centres of interest for our visitors. We must also conform with the evolution of mentalities and of new social considerations towards the environment as well as new rules which support the preservation of endangered species. All these reasons have forced us to relocate our bears and destroy their exhibits. For the same reasons, we have decided to separate ourselves from the primates who won't return to the zoo until we can offer them more modern exhibits that are better adapted to their needs. These are very difficult decisions to make, considering the impact they will have on the number of our future visitors, but it is necessary in order to maintain our operations in the zoo and respect our missions" (ZSG, 1989).

[10] From the Societé d'histoire de la Haute-Yamaska, http://www.shhy.org/archives/cu/p034.html (visited on the 8/1/05) and Historia, 2004.

Table 3.1 Animal Departures at the Zoo (RJ Marketing *et al.*, 2002)

Year	Animal Departure
1990	Departures of the orang-utans and white-handed gibbons
1991	Departure of the chimpanzees
1996	Departure of the polar bears
1997	Departure of the penguins
1998	Departures of the otters and beavers
2000	Departure of the cobras
2002	Departure of the white rhinoceros
2003	Departures of the grey and common foxes

Despite employee efforts and receiving substantial grants for new constructions and projects[11], by 1996 the zoo was in deep financial trouble and its future was in question. The ZSG board selected a new General Director with a background in marketing and a reputation for saving companies in difficulty. Recognising the absolute dependence of the zoo on visitors, who fund practically all of the operational costs of the zoo, the General Director's first priority was to improve the visitor experience during a period when quality was one of the major preoccupations of North American managers. This focus is demonstrated in his 1997 annual general meeting speech and other speeches throughout his mandate:

> "*Voila* the first strategy in 1997: focus on the client, give them a WOW service, that is, a service that exceeds expectations from the moment they enter the Zoo site. The WOW service is one where quality is prioritized, the quality of the site, the quality of the animals, the quality of information, the quality of the welcome and the see you again at the exit. The WOW service is a winning attitude, a professional attitude, an attitude of an entrepreneur" (ZSG, 1997).

Thus, the client returned to the centre of the zoo's preoccupations alongside its conservation mission. By 1997 visitor numbers had increased significantly, spurred by better service and excitement surrounding the new Africa pavilion. This facility was created to reinforce the unique vocation of the Granby Zoo in Quebec: the conservation and the reproduction of animals in a precarious status (ZSG, 1996). As such it sought to ensure animal comfort, providing several hiding spots should the animals seek tranquillity and the same climate as their natural habitats (temperature maintained at 24°C, regulated humidity and sun for 14 hours per day using special lamps that reproduce the warmth of the sun and encourage vitamin D absorption). The success of this pavilion, constructed with the animals and visitors well-being in mind (ZSG, 1996), was apparent in the animals behaviour. Mumba, for example, was visibly calmer and less stressed (Historia, 2004). Clients were also more satisfied, with an 8% rise in individual visitor spending and over 125 000 response coupons evaluating the client service as "very good" or "excellent" (ZSG, 1997).
The General Director's second strategy was to "stimulate confidence in the future of the organization and pride to be part of it" by creating a Human Resources department to be an "unavoidable link to institute better communication, resource management, training, and a

[11] In 1996 the zoo received $5.5 million in grants ($2 m federal, $2 m provincial and $1.5 m municipal) for the construction of the Horace Boivin education/administration pavilion, and the Africa pavilion. $49 758 in federal or provincial government grants were also received for education, science and employment activities, as well as the usual support from the City of Granby of $168 700 in the way of tax write-offs (water treatment, property tax reimbursement, works and services).

bridge of mutual respect with the union" (ZSG, 1996). The following year the president noted: "one of the most important realizations being the signing of a collective convention for 6 years…a historic agreement" (ZSG, 1997)[12]. This agreement ensured that difficult yearly wage negotiations would not hinder the development of the zoo during this critical period. The focus on animal conservation could thus continue, an important element in ensuring the credibility of the institution, as noted by the General Director:

> "No credibility is possible for the Granby Zoo without the highest international standards of conservation and animal care…and more, as we must be leaders in this field. The base is already solid: we can count on an enviable reputation thanks to the work of employees over the last years. We must confirm and push our own expectations even further" (ZSG, 1997).

The financial situation of the zoo continued improving the year after, with the 46th year of existence confirming the positive redressing of the zoo's finances (ZSG, 1998). Visitor numbers increased by 7.2%, revenues increased by 6%, and profit before write-offs were 4% above projections ($572 000 instead of $550,000) in 1998. Still, the zoo's situation remained precarious, facing debts and little money to improve ageing animal installations. The zoo thus aimed to diversify its offer whilst staying true to its mission as noted by the President:

> "The development model of the garden goes in the direction of a diversification of our activities, a constant improvement in our profits and our mission of conservation specialized towards a collection of exotic animal species: unique, charismatic and spectacular. These objectives permit us…to remain the leader amongst Quebec tourist attractions….We have confidence in the future" (ZSG, 1998).

Thus, the second phase of the turnaround began. It involved constructing an aquatic park called Amazoo, an idea concocted by the General Director and inspired by the Amazon Rainforest, with a river adventure and the largest wave pool in Quebec (ZSG, 1998). The two main objectives were: to consolidate the competitive position of the zoo, by creating a strong and diversified tourist venue with a product that attracts; and increase the net profit generated by the zoo (ZSG, 1998). After two and a half years of talks, nine months of construction, and an investment of almost $6 million (backed by Granby city), it was opened in 1999 (ZSG, 1999). This plan generated concern amongst employees, however they were won over:

> "The vet and I were scared that we'd become an attraction park with animals instead of a zoo with attractions, but when the General Director came with his project we didn't have a choice, we had to go in that direction in my opinion. He succeeded in reassuring everyone by saying that above all we are a zoo, and the directors were promised that Amazoo would bring us the money we needed to invest in the zoo, not for growing Amazoo, but for improving animal habitats" (Director of Client Services in interview).

> "The mentality changed with the idea of an aquatic park…The zoo took a direction much more focussed on the client, on tourism, and some feared that we would turn away from our role of animal conservation. But straight away, after the first year of operations in 1999, the visitor numbers jumped dramatically and then we made

[12] Several annual reports note difficulties in reaching collective agreements and meeting salary rises as well as workplace disputes and disruptions (see 1976, 1977, 1978, 1991 and 1992).

> substantial profits that could be reinvested in the business, and the first that benefited were the animals because we had the money to create interesting habitats…Since the aquatic park was built we are no longer an organization that has difficulties financing itself…We have turned the page completely." (Director of Human Resources in interview).

The impact of Amazoo was spectacular with the president noting: "over the last few years the situation of the Granby Zoo has redressed itself in an enormous way and seen, in 1999, one of the better if not the best years of its history" (ZSG, 1999). More than 50 seasonal positions were created, the visit time increased from 5.5 hours to 8, visitors from outside of Quebec increased from 1.6% to 7.2%, regional economic spill-overs exceeded $17 million, hotel/zoo packages increased by 55%, and spending per person increased too (ZSG, 1999). The animals also benefited from this success:

> "Since we integrated the aquatic park things are going better. Since then our role to take care of animals, to reproduce and protect them, and also to think of the environment, is much more present" (Director of Construction and Maintenance in interview).

According to the president, Amazoo was necessary to "regain our leadership in the quality tourist domain and to allow for enough financial room necessary to improve the garden that will soon celebrate its 50 years" (ZSG, 1999). The zoo began planning its modernisation at the turn of the century, hoping to celebrate its 50th anniversary in 2003 with modernised facilities. The Director General pushed the idea of constructing two dolphin pools - one at Granby Zoo and one in Old Montreal - intended to give the zoo another revenue source by diversifying its activities. He departed in 2000 with the feasibility study of this increasingly controversial project underway and the new General Director took over championing this project. By 2002 this project was abandoned, in the light of escalating international controversy after several animal rights groups intervened to contest the logic of such a project despite public support[13]. Shortly after the new General Director stepped down and the zoo was without a General Director for six months, which caused it to lose its AZA accreditation. AZA appears to recognise that zoos' conservation efforts are related to a broader sound management of the zoo's governance and operations. The application itself requires satisfying hundreds of questions and numerous criteria including the governing of the institution, staff capabilities, involvements with support organizations, financial security, physical facilities, safety and security issues, animal collection information, vet care, conservation activities in the broad sense also covering natural resource conservation, as well as research and education.

Despite losing the accreditation, the zoo continued with its *in situ* and *ex situ* conservation projects, still run by the same vet that arrived in the mid 1980s. For example it financially supported the Conservation Breeding Specialist Group of the IUCN, the Amsterdam Foundation of Tigers to conduct conservation efforts in Asia, the International Snow Leopard Trust which provided financial assistance to impoverished communities to protect rather than hunt this species, the International Elephant Foundation, and the natural refuge of Missisquoi Bay. It also earned the position of one of the top 30 institutions from over 586 in the ISIS system, participated in SSPs aimed at reproducing 16 threatened species in North American Zoos and 38 Studbooks, as well as continued its program to re-establish a threatened

[13] One article states that a coalition comprising over 50 local, national and international groups opposed the project (La Presse, 2001), whilst another states that 92% of the public supported the idea (Lemieux, 2002). Brigit Bardot also wrote a letter to the zoo denouncing the project (Le Soleil, 2001).

tortoise species in Quebec. Furthermore, the zoo participated in 13 scientific studies, such as artificial insemination of giraffes in collaboration with Laval University, a study of gorilla genes with Merck-Frosst, and antibiotic dosages for elephants.

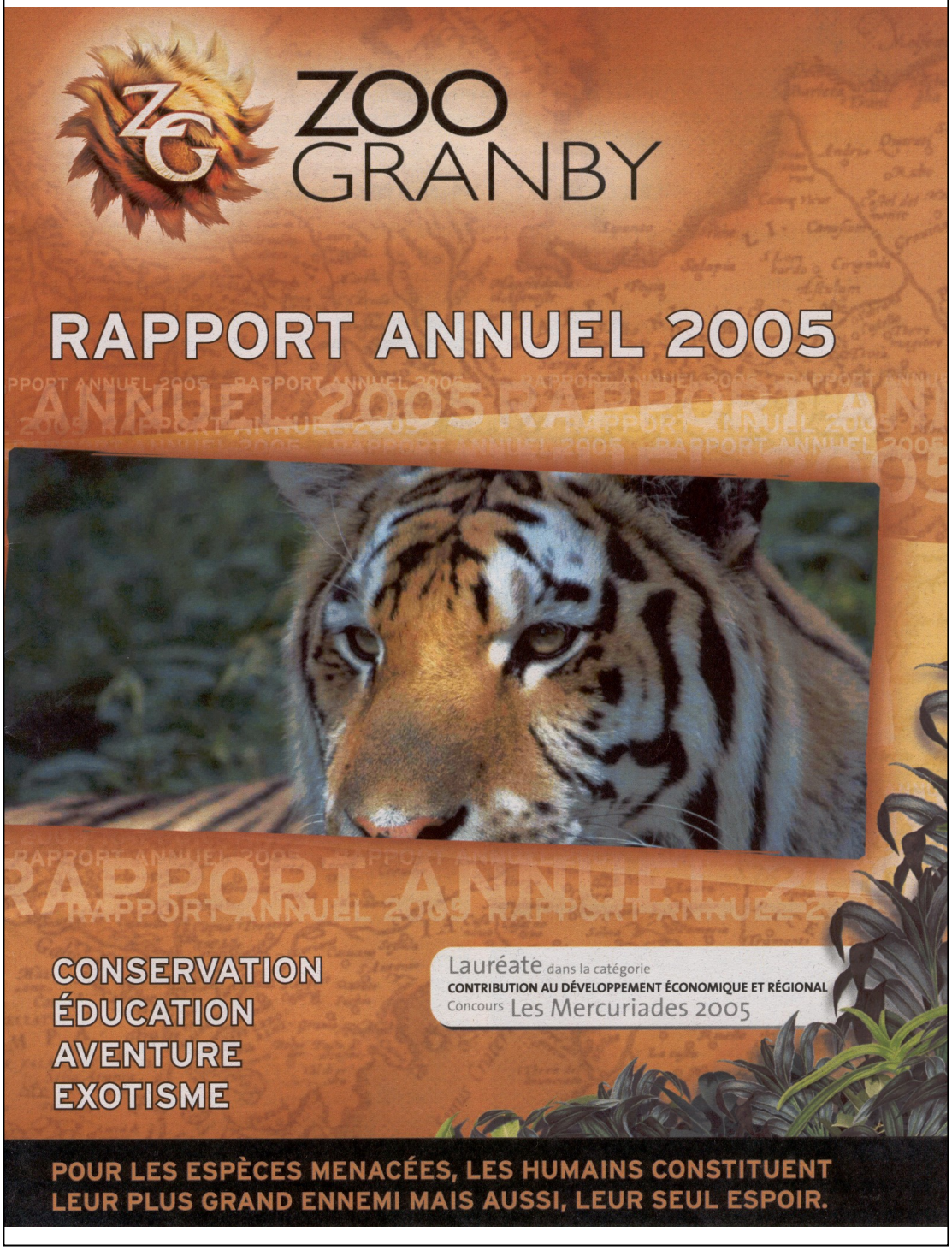
The interim director was replaced by the present General Director on the 29th of September 2003. At that time the zoo was still awaiting confirmation of grants for the biggest modernisation project in its history, albeit without the Dolphin pools. It sought a modest sum of $36[14] million compared with other zoos abroad[15]. In February 2004, the new General Director received word that the funding would be arriving shortly, with the first instalment needing to be spent by the end of March and billed before the end of April in order to fit in with the government's financial year. There was no time to wait, construction had to begin immediately. Some of the first habitats to be improved under this modernisation project were the ones that the new General Director found inadequate on her first inspection of the zoo in 2003 such as the feline exhibit with bars. She also got directly involved in the AZA re-accreditation process, thus becoming the head of the zoo's conservation efforts and ensuring full commitment from the top. The reworked mission of the zoo (see following quote), and the 2005 annual report cover page which states "for threatened species, humans constitute their greatest enemy but also their only hope" (see Figure 3.7), reinforce this commitment:

> "Together, we want to offer our visitors a unique educative and recreational experience, through contact with mostly exotic or endangered animals, in a context of conservation and scientific development, in quality recreational-tourism installations" (ZSG, 2005).

[14] This sum has been adjusted to $38.6 million - $29 million from the provincial/federal governments, $2 million from the City of Granby, and $7.6 million from the zoo and its foundation (Barcelo, 2005).

[15] The Bronx Zoo (NY), for example, spent US$43 million building just one exhibit in 1999 (Ebersole, 2001). It recreates an African rainforest on 6.5 acres with some 300 animals including 22 gorillas. The $3 visitor fee goes to habitat protection, scientific research and education in Central Africa.

Figure 3.7 Cover of the 2005 Annual Report showing an endangered Siberian Tiger (ZSG, 2005a).



In 2006 most animals can be observed in relatively natural enclosures that mimic their native ecosystems, particularly over the summer months when indoor winter cages are not used. The telltale signs of boredom and frustration that were once so common to see in traditional zoos, such as continuous pacing and aggressiveness, are only seen in the rarest of occasions. Today Granby Zoo's collection holds 1103 specimens including 295 mammals, 110 birds, 50 amphibians, 131 reptiles, 223 fish and 294 invertebrates (ZSG, 2005a). With improved care animals now live longer and reproduce more regularly, causing new challenges in terms of ensuring sufficient space for newborns and continued genetic diversity of species (ZSG, 2005a). Newly constructed habitats, such as the hippo exhibit, are being constructed with such issues in mind, providing special areas to ensure the safety of newborns. The zoo continues broadening its animal conservation efforts too, recently responding to an urgent call from the IUCN and WAZA to assist in building and keeping a healthy population of amphibian species to counter the widespread decimation of such creatures in the wild.

Granby Zoo continues to be recognized for its efforts. For example, in 2005 it was accepted into WAZA to become one of only 217 odd institutions in this prestigious association worldwide. In 2005, recognising the new quality installations that had been constructed for the Siberian Tigers, the SSP gave the go ahead for two individuals at the Granby Zoo to be matched. They were observed busily trying to reproduce this spring and offspring are hoped for later this year, a crucial step towards ensuring the survival of this highly endangered species. Furthermore, the Granby Zoo is rated in the top 5% of the 650 institutions that are part of ISIS for the quality of its data. Considering all the continued efforts that Granby Zoo has made for over 20 years, which have been described in this section and summarised in Appendix C.1, animal conservation appears very much part of the zoo's *raison d'être*. This conservation role is expanding to embrace eco-efficiency, as discussed in the next section.

3.4 Eco-Efficiency

When Granby Zoo was founded during the post-war economic boom, resources were seen as endless and there was much ignorance in organizations regarding their environmental impacts (Gendron, 2004). No references towards resource conservation were found in ZSG documents for the first 20 years, although by 1970 the president notes a considerable improvement in the zoo's water and sewage system. This followed the first disclosure about water in the 1969 annual report by the president:

> "The water problem needs to be studied; it is an important problem as all of you know. On the one hand we should use water sparingly; on the other hand we cannot keep stagnant water in our basins" (ZSG, 1969).

This disclosure was not directly motivated by fiscal incentives because at the time, and still today, Granby Zoo did not pay for water use or disposal. Despite this, upper management was aware and concerned by the amount of water consumed by the zoo, the 2nd greatest water user in the Granby district, and chose to demonstrate its responsibility. Other resource use, such as energy, was not mentioned in official documents before the 1990s (not even during the 1970s oil crises). This was a period where organizational ignorance towards the environment turned to denial and then debate (Gendron, 2004). However in the midst of a growing consciousness internationally, initiatives towards eco-efficiency emerged.

The zookeepers started collecting cans during the 1980s for an association they created, with proceeds allowing them to travel to conferences, receive training, and purchase publications. By the early 1990s, during difficult economic times for the zoo, the Department of Construction and Maintenance took over this activity to fund the zoo's operations. The 1990s saw the environment emerge as one of the principal preoccupations of citizens in many industrial countries (Gendron, 2004). The zoo began printing its annual reports on recycled paper, and several employees from different departments began their own green initiatives. A few employees from animal care and education formed an environmental club for example, however regular work and family commitments, and the fact that many of them were only hired during the summer months, meant that it was abandoned soon after. Around this time certain employees began recycling paper too, as they had begun doing at home. The Department of Construction and Maintenance started collecting used oil and batteries, after its' director learned how damaging these were for the environment. In fact, most of the documented activity during the 1990s was initiated by this director. Whilst not describing himself as a "greenie", he is an entrepreneurial type who likes to find solutions or improve things rather than wasting them. His comments in numerous annual reports during the 1990s reveal a conscious effort towards conserving resources during financially challenging times:

> "Recycle and energy! Words that we often hear these days, words that are also synonymous with savings. Many efforts were made in the zoo to recycle certain products, save energy, and recuperate to the maximum…In the beginning of the year an effort was made to encourage all employees to keep their daily energy consumption to a minimum. The results are encouraging: energy costs decreased by 4% and gas costs decreased by 29%, saving a total of $18 072. The Australian exposition…was constructed with material from the old primates pavilion, the windows being used for certain enclosures…The new red panda exhibit was made with recuperated material from the same primates' pavilion. You will also see certain picnic tables and benches in the garden made from recycled products. In the bear project, an immense wall was constructed with cement blocks…allowing savings of $100 000…Oils and cleaners are now recuperated and transformed" (ZSG, 1992).

> "The implication of our employees towards conserving water has demonstrated that in 1992-1993 our annual consumption fell from 519 000 m^3 to 379 299 m^3, allowing the City of Granby to save $50 500" (ZSG, 1993a).

> "A greater awareness, a better management and a constant concern from the employees of the [zoological] society to conserve water, permitted for the fourth year in a row, an important saving. With the arrival of new pavilions (Education, Pathways to Africa), the challenge to surmount in the coming years will be to control the energy costs" (ZSG, 1995).

Savings generated from such initiatives allowed more money to be directed towards improving animal care and conservation at the zoo. For example, the 1996 annual report states the intention of using the $400 000 of savings generated by the Zoological Society acting as its own general developer and supervisor between 1991 and 1996, another initiative of the Director of Construction and Maintenance, to create an external habitat for the lions amongst other things (ZSG, 1996).
Towards the turn of the century further steps were taken, mostly again from the Director of Maintenance and Construction. He banned toxic pesticides from the zoo. He also decided to use his budget to purchase outdoor furniture made from recycled plastic[16]. The new Horace Boivin pavilion was constructed in 1996 with insulation greater than minimum standards in order to conserve energy and reduce costs. Controls were placed in this building too so that the temperature and lights could be regulated from the desk of the Director of Construction and Maintenance, to ensure that the temperature is lowered at night and that lights are switched off. Water filtration was installed in some areas, as were water pressure instruments, which greatly reduced the amount of water used for cleaning. Locks were also placed on certain valves so that employees could no longer open them. Changing people's habits was difficult, so technology was preferred:

> "I am not able to change people's habits, the technological way is better. It's much surer. People don't turn down the temperature at night if there's no follow-up….I think that's the key – technology. If you leave it to the people it won't last. At home we pay so we take care" (Director of Construction and Maintenance in interview).

Despite all the green efforts from different employees in different departments, results were limited, with no orchestrated effort or procedures in place, just personal initiatives, and none of the physical capability, support or follow-up necessary to have a large impact:

> "For several years even I, without having a real green spirit, said that we waste a lot [of water] and that it doesn't make sense, we shouldn't do that. We took action because people wasted so much water but if you say it and don't follow-up, 2 or 3 weeks later it's finished, it [the old habits] begins again" (Director of Construction and Maintenance in interview).

> "There were [environmental] actions [before] but there wasn't follow-up…like the environmental committee… [There were] budget problems, uninterested people…" (Environmental Coordinator in interview).

[16] This furniture was not cheaper than wooden alternatives however it meant that no trees would be cut. Such decisions were not necessarily shared with the Director General at the time as the Director of Construction and Maintenance had the discretion to make such decisions.

The orchestrated effort began towards the end of 2003 following the arrival of a new General Director. She saw the zoo's conservation role in the broadest sense, and wanted to ensure that the zoo's forthcoming modernisation project would be as green as possible. She – like the vet and Director of Construction and Maintenance as well as the Environmental Coordinator and Education Director – has been described by colleagues as a highly energetic and dedicated individual, always full of ideas and inspiring to work with. One of her initial gestures was to formulate the guiding principles for all involved in the zoo's modernisation (see Table 3.2). She also decided to go around the zoo's tradition of always using one particular group of engineers, deciding to hire a second group with expertise in green technology too that would challenge the other group to do more. In discussions with directors, she asked for environmental consequences to be considered in decision-making. Finally, convinced that the level of environmental initiatives could be increased significantly at the zoo, she decided that environmentally responsible practices should be integrated into all aspects of the enterprise and that an environmental coordinator should be hired to centralise the zoo's environmental initiatives and focus on pressing questions regarding energy and water issues.

Table 3.2 Guiding Principles for the Modernisation Project (ZSG, 2005d)

• Spaces that respect the needs of the species
• The disappearing of bars
• Cohabitation between species
• An increase in the number of animal species
• An architecture that is integrated with the environment
• More natural materials
• More abundant vegetation
• "Green" practices (reduce, reuse, recycle and recuperate)

This new focus was in-line with her fundamental values as someone with the environment at the heart of her life (Renault, 2005). In fact, this value played an important role in her accepting the position of General Director of the Granby Zoo. Having studied geography and worked for 23 years with Hydro Quebec, lastly as the Director of Communications and Environment in charge of 250 people and an operational budget of $50 million, she decided to look for a position as General Director or CEO that was in line with her profound values even if it meant a drop in salary (Renault, 2005). Before accepting the position, on her first visit to the zoo, she recognized the potential of the zoo and her ability to influence it:

> "I saw all the enormous potential with the environment, I've worked in that all my life, and for me it's not Chinese…It's easy to say to people I want us to do that and that and that. Honestly, I think there is a relation with my style of leadership and my own experience. Maybe a director here who was an accountant would concentrate on developing a strategic plan, financial plan and a business plan more than developing the marketing side and the environmental side. I think that my way sticks with the need and vision that a zoo must have in my mind. To be not just a tourist destination, but also play a role through which visitors are educated and made aware, but in a fun way" (General Director in interview).

The conferences she attended in her first year, part of her role having taken over responsibility for the zoo's CAZA and AZA accreditations, confirmed the direction she wanted the zoo to take. Indeed best practice zoos were evolving into conservation centres, addressing sustainable relationships with animals and nature, explaining the value of ecosystems and the necessity of conserving biological diversity, practicing the conservation ethic in their own operations, and cooperating with the world zoo network and other conservation organizations (WAZA, 1993):

> "I would say that discussions and orientations [shown] in the AZA and WAZA conferences, the discussions with others, the exchange, influences us and confirms that we are making good choices. The accreditation, the standards [for it] are related to the green zoo, protocols exist towards it - regarding the animals, safety matters, health and security, client service, agreements with local emergency services etc. We must document all of that to be accredited" (General Director in interview).

Having received word that government funding for the zoo's modernisation project would be received, and that the first instalment should soon be billed, there was no time to waste. The zoo had to make major decisions regarding energy and water systems that would have a big impact on future costs with: buildings set to double over the next 3 years; new municipality requirements regarding the separation of waste water into two distinct networks; the possibility of the municipality beginning to charge for water; and energy prices on the rise. The Director of Construction and Maintenance had applied for and received a grant for a water efficiency study, following new laws beginning in 2003 that required a regular analysis of water in the aqueduct, and there were many other grants that the zoo could apply for regarding energy too. Someone was needed to coordinate this effort, and the water technician from Amazoo over the previous summer who was hired to fix the water quality and chemical use problems, was approached for the job. He enthusiastically accepted the challenge of becoming the Granby Zoo's first environmental coordinator. This new position would see him managing water quality of Amazoo over the summer months, and coordinating environmental efforts in the zoo full-time over the rest of the year beginning with two substantial projects: water and energy efficiency.

The new Environmental Coordinator immediately began working on these two projects where significant savings could be made relatively easily. No environmental audit or environmental policy was developed to begin with, as recommended by various programs such as ISO 14001. In fact, time and resource restrictions, as well as the previous experience of the General Manager in implementing ISO 14001, meant that a conscious effort was made to not waste time on such things:

> "We didn't pass by a normal process, when you have a lot of time ahead of you and you can look at best practices etc. We didn't do that. I'd already passed by all those processes at Hydro Quebec…and my God, I found that long and arduous and sometimes a waste of time. Here, in my own mind, I know where I want to take the zoo, I've visited some zoos, I've participated in certain congresses on zoos, and with my communication background I have a tendency towards communication, and I wanted to develop in the zoo positive marketing but one must "walk the talk". And if I want to walk the talk I've got to implement something … Certainly I know how to implement ISO 14001 and I understand how an immense state-owned organization like Hydro-Quebec needs to put in place processes for the employees before passing on to practice. But in a little enterprise like the Granby Zoo with around 65 permanent employees year round, before putting in place processes it is more useful to set good practices…We don't have the means to be too administrative…Therefore the first objective I gave, before developing an environmental policy etc. with lots of paper and all of that and processes, was to immediately look into reducing our water consumption, in other words, take action, because with paper we could speak and take three years to develop a policy and not even have done anything yet. The paper will come afterwards. We will document what we have done" (General Director in interview).
>
> "We can use a little energy to take a few actions that have a big impact. We are still in this phase. After that, when maybe we've done 70% with recycling, energy, and

> water, we'll have just a small part left that will take a lot of effort – the working procedures, the buying procedures. There are still many small things to do" (Environmental Coordinator in interview).

The first step was agreeing on objectives, based on educated guesses from the Environmental Coordinator and Director of Construction and Maintenance about what was probably achievable which the Director General accepted. For water, the zoo estimated that it could quite feasibly save 20% of its consumption in 2004 and 40% in 2005. For energy, it wanted to double its installations without increasing the energy bill, which was $490 000 for 62 buildings at the time. A grant from Environment Canada allowed the Environmental Coordinator to attend a course on environmental management and network with SMEs in their region that were also aiming to improve their environmental performance.

Next, the Environmental Coordinator set about measuring the water consumption of each of the zoo's activities, which required characterising water use in all departments and putting measurements in place. The water pipes were inspected by workers from the Department of Construction and Maintenance, who found many leaks and cracks throughout the system. The Environmental Coordinator also met with workers from the Department of Animal Health and the Department of Construction and Maintenance to learn about practices that were wasting a lot of water. Following this, he compiled data into a report for upper management, which included a list of recommendations, costs and savings. This report was reviewed by the Director of Construction and Maintenance who checked what was possible within the department's budget, as well as the General Director, who together decided on priorities and approved the action plan. Subsequently many improvements were made to the system for a total cost of $91 200 including: reducing the water used by toilets (from 13 to 6 litres per flush) and installing urinals without water that use anti-odour cartridges; repairing leaks; changing methods so that water doesn't constantly flow to avoid pipes from freezing during the winter; filling in unnecessary basins; and installing filtration or natural basins so that the old basins no longer needed to be regularly washed out to avoid algae contamination. Savings were then calculated, revealing that the zoo had significantly outdone its objectives. It reduced water consumption by 45% in 2004 and a total of 70% by 2005 (from 403 000 m^3 in 2003 down to 220 000 in 2004 and 119 000 in 2005), saving the City of Granby $125 700 in the first year or the equivalent water of 400 households (ZSG, 2006).

For energy, the zoo sought assistance from outside in the form of two different engineering companies. In order to pay for these costs, the Environmental Coordinator researched and applied for grants. In 2005 the engineering companies conducted energy studies on existing and planned buildings, compiled the data into a document with recommendations, and presented it to the directors. Once the directors had decided on how to proceed, many steps were taken to ensure that the zoo's energy consumption would be minimised. Heat accumulators were installed in some new buildings, such as the tiger exhibit and vet hospital. Geothermal based energy was installed in other new constructions like the hoofstock, hippo and elephant/giraffe pavilion for heating and cooling air and/or water. High efficiency motors were also installed. Where grants allowed, some buildings were even converted from gas to geothermal. Energy efficient materials were used in these new constructions too, such as improved insulation, thermo-windows, and energy retaining bricks amongst other things, which permit even further savings. Finally, obsolete equipment was replaced and actual systems were optimized. The zoo also joined the national government's voluntary initiative for reducing CO2 emissions.

Whilst these measures and more are set to continue at least until the modernisation project is completed in 2007, the zoo has already realised impressive results from this initiative. It is currently the biggest user of geothermal based energy in Quebec, and although the energy needs have increased substantially with the new constructions the energy costs have only increased by a small fraction. This figure is expected to lower further with the conversion of

existing buildings to geothermal. Due to grants, the payback for geothermal is an average was 2.5 years, making it by far the most economical choice for heating and cooling purposes. In fact, just the geothermal exchanges and air recuperation systems allowed energy savings of 72% compared with traditional systems. For the hoofstock pavilion the pay back was less than a year following a $300 000 Hydro Quebec grant and energy economies of $45 000 per year (Létourneau, 2006). The energy choices in this pavilion, together with the elephant pavilion, have allowed the zoo to save 1160 tonnes of CO_2. Drilling the hole for this energy source also led to a series of wells to be discovered, which are now being tapped into for some of the zoos water needs.

The creation of an environmental coordinator position and the rapid improvements which followed visibly demonstrated the importance that upper management was placing on environmental practices to all employees. One worker in Animal Care saw the filling of the large concrete basin in the kangaroo enclosure, one of three such basins, as very symbolic. It had leaked since its construction in the late 1960s, and due to the lack of filtration and the build-up of organic materials, had to be emptied and cleaned every few weeks for more than 30 years wasting copious quantities of water. After this worker was promoted to a position where he could "more easily give his opinion", he began pushing for it to be filled. However there was no support from upper management so nothing was done about it and he felt discouraged[17]. With the arrival of the Environmental Coordinator that employee was able to work with someone dedicated to improving the situation that supported his recommendation. Many other employees noted the crucial importance of the Environmental Coordinator and the Green Zoo program in the success of environmental initiatives too:

> "It's easier since we've made the Green Zoo [program] and it's more pleasing because we know that our small individual gestures combined with those of our colleagues will have an impact. In the past it was more difficult. Now we have the impression that we're working in a team. Recently the Environmental Coordinator organized a survey on recycling habits with all employees, and there were prizes like household recycling boxes, different things. So in a meeting we could meet everyone, show all the recycling done at the zoo, and they left with a present. So next time the employees will be interested too because it was a pleasant meeting" (Director of Human Resources in interview).

A large number of the zoos employees have some sort of environmental background (i.e. biology, animal health or geography), and the majority understand the importance of green efforts. They mentioned their pride and support for such initiatives. Whilst certain negative behaviours were observed amongst employees from the Department of Construction and Maintenance (such as leaving unattended vehicle engines running) and stories were heard of such employees delaying certain green efforts, in general they are a small minority. Despite his lack of formal authority over them, the Environmental Coordinator seems to triumph with strong arguments, much persistence, relentless optimism and good humour.
The Environmental Coordinator faced other challenges as well. With no protocols or procedures already in place, he had to be a resourceful investigator. Initially nobody knew the number of environmental efforts already in place, which departments were doing what, how many dangerous products were used, and of what quantities. Also, there was confusion regarding roles and responsibilities. Some employees were convinced that efforts would fizzle out as they had in the past. Incorporating the environment into decisions also proved a challenge, however certain employees expressed their satisfaction in finally finding winning solutions which also generated outside interest[18]. Funding was a problem too, with no budget for green initiatives initially available. Fortunately the most influential employees backed

[17] "If you want something and the directors don't support it forget it, it discourages you…Since two or three years there's real support [from upper-management]. It's the new General Director that brought that [to the zoo]" (Former Zookeeper in interview).

green efforts and solutions were found. Circulating and receiving information was also challenging, especially during the zoo's open season when the Environmental Coordinator spends most of his time in the Amazoo facility. Initially, the zoo's green efforts were discussed only with those employees directly touched by the energy and water program, so broader feedback or implication wasn't present. However, once the water and energy projects were well underway the Environmental Coordinator, together with the General Director and other Directors, began promoting the successes both inside and outside the zoo.

Internally, most communications were conducted directly with the employees touched by the water efforts during 2004. There were only three organization-wide communications (one regarding the hiring of the Environmental Coordinator in February, and two regarding recycling material and fluorescent bulbs later in the year). During the presentation of the 2004 annual report in February 2005, all employees learnt about the successes of the Green Zoo program. That year, when the Green Zoo began requiring the cooperation of all employees with efforts focussing on recycling, internal communications increased substantially too. The Environmental Coordinator communicated information about the Green Zoo to all employees in six Animots (the zoo's internal paper), three e-mails, one recycling survey, and one presentation/event. Such communications were successful in making employees aware of the significant impact that green efforts were having, and what else should be done:

> "We saw the importance, when there is someone working on [the environment] that the employees see, it's something concrete, the employees see that someone has been hired to do that. We have meetings for that, we speak about it, and we have small conferences" (former Animal Care Coordinator in interview).

In 2005 external communications about the Green Zoo program began too, with a press conference on Earth Day and a presentation at UQAM. Numerous articles have been printed in various papers since then, and interest continues as was demonstrated in a recent press conference scheduled around Earth Day, 2006, and invitations for the General Director to speak at various conferences. Through such opportunities the zoo is extending its educational mission beyond animal conservation to include broader environmental goals. It is also receiving much positive attention which is motivating them to do more, whilst enhancing their reputation and providing free media coverage.

After the 2005 summer period, the Environmental Coordinator set about centralising information by beginning to document green activities. He discovered that many employees were unaware that certain products were being recycled at the zoo (such as florescent light bulbs, batteries and paint). The first organizational-wide environmental meeting was organized in October that year to build employee awareness, based on an environmental survey which received 52 responses (a participation rate of over 90%). Here they learned the results of this survey, revealing that only approximately 30% of ink cartridges are recycled at the zoo and that 44 trees were cut down for paper consumption in a year, as well as the environmental consequences of Styrofoam (which was recently banned from the zoo). They received green prizes for their participation too, such as recycling boxes and other products that were made from recycled materials which many employees did not know were available.

The coordinator also began measuring the volumes of products recycled to track performance over time, and intensifying inspections of recycling areas which included chasing employees who were not disposing of materials correctly. This last activity caused challenges at times, with certain employees considering that enough was being done, but persistence paid off and recycling volumes increased substantially in just a few months (there used to be only 3 recycling bins on the road, by early 2006 there were usually more than 10).

[18] Five journalists contacted the Director of Construction and Maintenance to ask about why the zoo had chosen geothermal energy after the decision was made in 2005.

That year the Environmental Coordinator expanded the documentation process beyond recycling, to cover toxic products and safety issues, which were also not previously recorded. A policy was made to purchase organic soaps too, which although more expensive reduce the danger of contaminating humans or other species and the environment at large. After measuring such consumption the results were consolidated into the zoo's first Green Book (to be issued in spring, 2007). This document will be used as the blueprint to monitor developments in the zoo. It lists, amongst other things, the products recycled at the zoo that will be compared over future years to track performance (see Table 3.3).

Table 3.3 Products and Quantities Recuperated in 2005 (ZSG, 2005b)

Products Recycled	Quantity Recuperated (2005)
• Paper	• 4513 kg
• Cardboard	• 6223 kg
• Plastic	• 5372 kg
• Glass	• 111 kg
• Aluminium	• 1422 kg
• Used Computer Equipment	• 37 items
• Printing Cartridges	• 50 items
• Non-reclaimed Clothing etc.	• 30 large boxes (approximately 150 kg)
• Animal Dung	• 643 Tm
• Dead Leaves	• 59.7 Tm
• Grass Cuttings	• 2 Tm
• Tree Branches	• 30.7 Tm
• Oil from Restaurants	• 1 Tm
• Left-overs from Zookeepers Kitchen	• 913 kg
• Animal Carcasses	• 250 kg
• Wooden Palets	• 13 Tm
• Used Tyres	• 300 kg
• Metal	• 3850 kg
• Empty Aerosol Containers	• (began in 2005, quantity still unknown)
• Fluorescent Lights	• 220 kg
• Used Oil	• unknown
• Used Filters	• unknown
• Used Solvents	• unknown
• Used Batteries	• 35 kg
• Batteries for Electric Cars	• 190 kg
• Paint Residue	• 56 kg

In 2006, clearer signs and entry holes were placed on the recycling bins that were installed in 2005 for the first time (previously sorting of recycling from waste occurred at night after the zoo was closed), which has reduced the amount of non-recyclable waste placed in these bins substantially. Also, the zoo planned to begin raising awareness of the zoo's green efforts amongst visitors with signage that identifies Green Zoo initiatives and logo (see Figure 3.8) in a clear and fun manner around the site. However difficulties getting them produced on time have delayed the process, so they will not be presented until 2007[19].

[19] This logo was introduced on visitor documents (maps, website etc.) during the 2005 season.

Figure 3.8 The Green Zoo Logo

The phrase “Zoo Vert” or “Green Zoo” was coined by those involved in the change program as a simple way to describe all the environmental activities being put into motion after the new General Director arrived in 2003. The concept of the Green Zoo logo and educational signs that began this season also emerged in an unplanned fashion:

> “On the Board of Directors someone said that it would be good if we could identify all the green practices we are doing for ourselves, all our green actions. We said that maybe it would be good to develop a logo, because we were discussing in parallel the development of our [new] commercial logo, and then we could identify how we care, our green actions, and educate our visitors about it. That’s when we decided to develop Green Zoo logo…This year over winter we have a team of educators, the environment coordinator, and a team from operation to develop signs that identify our green practices that we’ll place in strategic positions on our site to educate our visitors” (General Director in interview).

Such initiatives would not have been possible a few years ago, when the zoo was making consistent losses before Amazoo and had no government backing for modernising its facilities. When asked why the Green Zoo efforts did not begin earlier all employees gave the same reason: the zoo was struggling financially. Improving environmental performance takes resources that the zoo didn’t have as the Director of Construction and Maintenance explains:

> “I could imagine [the Green Zoo program] with the last two Director Generals…It was linked to the means we had at the time. In 1999 when we started to become a more profitable enterprise we became greener because we had the means. Look, say we wanted to buy unbleached toilet paper that costs $2 000 more at that time we didn’t have that $2 000. Today we want to be greener, we pay attention to be greener, and we have the $2 000 as well. It’s easy” (Director of Construction and Maintenance in interview).

In just a few years, the Green Zoo program has realized significant success towards eco-efficiency, considerably more than had ever been achieved in the past, as described in this section and summarised in Appendix C.2. Such efforts have generated favourable publicity and allowed the Granby Zoo to win various distinctions. Employees recognize, however, that this process is only just beginning and that much remains to be done such as formulating an environmental policy and an ethical purchasing policy, installing signage around the zoo highlighting green practices, building more enclosures with geothermal exchangers, composting employee scraps, distributing plant trimmings to the animals for food or

enrichment purposes, and characterising waste amongst other things. Fortunately employees remain committed to continuing this ongoing improvement across all levels and departments. Thus, we can expect many more contributions towards sustainable development over the coming years.

3.5 Conclusion

This chapter sought to present a rich description of the Granby Zoo's evolution towards sustainability. Beginning as a menagerie in the backyard of its charismatic founder, the Granby Zoo was officially opened in 1955 and has remained one of the most important tourist attractions in Quebec ever since, entertaining hundreds of thousands of visitors annually. Whilst some individuals tried to focus efforts on animal care in the 1970s, it wasn't until the more favourable context in the mid 1980s that the zoo began widespread change which saw animal conservation firmly anchored in its mission by the end of that decade. Several initiatives towards resource conservation occurred at the zoo in the 1990s, however they remained largely decentralised and had limited impact until a more favourable context led to the emergence of the Green Zoo program in 2004. Through animal conservation and eco-efficiency efforts, the zoo has renewed its *raison d'être* and evolved from a living museum to a conservation centre. The following chapter will discuss this process of organizational change towards sustainability, seeking to understand what can be concluded from these findings.

CHAPTER 4

DISCUSSION OF THE CHANGE

A little learning is a dangerous thing;
Drink deep, or taste not the Pierian spring.
Alexander Pope

Following the factual account in chronological order of the change process (Chapter 3), this chapter aims to identify what can be concluded from the Granby Zoo's evolution towards sustainability. In order to clearly respond to this question, change drivers that influenced the organization's capacity to change and the way it went about changing will be studied. Then the change process itself, followed by change role or roles that individuals have taken in effecting this change will be discussed. Finally, a number of hypotheses and observations that have emerged from this investigation are presented.

4.1 Change Drivers

The detailed account of change in terms of animal conservation and eco-efficiency (see section 3.3 and 3.4), highlights how numerous interlinked factors influenced the zoo's capacity to change and how it went about such change, that is the "why", "what" and "how" of the change process. These factors have been grouped at the environmental, organizational and individual level and will be discussed in turn.

4.1.1 Environmental Level

Criticism from society, in the form of critical press and later NGO pressure, influenced the creation of the more serious zoo in 1953 and the scrapping of the dolphinarium idea in 2002. Societal values changed over time, to increasingly prioritise environmental issues and animal rights, with the environmental becoming one of the principal concerns of society by the 1990s. So too did the priorities of the government and its support for such efforts. Whilst the zoo's visitors, also coming from the general society, have not directly pressured the zoo to improve animal conservation or eco-efficiency, they had a direct influence on the financial wellbeing of the zoo throughout time, which in turn influenced the investments made by the zoo in this regard. Their numbers were influenced by: the natural environment (in summers when there was much bad weather, numbers diminished significantly); whether new attractions at the zoo existed or not (which in turn depended on the financial situation of the zoo, that is, largely on visitor numbers in previous seasons and government funding); the demographics of the population (with families being the main client group); the disposable income of the population (influenced by the state of the economy); the attractiveness of the zoo in general (the number of charismatic animals, whether a holistic attraction was available offering things to do and see etc.); and on the offerings and numbers of competitors.

Government support also depended on the general society, with some elected political parties more likely to support the zoo or its competitors than others. For example, the Quebec liberal party decided to support the modernisation of major Quebec zoos in 2004, and to not save the Quebec Zoo from closure in 2006, whilst in the late 1940s and 1950s the government at that time ignored the demands of Horace Boivin to finance the zoo due to his

political affiliations, preferring to support the Charlsebourg Zoo (which later became the Quebec Zoo) instead. Thus, the zoo was forced to auto-finance the vast majority of its operations throughout its history. Federal and provincial government support, which was also influenced by the state of the economy and the values of society, was only available sporadically to the zoo but when it was provided, the zoo generally made significant improvements towards sustainability. For example, the zoo began teaching about animal conservation issues in 1990 due to a government grant for a rainforest education project, and the latest modernisation project whereby habitats have substantially improved is largely paid for through provincial and federal government support. Also, the government grants available for energy studies and water conservation, as well as new laws and the future possibility that the zoo may be charged for water, influenced the zoo's decision to begin an energy and water saving program in 2004. Furthermore, technological advances also assisted the zoo in the area of eco-efficiency, many of which were paid through grants from government-owned enterprises such as Hydro Quebec, providing attractive paybacks and leading the zoo to invest in geothermal technology which would not have been otherwise affordable. Other organisations too, in particular engineering firms, provided the zoo with expertise about green technologies.

As technical knowledge improved new employees from the general society were hired at the zoo and greatly supported improvements in the area of animal health, and later in the field of eco-efficiency. Their knowledge assisted in improving diets, breeding and handling practices, and led to innovations like caesareans on polar bears. More recently, technology for such things as urinals without water, filters, as well as geothermal heating and cooling systems, have also greatly helped the zoo to substantially reduce its water and energy consumption.

The zoological industry provided the standards, networking possibilities, and support that allowed the zoo to greatly improve its conservation practices. The vet's exposure to CAZA and AZA in the 1980s, and later the General Director's exposure in mid 2000, assisted them in seeing the zoo's potential and how this vision could be realised. The certification process also encouraged a number of progressive improvements to be made over the years as standards continued to rise such as: the construction of a quarantine; the parting of certain animals with inappropriate enclosures; the exchange or breeding of others rather than taking species from the wild; the construction of better facilities; the participation in several SSPs; and a research, education and conservation mission.

The natural environment didn't just have a direct influence on visitor numbers through the weather, the availability of its "resources" influenced the need for the zoo to improve animal health so that it could rejuvenate its own stock of animals rather than use animal dealers to receive increasingly more threatened and expensive animals from the wild. The availability of such animals was of course largely determined by social and economic factors, such as the demand for animal parts and other natural resources (for food, medicine, energy, construction etc.), or for natural spaces (for agriculture, buildings, recreation etc.), which grew with the growing population and consumption trends.

The economy, driven by privileged members of the society who were often also part of or greatly influenced the government, had an impact on all of the factors discussed above. Horace Boivin, the charismatic industrialist and mayor who created the zoo greatly assisted the organization's development, especially during its early history. The health of the economy also affected the disposable income of the general society, which in turn affected the spending available for recreation as well as the attractiveness of the industry for potential competitors, and hence the number of visitors and the zoo's financial health as well as its ability to invest in improving its operations. Economic priorities also affected the technological

developments and the availability of resources for the government to support its priorities, and the demand on natural resources amongst other things.

4.1.2 Organizational Level

The organizational structure refers to all the "hard" organizational factors such as: its goals and formal strategies; the organizational design, the system of recruitment, motivation and training; the authority and control structure; and the management system (budgets, planning, and financial indicators). Several of these factors influenced organizational efforts towards sustainability throughout the zoo's history.

The creation of a new structure – Zoological Society of Granby - occurred in 1953 to make a more serious zoo that offered better facilities, following problems with animal care and a lack of interest by the government to assume responsibility of the zoo. Granby Zoo immediately became one of the most important attractions in Quebec. Being a non-profit organization without regular government support however, the zoo was forced to finance itself much like a private-for-profit enterprise. Its location in a small city also limited local government financing opportunities, however the zoo's founder and mayor ensured that the zoo benefited from many privileges such as free water, land use and waste collection. Its status also attracted several significant subventions for modernisation efforts throughout its history, allowing the construction of more appropriate and efficient buildings.

The mission of the zoo also changed considerably over its history. During the 1950s and 1960s the zoo's purpose was to entertain and attract large numbers of visitors. By the 1970s, in the midst of growing awareness about species extinctions, the intention of the zoo to promote conservation appeared for the first time, however it wasn't until the 1980s that real changes in policies and procedures supported this intention.
Interestingly, it was during times when the zoo was doing relatively well financially, with strong visitor numbers and/or government support, that the zoo realised the greatest gains towards sustainability following increased investments in this area. For example, it was in the mid 1980s when the zoo returned strong profits that it hired a full-time vet (who was also given the task of hiring zookeepers and acting as the curator). With this new power he could ensure that supportive employees were in place and that procedures were changed to improve animal care practices, and conservation efforts grew substantially. Again in mid 2000, a period when the zoo had returned to profitability and received subventions of more than $30 million, the environmental coordinator position was created and new procedures to save water and energy were introduced. This involved new technologies that limited the need to alter employees' habits. In both these situations it was upper-management (namely the President or the Director General), who provided financial, moral and other support to ensure that the technology, mandate or other necessary structural elements were in place as needed.

The zoo's propriety structure also influenced change. Lifelong members of the Zoological Society of Granby elect the presidential board, whom serve for a minimum of 2 years and a maximum of 6 years in this function. This board has a substantial influence on the strategic direction of the zoo. For example, they choose whom to hire as the General Director and whether to support their strategic direction or not. The General Director, who almost always is an individual from the outside, has responsibility for the zoo's operations and performance, and as such the liberty to create structural changes necessary to support change efforts. Nonetheless, the General Director seeks approbation for strategic decisions from the presidential board. This structural arrangement allows outsiders from the general society to assume influential positions, bringing with them new ideas and values, which in turn influence

the zoo's priorities (see the section on individuals). One should also note that the organization was very small for much of its history and would still today be categorised as a small-to-medium enterprise, with fewer than 500 employees, most of those only over the summer months. This means that there are few levels of management and the General Director has a substantial and rather direct authority and contact with most employees.

The organizational culture refers to all the "soft" organizational factors such as: the values and assumptions that guide decisions and actions; the beliefs and vision of the world; the symbols and significations; and the historical residues, traditions and costumes. For much of the early history of the zoo the culture did not support changes towards sustainability. This was during a period when the environment itself was a low priority for society at large, and organizations were quite ignorant towards the environment seeing resources as largely unlimited.

When the zoo's full-time vet tried to make changes towards sustainability in the late 1970s and early 1980s, it was clear that most workers and upper-management did not support such efforts. They repeatedly blocked or refused to support such improvements. Things changed in the mid 1980s as new specialists in animal care were hired, in particular the new vet who had more power and support from upper-management and succeeded in influencing the values of the zoo. Thus, changes towards animal conservation during this time were significant. As more and more employees educated in biology or animal health entered the zoo, conservation values became more anchored in the zoo's culture and *raison d'être*, so that change efforts in this direction were more widely supported. The new General Director who arrived in 2003, someone who clearly values the environment, is broadening the conservation values of the zoo's culture to encompass resource conservation, and facilitating this process through structural changes such as the creation of specific positions, processes, procedures and policies.

The openness of the zoo to the outside world and the creativity of employees, two aspects of the zoo's culture which can be traced back to its founder Horace Boivin, have greatly assisted the zoo in recognising trends and adapting with the environment. For example, the zoo has invested in sending employees to national and international best-practice conferences since the 1980s (although this stopped temporarily in the 1990s when the zoo was struggling financially), which provided employees with many ideas that led to significant improvements in sustainability efforts. When the vet in the mid-1980s went to the CAZA and AZA conferences he was exposed to industry best-practice and conservation trends, networked with other zoos, as well as learned about animal exchange and certification possibilities. This eventually led the Granby Zoo to become the first zoo in Quebec to receive the CAZA, AZA, and WAZA certifications, and to make significant improvements towards animal conservation. Other employees also brought back ideas from conferences, such as mirrors for the flamingo enclosure, one factor which allowed the zoo to pioneer breeding these birds in small numbers. The zookeepers began collecting aluminium cans used by visitors in the zoo for recycling in the 1980s in order to: fund their own projects such as a zookeepers' association; visit conferences; and subscribe to industry magazines. Efforts from the Director of Maintenance and Construction in the 1990s to conserve energy also led to cost reductions and improved eco-efficiency. The openness of the zoo to the outside world and the creativity of employees are two aspects of the zoo's culture that have assisted the organization in learning and contributing to sustainability efforts.

Furthermore, there is a general sense of pride amongst employees to be part of this renowned organization, the most popular zoo in Quebec which welcomes over 500 000 visitors each year. This perhaps partly explains the zoo's ability to retain employees who remain motivated for long periods of time (the majority of employees that were interviewed had worked in the zoo for at least 15 years). Employees have also been proud of gains made

in animal conservation and eco-efficiency. Finally, the legendary founder of the zoo (Horace Boivin) is celebrated in different organizational documents, exhibitions and events throughout the zoo's history. It serves as a reminder of the continued influence of his values and vision, as well as the potential of one man's dream.

4.1.3 Employee Level

The presidents of the Zoological Society of Granby, and indeed the board, exercise a direct influence on the future of the organization by selecting the General Director of the zoo. During the crisis in the mid 1980s when the zoo lost most of its upper management, it was the president who took on much of the General Director's role, recruiting professional employees, delegating operational tasks, and ensuring that the zoo made it through the 1985 season. In hiring the vet, and in supporting the vet's efforts towards animal conservation, the president at that time ensured that the zoo was committed to making substantial progress in this direction.
The General Directors' from the mid 1980s until mid 2000 facilitated the vet's efforts in animal conservation by ensuring that there was sufficient funding available to improve facilities, comply with CAZA and AZA standards, build new enclosures, and improve diets etc. Before this time, the lack of commitment from upper-management blocked or slowed the earlier vet's efforts in this regard, because the necessary support was not in place. When another General Director increasingly focussed efforts on animal conservation away from the recreational mission of the zoo in the 1990s, confirming that the *raison d'être* of the institution was protecting endangered species with the tourism aspect simply a means of financing it, visitor numbers dropped and a financial crisis ensued. In turn, the zoo was unable to invest in improving habitats sufficiently, and was thus forced to part with several charismatic species that diminished visitor numbers further. The new General Director who was chosen by the ZSG board in 1996 due to his reputation for saving organizations, succeeded in refocusing the zoo on its recreational vocation by improving client service and employee relations whilst continuing to support animal conservation efforts, which increased visitor numbers substantially and hence the zoo's financial means to invest in improving animal habitats. When the ZSG board selected a new General Director in 2003, they chose someone who obviously valued the environment although they didn't specifically give them the mandate to make the zoo green. Subsequently, however, they supported the General Director's efforts in this direction, by respecting her discretion to make associated changes and investments. This included the creation of the environmental coordinator position (to ensure the follow-up, coordination and management of the green zoo program), and sufficient financial and moral support, which greatly increased the impact of green efforts at the zoo.

Various directors have also influenced the zoo's evolution towards sustainability, making changes directly through their own efforts, or indirectly by deciding how to disperse their budgets and which employees to hire in their departments. In terms of animal conservation, the Directors of Animal Health (i.e. the vets) have had the most far-reaching influence. The vet in the late 1970s and early 1980s was successful in convincing upper-management of the need: to feed animals meat fit for human consumption; hire qualified animal technicians as zookeepers; and support the recording of animal data in the ISIS system. However, improvements were limited with much resistance to such efforts. Many employees simply did not value such changes, and finally this individual sought to influence others from outside the zoo. The vet who appeared in the mid 1980s and assisted the president in seeing the zoo through its visitor season despite the lack of staff, gained much credibility and power which assisted him in achieving more widespread change. He hired zookeepers who were committed to such change, found ways of firing those who weren't, set about improving breeding, feeding and enrichment practices, and became responsible for conservation efforts in the zoo by coordinating research and overseeing programs linked with CAZA and AZA.

Other directors also had a substantial influence. The Director of Maintenance and Construction (who appeared just after the vet in the mid 1980s), supported the vet's efforts to improve enclosures, another important step towards animal breeding and conservation. He also sought to minimise resource usage for moral and financial reasons by initiating many initiatives - such as recycling, energy saving, water saving, or eradicating pesticides - throughout the 1990s. He was also influential in hiring an environmental coordinator in 2004 and in encouraging the implementation of green technology in the zoo. Another director - a biologist initially employed as an education officer and then education director - also supported many initiatives. In the early 1990s, she was one of the co-organisers of a short-lived environmental club, and she also established educational programs which went beyond animal behaviour to talk about conservation issues. In her later role as the Director of Client Services, she pushed for improved practices such as the banning of Styrofoam from the premises and the use of biodegradable plastic bags. Finally the Director of Human Resources, who is responsible for hiring most new employees, makes it clear that those who do not support green efforts will not be welcomed at the zoo, ensuring that the new people who enter the zoo also value such efforts. In summary, those directors who have made the most efforts towards animal conservation and eco-efficiency were leading the departments which could probably contribute the most to such ends. That is, they were leading departments that had the greatest opportunities and influence for effecting such change, and they themselves were conscious of their ability to positively influence such change. They all could be described as entrepreneurial types, creative and energetic people who find innovative solutions to problems even before they are seen by most, which has no doubt influenced their relative contributions towards sustainability efforts.
Coordinators, who work below the directors and above the general employees, have also influenced organizational efforts towards sustainability. The coordinator for animals in the 1980s, for example, greatly assisted the vet in animal conservation efforts. Another one participated in the environmental club when he was a general employee and tried to raise resource waste issues with higher management, but he gave up after it was made clear that such investments would not be made. The environmental coordinator has contributed the most time and energy towards eco-efficiency, as manager of the zoo's day-to-day green initiatives. With direct support from the top, the mandate to focus on environmental issues, and a highly motivated and optimistic character, he is well positioned to encourage such efforts amongst other workers too. Thus, this coordinator has been central in the zoo's success in terms of energy and water savings to date, and the more recent steps to record environmental information and measure progress in all areas. Before the arrival of this new employee change towards eco-efficiency was limited, with no one to specifically focus, coordinate or follow-up on such efforts. Several employees believed that early gains in the green zoo program would fizzle out as they had done in the past, however this energetic and positive individual is proving them wrong and showing them how rewarding green initiatives can be.

Other workers have also played a role in the success or failure of such organizational change. The vets in the 1970s and 1980s faced resistance from many zookeepers and maintenance and construction workers who did not see animal conservation as important. For example, the retired farmers who generally worked as zookeepers part-time up until the 1980s assumed that wild animals could survive on old food items discarded by humans (much as their own domesticated farm animals) and that human interaction was not really a problem. They did not see the importance of rich diets or of leaving the animals to mimic more normal behaviour, and thus largely ignored the vet's demands to change. Slowly those employees were replaced by others educated in biology and animal health who understood the importance of improving practices, and so resistance to the later vet's efforts subsided. Workers in construction and maintenance also resisted their director's attempts towards conserving resources in the 1990s, not seeing the importance of using abundant and cheap

resources such as water or energy sparingly. For that director, technology was the best way to combat such resistance and many problems were solved with technological innovations which were easier than changing employees' habits. Today, both technology and several communication channels are used to influence change. Communication about resource conservation is done by the environmental coordinator, but also by the Director General, demonstrating the zoo's commitment to eco-efficiency efforts and raising awareness amongst employees. Messages are continually repeated to employees, and their motivation to change their ways seems to be growing as demonstrated by the increased recycling.

4.1.4 Change Driver Comparison

By comparing these individual, organizational and environmental change drivers in 4 distinct periods, one can highlight certain factors that were more or less supportive of such change (see Table 4.1). When the organizational level, and hence upper-management, were receptive to such change it was major (as was the case in period 2 and period 4). That is, substantially more action was taken towards sustainable development within a substantially shorter time frame. Conversely, when the individual pushing for the change did not have substantial influence across the organization, the organization was not receptive of such change and the powerful individuals in the organization did not actively support it. In these periods comparatively less action was taken towards sustainable development and it was less widespread (as was the case in period 1 and 3). This can also be demonstrated by reviewing the summary of action taken towards animal conservation (C.1) and the summary of action taken towards eco-efficiency (C.2) in the annexe. C.1 shows that in terms of animal conservation, there was substantially less action in period 1 (the late 1970s to the early 1980s) than in period 2 (the mid 1980s to the early 1990s). Similarly C.2 shows that in terms of eco-efficiency, there was substantially less action taken in period 3 (early 1990s until early 2000) than in the much shorter period 4 (mid 2000).

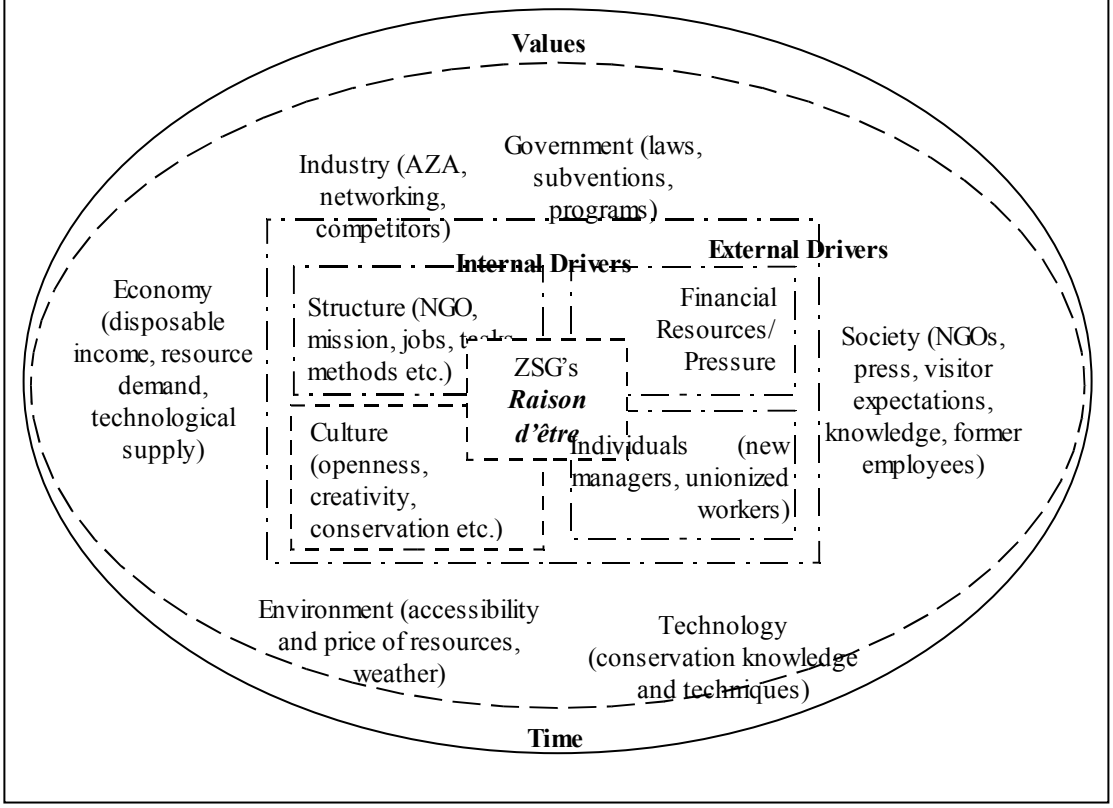
Table 4.1 Comparison of the Factors that Supported or Hindered Organizational Change towards Sustainability

Influential Factors	**Animal Conservation**		**Eco-Efficiency**	
	Period 1 (late 70s – early 80s)	Period 2 (mid 80s – early 90s)	Period 3 (early 90s – 2003)	Period 4 (2003 - 2006)
Individual				
• The individual who is aware of, values and pushes for change, has substantial power of influence across the organization	No	Yes	No	Yes
• The majority of employees impacted by change value it or at least are indifferent	No	Yes	No	Yes
• Powerful employees in the organization (like upper-management) actively support it	No	Yes	No	Yes
• An individual has the legitimacy, credibility and ability to manage or coordinate the change (by implementing, following-up, verifying and improving the change)	No	Yes	No	Yes
Organizational				
• Change is in line with the organizational culture or values	No	Yes	No	Yes
• Change is supported by the organizational structure and practices	No	Yes	No	Yes
• Sufficient financial resources exist to support change	No	Yes	No	Yes
• The organization as a whole is aware of external support or incentives	No	Yes	No	Yes
• The organization as a whole finds this change important and desirable	No	Yes	No	Yes
Environmental				
• Visitor numbers are stable and strong	No	Yes	No	Yes
• The government encourages or supports change	Yes	Yes	No	Yes
• Industry initiatives encourage or support change	Yes	Yes	No	Yes
• Technology and expertise exists which supports such change	Yes	Yes	Yes	Yes
• The general society values, or at least is not against, such change	Yes	Yes	Yes	Yes
• The availability of natural resources and costs encourage such change	Yes	Yes	Yes	Y es
Results	Minor Change	Major Change	Minor Change	Major Change

4.1.4 The Role of Evolving Values over Time

Drivers of organizational change towards sustainability in the zoo were numerous and varied over time as values evolved, ultimately affecting the *raison d'être* of the enterprise. These drivers have been regrouped into a model which visually summarises influential factors on the Granby Zoo's evolution towards sustainability (see Figure 4.1). No attempt has been made to differentiate their relative influence, as their power to affect such change varied in time. For example, the federal government generally had little impact on change towards eco-efficiency at the zoo until recently when government subventions were introduced that did assist in affecting such change in the zoo.

Figure 4.1 Factors which influenced the Granby Zoo's Evolution towards Sustainability



As values evolved over time, many of these change drivers increasingly encouraged change towards sustainability. Hence these various drivers have been placed within a sphere of *time* and *values* in Figure 4.1. For example prior to mid 1980s, animal conservation was not highly valued at the zoo, so little efforts were made in this regard. At that time this issue was not seen as important by citizens or the government either, so there was little encouragement from these factors. However the context changed. In the midst of widespread species loss the industry, government and society at large, began to increasingly value the animals. New laws and standards emerged, the cost of buying animals increased substantially, and new employees entered the zoo who valued conservation efforts and educated management on problems and opportunities. Likewise, values also evolved to increasingly create a favourable context for eco-efficiency changes in the zoo. Whilst in the 1950s resources were seen as abundant and limitless, the oil crises and growing environmental challenges saw efforts such

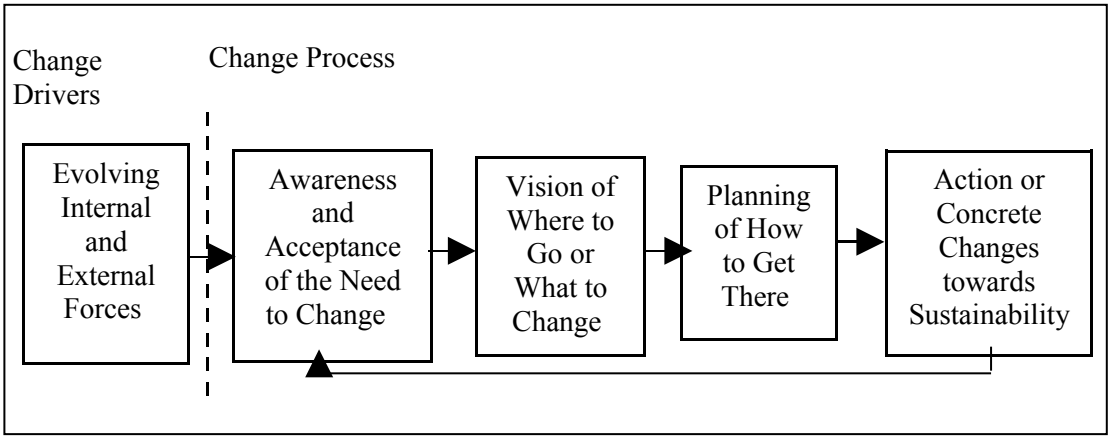
as recycling and energy saving becoming household priorities by the 1990s. Many employees within the zoo were aware of the potential of the zoo in this regard, and tried their own initiatives, but most tended to fizzle as they were not encouraged by the organization at large. The context changed dramatically in 2003 though, when the new General Director who values the environment made green issues a top priority, in a time when external financing was available to invest in such initiatives. By bringing in another employee with such values to coordinate this effort, structural and cultural changes followed that are broadening the conservation mission of the zoo, extending its *raison d'être* beyond animal conservation to resource conservation in the broadest sense. Thus the zoo, originally a living museum for human entertainment, has evolved into a centre of conservation, ensuring its legitimacy in a changing external context.

This evolution also highlights the fundamental importance not just of *time* but of *timing.* When efforts towards sustainability were part of a more coordinated movement during a time when influential people within the organization valued such change and thus supported it financially or otherwise, the context or timing was favourable and change was significant. At such times many initiatives were tried, they were widespread affecting several aspects of the enterprise including its *raison d'être,* and they made significantly greater contributions towards sustainable development within a shorter time frame.

4.2 Change Process

The detailed account of change towards sustainable development at Granby Zoo in terms of animal conservation and eco-efficiency (see section 3.3 and 3.4), also highlights the process in which change could emerge. The numerous interlinked internal and external change drivers summarised in Figure 4.1, raised awareness and acceptance of the need or want to change the status quo (i.e. led to learning about why change was necessary), and a development of a better alternative (i.e. a vision of where to go), followed by informal or formal planning of how to get there, and ultimately action. This process is repeated as initiatives lead to further awareness and acceptance or learning, followed by a vision of where to go or what to change next, planning on how to get there, and further action towards sustainability over time. This relationship is presented in Figure 4.2, with an arrow indicating how the cycle continues.

Figure 4.2 The Change Process



The change drivers, that is the evolving forces discussed in section 4.1 which have had varying degrees of influence over time, provide the incentives or threats to change (the "why change is necessary"), once individuals were aware of them (see the first two boxes of Figure 4.2). The "what needs to be changed" (see the third box in Figure 4.2), depended on these various internal and external factors too, as did the "how to get there" (see the fourth box of Figure 4.2), and ultimately the motivation to take action or concrete changes made towards sustainability.

New insight can be gained by applying the change process presented in Figure 4.2 to the four time periods used in Table 4.1 as summarised in Table 4.2. Firstly, in period 1, Granby Zoo's vet was aware and accepted the need to change, and had a vision of what to do and how to get there, but was unsuccessful in pushing through many actions. As the awareness and acceptance was individual, and not shared by the organization at large, most concrete changes were blocked or at least not supported by upper-management or other employees. Secondly, in period 2, this awareness and vision of the need to move towards animal conservation was shared by the organization at large, due to a number of factors including the power and influence of the new vet, negative press, networking and industry practices, as well as the increasing cost of animals. So, the vision of what to change was organization-wide, and even though most planning was individual (by the vet who also became the conservation officer), action was widespread and significant. In period 3, awareness and acceptance of the need to change was mainly at an individual level and not shared by upper-management or the organization at large. There is evidence that suggests that upper-management supported such change, but the organization itself was focussed on survival and did not prioritise such efforts, so the vision of what needed to be changed remained individual and was not shared by the organization. Planning and action occurred at the individual level too, and results were limited. Lastly, during the 4th period, awareness and acceptance of the change is organization-wide, perhaps largely due to the fact that the General Director is aware of the need and potential of the zoo in this area, but also because of other factors such as growing conservation values in society and changes in industry practices. The vision of where to go or what to change is organization-wide, and planning has been organization-wide too (in that it unites General Director and several departments) as part of a more formal plan, which has led to significant gains in the area of eco-efficiency.

Table 4.2 Comparison of the Change Process over Time

	Animal Conservation		**Eco-Efficiency**	
Change Process	Period 1	Period 2	Period 3	Period 4
1. Awareness and Acceptance of the Need to Change	Individual	Organizational	Individual	Organizational
2. Vision of Where to Go or What to Change	Individual	Organizational	Individual	Organizational
3. Planning of How to Get There	Few (i.e. minor change)	Many (i.e. major change)	Few (i.e. minor change)	Many (i.e. major change)
4. Action or Concrete Changes towards Sustainability				

So whilst there may have been many internal and external forces that raised awareness and acceptance of "why change is necessary" (step 1 of the process) and of "what needs to be done" (step 2 of the process), it was only when these two elements were not limited to certain

individuals but shared by the organization (or at least upper-management) that widespread change occurred (step 4 of the process). With the influx of specialists in animal care that had support from upper-management, this “why” was accepted by influential individuals within the organization and became a priority for the organization at large. That is certain individuals, supported by other internal and external forces which increasingly valued or encouraged conservation, succeeded in raising awareness and acceptance of problems with current practices in the zoo amongst key individuals. These key individuals then supported organizational change efforts and assisted in implementing significant improvements towards animal conservation. When a key individual with green values arrived at the zoo in 2003 (the General Director), eco-efficiency efforts were also supported from the top and became part of an organizational drive, thereby once again facilitating the implementation of significant improvements that broadened the conservation efforts of the zoo. This would suggest that the “why” and “what” needs to be understood and supported by most employees, in particular influential ones like upper management, not just a few scattered individuals if sustainability efforts are to have widespread effect.

4.3 Change Agent Roles

The detailed account of change towards sustainable development at Granby Zoo in terms of animal conservation and eco-efficiency (see section 3.3 and 3.4) also highlights the roles that certain individuals can assume as change agents in enabling or actively affecting such change. They did this by: instigating change within the organization; building acceptance for and actively facilitating change; coordinating the implementation of change initiatives; and/or actively supporting the change (see Table 4.3). By breaking this process into the same four periods used in Table 4.1 and Table 4.2 insight into these roles can be gained, which may assist in understanding why change was less or more far-reaching and significant (i.e. minor versus major) at various times as summarised in Table 4.3.

Firstly, in period 1, the vet played the role of change instigator as an individual who was aware, valued and pushed for their vision of change to be realised. However there were very few change supporters at this time, including those whose support she would have required the most to coordinate such change and assist breaking down barriers (such as upper-management and other zookeepers or construction workers). She was not able to recruit key supporters either nor assume the role of change builder role or mobilise a powerful individual for this end (although she became a change supporter from the outside in period 2). It appears that the environment was not ready to accept her initiative, this was a time when such change was not widely valued in the zoo, and hence results were limited.

In period 2, the new vet was also a change instigator, who was aware of, valued and pushed for improvements in animal conservation. A powerful individual himself, with close ties and support from the highest managers, he had success as a change builder. That is, he succeeded in raising awareness, selling the vision and building acceptance for the change. Upper-management thus became a change supporter, and together with this vet, assisted to break down barriers and create a supportive context for change. The new zookeepers became change supporters too, as did the vet from period 1 by publicly criticising practices. Finally, the new vet acted as a change coordinator, catalysing the change by planning and implementing it (including verifying, improving and communicating the change).
Period 3 saw new change instigators emerge in the area of eco-efficiency, who were aware that resources were being wasted at the zoo and pushed for improvements. However these individuals did not have the power or ability to act as change builders, or there was no fit with their wills and the internal context of the zoo. There were few change supporters, and significant barriers to change remained. Whilst one change instigator did succeed in pushing

through certain changes that were within their own department (where they had the credibility and legitimacy to take such action), they were not successful in implementing more organizational wide change. Hence changes were limited.

In period 4, widespread change occurred as in period 2 however it was not the result of principally one individual. The change instigator, who was aware of, valued, and pushed for change, and provided the vision of where to go, was the Director General. She also took on the role of the change builder, selling the need to change across all organizational levels and breaking down barriers so that a favourable context for change was present at a macro or organizational level. Many other directors already valued such change and hence became change supporters, facilitating its implementation in their own departments. The Director General then hired an environmental coordinator, ensuring that he had the legitimacy and credibility to do the job, who is responsible for planning and implementing the change. Over time this individual has also become a change builder and change instigator at a more micro-level. Whilst not holding the same explicit power as the General Director and other Directors, and thus not able to redirect resources to break down barriers at a macro level, this individual uses his communication abilities to open up communication channels, and build trust as well as awareness on the micro-level. This has helped to win over certain change blockers.

Table 4.3 Comparison of the Change Agent Roles over Time

	Animal Conservation		**Eco-Efficiency**	
Change Agent Roles	Period 1	Period 2	Period 3	Period 4
Change Instigator • Individual who notices the need to change and pushes for it.	Yes	Yes	Yes	Yes
Change Builder • Individual who facilitates change by raising awareness, selling the vision, and building acceptance for change (recruiting powerful change supporters etc.)	No	Yes	No	Yes
Change Coordinator • Individual who has the credibility, legitimacy and ability to coordinate change on a macro and micro level. This includes managing the change from planning to implementation, including the follow-up, verification, adjustment and communication of the change.	No	Yes	No	Yes
Change Supporter • Individual/s who assist change by breaking down barriers, following initiatives etc.	No	Yes	No	Yes
Results	Minor	Major	Minor	Major

These findings suggest that a change agent is not always a leader or recognised as such (i.e. an individual with followers who move towards a common goal). For example, in period 1 the vet did instigate change seeing the need for such change and pushing for some changes, but did not succeed in finding many followers or supporters. She was therefore not a leader, unable to be a change supporter herself or find a powerful individual to take on this role. This was the same case in period 3. Nonetheless, the vet became a change supporter from the outside once she left the zoo, by raising awareness through the writing of a book, and so became an external change builder. The main change instigator during period 3 also became a change supporter in period 4, recommending the environmental coordinator and facilitating his work where possible. These findings also suggest that a change builder requires

leadership qualities so that they are able to encourage others to accept and follow the change. In the two periods where change builders were present, period 2 and period 4, change was widespread. In both cases these leaders had significant authority; they were also dedicated, energetic, visionary and inspiring individuals.

Whilst this section concentrates on the role of individuals within the zoo in enabling the change process towards sustainability, it should also be noted that such progress has allowed the zoo itself to become a change agent. It is raising the bar in terms of standards for Quebec zoos, and for other organizations in terms of eco-efficiency. Its sphere of influence may be less than a large multinational, but it is nonetheless a driver of change in its region with more than 500 000 visitors who are exposed to conservation issues and significant press coverage about its conservation efforts each year, as well visits to schools and other *ex situ* initiatives. Thus, through the initiatives of various change agents at the micro level within the zoo, the zoo itself has become a change agent or a force of change at a macro level by assisting in raising awareness in the environment at large. If the change process towards sustainability which was described in Figure 4.2 would hold for the society at large, one could state the Granby Zoo is assisting in step 1 of this change process, working as a force which is raising awareness of the need to change within its region.

4.4 Lessons and Hypotheses

By studying the zoo's evolution over time, a number of lessons and hypotheses emerged. These will be discussed in turn and are summarized in Table 6.1 and 6.2 to assist would-be change agents and researchers towards enabling such change.

The first lesson is that sustainability change is not a precise project with a clear beginning and end, but rather a long-term programme of continuous improvement as values, understanding and opportunities evolve over time. In the zoo such long-term change is managed by dividing it into measurable incremental steps or projects (such as receiving CAZA and AZA certifications, economising water by 45% etc.). This way it can realise concrete and rapid results, measure progress and promote it, as well as learn and build upon successes, reinforcing the momentum for further change. One could hypothesise that breaking down sustainability change into smaller projects also makes it easier to communicate and sell initiatives to stakeholders (such as employees and upper-management), as they can more easily grasp the vision, benefits, and what is required.
The second lesson is that organizations can move towards sustainability without a formal program in place, through piecemeal individual efforts, although results are likely to be limited unless they are part of a coordinated or strategic organizational wide movement. The zoo began piecemeal efforts towards sustainability in the 1970s by contributing to ISIS, improving animal care and breeding, and more prudently using water at a time when "sustainable development" was not common language. More significant and lasting results were only achieved when such efforts became part of the organizations strategy in the mid 1980s (for animal conservation) and mid 2000 (for eco-efficiency). That is when upper-management and the organization at large shared awareness of the need to change and the vision of what to change. This support from the top provided legitimacy, created urgency and ensured the financial or other support to facilitate the process. Furthermore it built on the individual efforts already in place, which reinforced these initiatives, built momentum and ensured that efforts were in-line with internal trends.

Another lesson is that numerous external factors (particularly industry developments like AZA and government support) and internal factors (especially employee influence and upper-management support) influenced the "why", "what" and "how" of the zoo's efforts towards

sustainability (see Figure 4.1). Their relative force changed over time, influencing the values and behaviour of individuals and the organization at large by offering incentives or threats which raised awareness and acceptance of the need to change, and led to a vision of what to change, planning on how to get there, and ultimately concrete action. Thus we can hypothesise that the change process follows four steps: awareness and acceptance of the need to change, followed by a vision of where to go or what to change, planning on how to get there, and then action or concrete changes towards sustainability (see Figure 4.2).

The fourth lesson is the importance of having a systemic perspective (understanding the organization's particular situation both internally and externally) when planning sustainability initiatives. With such knowledge change agents can: (1) come up with strong arguments to communicate and sell the "why" change is necessary (thereby raising awareness and acceptance of the vision – steps 1 and 2 of the change process shown in Figure 4.2); and (2) better plan such efforts, the "what" and "how", and maximise the chances of successful action (steps 3 and 4). The zoos conscious decision not to spend precious resources implementing an environmental management system like ISO 14001 up-front when it began the Green Zoo program was based on a solid understanding of its particular situation. Such a system wasn't required by stakeholders, and resources could be more effectively channelled into action that would allow rapid gains to be realized and demonstrate the importance of green initiatives at the zoo without a written policy. For a larger enterprise with substantial resources and a more complicated structure however, implementing such an environmental management system upfront may be the most effective way to facilitate change that requires the support of many more individuals. Thus we can hypothesise an environmental management system is not required to make significant and rapid advances towards sustainability, particularly in SMEs. One can also hypothesise that organizational change towards sustainable development can be significant without generic systems, frameworks or models (ISO or otherwise, summarized in Tables 1.6 and 1.7) which the zoo did require to realise significant success.

The zoo did benefit from tools more tailored to its situation, such as industry best-practice initiatives and standards (such as AZA etc.). Generic frameworks, often only focussed on eco-efficiency (see Table 1.6) miss the great potential of zoos towards sustainability in terms of animal conservation completely. So another hypothesis is that industry-specific tools can provide more useful, significant and effective guidance than generic sustainability frameworks or models, as they are more closely linked to the core-business of the organization and its particular potential.

Another hypothesis is that organizations may not be making significant contributions towards sustainability not because they don't value such change, but rather because they don't have the financial flexibility to invest in it. During the zoo's financial crisis resources were funnelled elsewhere instead, and energy was focussed only on the zoo's immediate survival although conservation was a clear value of the organization at the time. Thus, encouraging organizations to become more sustainable probably requires not only appropriate values but also incentives (both financial and non-financial) to encourage sustainability efforts particularly in financially struggling enterprises. Their more precarious financial situation seems to force a shorter-term vision, whereby sustainability initiatives are seen more as a cost than an investment (a vision which would require a longer-term view). Ironically, when the zoo focussed too much on conservation at the expense of their visitors their efforts towards sustainability were actually hindered, as visitor numbers dropped and hence revenue to invest in such initiatives. So another lesson is that the customer, when the main revenue source, is important in sustainability efforts by providing the necessary liquidity to invest in such change and should not be forgotten in an organisation's drive towards sustainability.

A further hypothesis is that a change agent (an individual who influences change) is not always a leader or recognized as such. Certain employees within the zoo were not able to

convince others to change as such, however they did play an important role in helping facilitate sustainability changes at a later date (from both within and outside the organization). Also, one can hypothesise that change agents take on 4 distinct roles: change instigator; change; change coordinator; and change supporter. Whilst change instigators are visionary, they are not necessarily visionary leaders. It was observed that the initial vet who pushed for changes towards animal conservation was unable to find followers or recruit change supporters who shared her vision and need for change, and could thus not build much support for the change from the inside or convince anyone else to take on this role. She did initiate some changes but she couldn't build the change. In periods when a change builder was present, change was major. Thus, another lesson is the crucial importance of a change builder for communicating and selling the change to influential organizational members so that they support its implementation if it is to have significant results.

Another lesson is that change agents use a number of different leadership styles - from charismatic and transformational to transactional and authoritative leadership – to push or pull others depending on the particular situation. Whilst it is not possible from the case to determine whether a particular style of leadership per se is more or less important, those change agents who lacked formal authority (and thus were not able to use authoritative leadership to push followers to change) relied on their power of conviction, communication abilities or charisma to pull followers to change. Leaders with formal authority were observed using a combination of both transformational and transactional styles to push or pull others depending on the situation. So one can also hypothesise that there is not one particular style which best enables organizational change towards sustainability, but rather the best style appears to be the one that best fits the situation.

A further lesson is that sharing the successes of sustainability change increases the rewards. Breeding and exchange programs at the zoo reduced the high costs involved in using animal dealers and eco-efficiency efforts like geothermal technology had an average payback of just a few years with energy cost reductions of around 70%. However, there were many other less quantifiable benefits that were only realised by the zoo communicating its efforts to its stakeholders. By communicating the fact that its water consumption has decreased by 70%, one can speculate that the zoo has built goodwill with the local government who covers the cost of this resource. This may encourage the city to support the zoo in other ways. Also, the zoo has received much positive attention, in the form of positive publicity and prestigious prizes because it has publicised its successes. Furthermore, the zoo's employees have expressed their pride in such efforts and their motivation to do more once learning of the results. It may also have increased job satisfaction and the commitment of individuals towards the organization. Such improvements have also ensured the continued legitimacy of the zoo despite the major change in values and expectations of zoos since it first opened. Furthermore, they have reinforced the zoo's competitive advantage as the only zoo in Quebec specialising in the conservation of exotic and threatened species.

Finally, it was learned that contributions towards sustainability are greatest when they are creatively linked with the core business of the firm. Indeed, no organization can seriously contemplate being sustainable without focussing on its core business. Traditionally zoos were in the business of trading, housing and presenting animals to a curious public. It was here, in the areas of trading, housing and presenting animals, that improvements were initially made at Granby Zoo, which ultimately led to important contributions towards animal conservation and the global fight to save threatened species. The CAZA and AZA certifications also served to legitimise and reinforce improvements to the core business in the way other certifications or programs which focus solely on peripheral activities could not. Eco-efficiency efforts became, in effect, an extension of the conservation trend already in place at the zoo, so they were linked to the core-business of the zoo as well. The final hypothesis is that when changes are linked to the core business or the *raison d'être* of the organization they are more

likely to have lasting and significant impacts than if they are just a side-project of the enterprise.

4.5 Conclusion

In seeking to understand what can be concluded from the case of organizational change towards sustainability at Granby Zoo, a number of findings emerged. There were numerous and interlinked change forces – at the environmental, organizational and individual level - that evolved and influenced the "why", "what" and the "how" of Granby Zoo's change towards sustainability over time. Together these change forces raised awareness and acceptance of the need to change, providing a vision of where to go or what to change, which led to planning about how to get there, and action or concrete changes towards sustainability. This change process resulted in greater or lesser change, depending on whether the first two steps (awareness and acceptance of the need to change as well as the vision of where to go or what to change) were held by a few individuals or the organization at large, which depended largely on change agents and the roles they played. During periods where the change instigator was not a change builder, nor able to recruit one, the change was minor. During periods when the change instigator was able to build support for the change, or a different change builder or leader was present, change barriers were broken down and change was major. All of these findings led to a number of hypotheses and lessons, which will be compared with literature to understand how they contribute to research on organizational change towards sustainability in the following chapter.

CHAPTER 5:

RESEARCH CONTRIBUTIONS

Ring out the old, ring in the new,
Ring, happy bells, across the snow:
The year is going, let him go;
Ring out the false, ring in the true.
Lord Alfred Tennyson

Having already discussed the research findings (Chapter 4), the purpose of this chapter is to demonstrate how these findings contribute to organizational change towards sustainability literature as outlined in chapter 1. Thus, this chapter aims to show how these findings build understanding in the following three areas: change drivers of organizational sustainability; conceptualising organizational change towards sustainability; and enacting organizational change towards sustainability.

5.1 Change Drivers of Organizational Sustainability

This research confirms that there are numerous factors which encourage organizational change towards sustainability. In particular, certain external (like the arrival of new employees into the zoo as well as government support and industry best-practices) and internal factors (like the overall organizational values, structure, influential individuals and the financial situation of the zoo), have greatly facilitated or hindered this process. In turn a model has been developed (see Figure 4.1), which not only highlights the particular factors that have affected the zoos evolution towards sustainability, but also places them within the larger sphere of values and time. This contributes to literature by highlighting a seldom discussed phenomenon in organizational change: the influence of evolving values over time, which create better timing for such sustainability change. Thus, this research supports calls by Sharma and Starik (2002) for integrative studies (examining interacting institutional, organizational and individual variables influencing organizational "greenness") and other authors like Cao *et al.* (1999) and Haines *et al.* (2005) for less generic and more systemic perspectives of organizations (which take account of their dynamic and complex nature).
This investigation also supports some aspects of various organizational theories discussed in section 1.2.1. For example, organizational learning theories suggest that organizations change continuously in reaction to their context and by a process of experimentation that produces innovations. Many such experimentations and innovations can be seen throughout the history of the zoo, such as the idea of placing mirrors in the flamingo exhibit which led the zoo to pioneering the reproduction of this species in small groups. Cultural and cognitive theories suggest that change is not just structural and strategic but also cultural, as new visions of the world cause inevitable ruptures and thus major change. This too was observed in the zoo, particularly as new employees who valued animal conservation entered the zoo and were able to influence the values of other employees and the organization at large, and shows that cultural change leads to structural and strategic change or vice versa. However unlike configurational approaches which see the head of the organization as visionary leaders who strategically and radically guide such change, this research suggests that this

may not always be the case. It was not the head of the organization but those employees who worked closely with animals and resources who initially began changes towards animal conservation and eco-efficiency in the zoo. Nonetheless it is true that major gains were made once the Director General or President supported these efforts. Like the constructivist approach, this research underlines the importance of change actors depending on their situation (location, hierarchical status, access to power and resources etc.). Employees with a higher hierarchical status and wider access to resources could more easily affect such change. However it also depended on their timing. When their ideas were not aligned with the organizational values or priorities at the time, or the organization was struggling financially, their influence was limited. Finally like the contingency theory, one can say that decisions on why and how to proceed with organizational change depended on the particular situation. For example, the zoo chose to begin their eco-efficiency efforts by focussing on water and energy savings as they were important and easily realisable gains that could be made, and also because such resources were likely to become increasingly expensive in the future amongst other reasons. Thus, this research suggests that many organizational change theories may be useful in understanding particular aspects of the Granby Zoos evolution towards sustainability, which supports claims that such change is highly complex and multi-factorial requiring a systemic perspective.

By demonstrating the importance of values in explaining organizational changes (which determine the priorities of the organization itself and how it runs its business) and how they can be influenced, this research also goes beyond the brief mention of the importance of value changes in sustainability efforts raised by some authors (such as in Schmandt and Ward, 2000), to show how this can be done. This research demonstrates that it may be easier to influence organizational values and culture by getting new people with the appropriate values into key positions within the organization than to try and convert the values of influential employees already inside. Also, this research underlines the importance of raising awareness, which can assist in changing values of those already within the organization and ultimately creates a more favourable context for change. And for pessimists this research provides hope, for it shows that values are not set in stone, but rather evolve and become more supportive of organizational change in this direction. So would-be change agents who find that the timing is not good for such change in their organization need not despair, over time a more favourable context for their ideas may emerge.

Although Lesourd and Schilizzi (2001) claim that sustainability change is motivated by moral or economic reasons, this research suggests that such change is motivated by a combination of the two depending on the timing (determined by the values, resources and time horizon of the decision maker at the time when the decision is made). The decision to feed animals meat fit for human consumption was more expensive but upper-management considered this important and decided to allocate resources towards it, so it may be considered a moral and not an economic decision. However in the longer term this decision also makes sense economically, as better diets mean better breeding and better breeding means a lesser need to use expensive animal dealers to source stock. Likewise economising water, a resource that the zoo does not actually pay for, was influenced by the fact that the zoo knew it greatly wasted this resource and efforts should be made in addressing this, could also be considered a moral decision. However there was also a threat that the zoo may eventually have to pay for this resource, and by showing responsibility towards one of its major stakeholders the zoo probably built goodwill that may encourage other economic benefits in the future.

Finally, regardless of what the drivers of change actually were, the benefits of improvements in animal conservation and eco-efficiency suggested by this data are numerous. Some are already well supported by other literature - such as greater competitive advantage, lower costs and better stakeholder relationships - but others are less widely discussed. This research shows how such change can also increase employee satisfaction, renew an

organization's *raison d'être* by providing a greater and adapted mission, as well as increase organizational legitimacy. Thus, this study responds to calls from the European Commission (2001), UK Department of Trade and Industry (2002) and World Business Council for Sustainable Development (1999) for studies of change towards sustainability in SMEs which provide incentives for other SMEs to do the same. But it goes even further, highlighting the fact that benefits beyond immediate cost savings are only realised by communicating results to other stakeholders, reinforcing the importance of this step which allows the organization itself to become a change agent, setting an example and encouraging change in a broader sense.

5.2 Conceptualising Organizational Change towards Sustainability

Whilst much literature is concerned with conceptualising and defining organizational sustainability, the case of the Granby Zoo shows that significant gains towards sustainability can be made without directly addressing such issues. The zoo has never stated that it aims to become a sustainable organization. Its goals have been shorter-term, like to reduce water consumption by 40% or receive AZA certification. Over time, these smaller visions accumulated into significant gains, showing that sustainability itself does not need to be articulated for major change to occur. Shorter-term visions may be more readily grasped, attainable and measurable, and encourage or better serve organizations heading in this direction. Thus, while certain researchers have called for more studies on the meaning and definition of sustainable organizations (see Sharma and Starik, 2002), this research questions how useful such information would be in enabling such change. Furthermore, it suggests that many organizations may actually be moving towards sustainability without realising or promoting it, as it is occurring at an individual (i.e. by scattered individuals) rather than an organizational level (i.e. as an organizational-wide movement) and hence not as visible.

This research also questions the necessity of using sustainability frameworks (see Table 1.6), as the zoo made significant contributions towards sustainable development without using such frameworks. In fact, the case of the zoo contributes to literature by suggesting that industry led initiatives may be more beneficial than generic frameworks. Whilst the zoo's eco-efficiency efforts incorporate certain elements of several frameworks (like the 3 Rs and Zero Waste), these frameworks were not explicitly used nor would they have been useful for the organization's efforts towards animal conservation. However, it is the handling and exposition of animals that the organization's core-business lies, and arguably here that a zoo can make the greatest contribution towards sustainable development. Industry initiatives (in the form of AZA) were not necessarily tied to factors common and peripheral to all organizations (i.e. resource consumption and waste), but focussed more on the zoo's *raison d'être* and thus its full potential. Nonetheless, further research is required to see whether industry specific initiatives are generally more effective, which may support or refute this suggestion that industry appropriate methodologies are more effective in guiding such change. Further research could also confirm whether contributions by organizations are more significant and long-lasting if they are linked to the *raison d'être* of the enterprise, thereby really allowing it to achieve its full potential. It could also test whether those organizations considered as leading in terms of sustainability are doing so because they espoused "principles before profits" as Williard (2002) suggests (in fact, the Granby Zoo nearly went out of business when it put principles above all else, and had to relearn the importance of balancing the two), or rather because their fundamental existence and core-business is linked to sustainable development.

5.3 Enacting Organizational Change towards Sustainability

This research thus questions whether consciously applying such generic models (see Table 1.7) is actually necessary or useful. The Granby Zoo succeeded by building upon individual initiatives of certain employees in the area of animal conservation and eco-efficiency, with an eye to industry initiatives. In the process the zoo naturally (though not consciously) took many of the steps noted in generic models such as changing the dominant mind-set, developing a vision, identifying the gap, planning for and creating short term wins, and institutionalising new approaches (see Table 1.7).

This research also responds to calls by Doppelt (2003) and others for knowledge on the sustainability change process, suggesting that the process evolves through four steps which have been developed into a model (see Figure 4.2). Internal and external forces raise awareness and acceptance of the need to change, where to go or what to change, which evokes planning how to get there, and finally concrete changes or action towards sustainability. The first 3 steps of this process have similarities with the sequence of change described by Mintzberg and Westley (1992): conceiving the change (learning); changing the mindset (vision or perspective) often driven by a visionary leader; and programming (where necessary) the consequences (planning). Whilst this sequence may hold for distinct projects, it is perhaps less applicable to the process of organizational change towards sustainability which is a long-term programme requiring learning and improvements over long periods. The model proposed in Figure 4.2 suggests a fourth step - action or concrete changes towards sustainability – and an arrow which leads to the process beginning again for further change. When the cycle continues and the project is re-evaluated the learning occurs as awareness grows about what else could be changed, leading to further planning and more action. This research also suggests that the key to whether results are minor or major (i.e. less or more significant) depends on whether certain steps in the process occur at the individual or organizational level. Planning does not necessarily have to occur at the organizational level (the third step), but acceptance of the need to change and where to go or what to change (the first two steps) does for change to be significant.

This research also suggests that a systemic vision assists change agents in enabling change because it allows them to: (1) come up with strong arguments to communicate and sell the "why" change is necessary (thereby raising awareness and acceptance of the vision – steps 1 and 2 of the change process shown in Figure 4.2); and (2) better plan such efforts, the "what" and "how", and maximise the chances of successful action (steps 3 and 4).

This research does not support Doppelt's (2003) claim that organizational change often fails to get off the ground, stalls soon after it begins, or eventually collapses because the cultural beliefs, thinking and behaviour that are inconsistent with sustainability are not altered. The process towards eco-efficiency in the zoo demonstrates how many influential employees had thinking and values in-line with such change during the 1990s. Instead, they blamed the poor financial situation of the zoo for the lack of progress made at that time, which forced the zoo to focus on its immediate financial survival only. Thus, this research contributes to literature by suggesting that it may sometimes be the lack of economic sustainability, rather than cultural beliefs, which limits an organizations contribution towards sustainability. The environment seems to be a luxury for organizations which can only be addressed once economic sustainability is assured (the basic equation to ensure organizational survival). Nonetheless, few authors address financing as a crucial element or a key success factor in enacting organizational change towards sustainability, perhaps because studies are often based on larger enterprises with greater financial capacities, suggesting another aspect which could be explored in future research. Such research could explore the relative contributions of organizations towards sustainability with similar contexts (in terms of their products or service, location and size) but substantially different financial leverage. It could

also analyse the relative effectiveness of external support is (such as grants, low-interest loans, and free training or consulting services) in enabling sustainability change in less well-resourced organizations.

This research both supports and refutes existing research organizational change success factors. Many key success factors described by Nattrass and Alomare (1999) and shown in Table 1.8 could be observed in the zoo. These include: a proactive attitude towards change; endorsement and active support from the top; a culture that supports experimentation; and a well articulated and aligned vision. However other elements were not present or necessary such as: ensuring a common knowledge base about sustainability (perhaps because influential employees valued the initiatives) or using a framework like the Natural Step (perhaps because other more tailored industry specific guidance was available). Palmer's (2004) claim that management support and communication are success factors for change is also backed by this research, especially top management support as noted by Clement (1994). This research does not support Hafsi and Demers' (1997) claim that in SMEs the organizations' structure and culture play a less important role than leadership in major organizational change. The zoo's structure (especially whether someone was responsible for coordinating the change or not, the policies in place, and how responsibilities and resources were shared) and culture (especially in terms of the creativity and world openness of employees as well as their value for conservation) were also important in the success of Granby Zoos initiatives.

Light may also be shed on frequent debates in organizational literature concerning incremental versus radical change towards sustainability through this research. The zoo was moving incrementally, for example recuperating animal manure and recycling aluminium cans, long before recycling and other such words became daily jargon. Significant results occurred when more incremental changes took place within a shorter time frame. Therefore, rather than continuing common debates on whether change towards sustainability requires incremental or radical change, authors may be better served debating how to make the incremental improvements already occurring happen more rapidly (so that results are more significant or radical). For the zoo, this occurred when initiatives became part of an organizational wide and coordinated effort backed from the top. So this research also contributes to debates by suggesting that incremental change becomes radical when it is part of a coordinated effort, requiring awareness and acceptance of the need to change and what needs to be changed at an organizational level to secure the necessary support.

Finally, this research makes several contributions to literature about leaders or change agents in sustainability efforts. It shows that whilst much strategy literature speaks of the highest manager in an organization as ultimately responsible for the strategy or direction (Giroux, 1993), such strategies may be initiated at lower levels. It was the lower levels at the Granby Zoo who began change efforts towards animal conservation and eco-efficiency long before there was a conscious commitment from the organization as a whole (and therefore upper-management). Thus whilst the zoo's top management played an important role by providing the financial, structural and moral support which enabled significant change, other individuals were important initiators of such efforts. This research also demonstrates that change agents can be, but are not necessarily, leaders or recognised as such. Although many authors tend to use these terms interchangeably or describe change agents only in leadership terms, this research suggests that change agents at the zoo adopted four different roles: change instigator, change builder, change coordinator, and change supporter. Only the change builder necessarily needs to be a leader (in order to successfully build awareness, sell the vision and encourages others to follow it). Furthermore, change agents may take on both leadership and non leadership roles during the process. This research also notes that there does not appear to be one particular leadership style that is most effective in enabling such change. Different change agents used different leadership styles to push or pull others

to change. Instead this research suggests that the best leadership style is the one best suited to the situation. Thus, this study also contributes to literature by responding to calls from Sharma and Starik (2002) and other researchers to study the role of individuals in effecting environmental change within organizations. It also assists in resolving confusion in literature which often uses the words change agent and leader interchangeably, suggesting that change agents do not necessarily have to be leaders and demonstrating why.

5.4 Conclusion

This chapter showed how the research findings contribute to literature on organizational change towards sustainability, by providing new insight or supporting literature already written on the topic, as well as suggesting potential areas for further research and implications for practice. As such it supports calls of various research groups and bodies for: descriptive studies on how organizations are changing (Shamel and Sharik, 2002); integrative studies examining the role of institutional, organizational and individual variables in effecting such change (Shamel and Sharik, 2002); business-cases on such change (Willard, 2002); research on SMEs progress towards sustainability (European Commission, 2001; and the World Business Council for Sustainable Development, 1999); and case-studies on how such change impacts SMEs profitability and performance (UK Department of Trade and Industry, 2002). The following concluding chapter will summarize this research, as well as the suggestions for would-be change agents and researchers focussing on organizational change towards sustainability.

CHAPTER 6:

CONCLUSION

Now this is not the end.
It is not even the beginning of the end.
But it is, perhaps, the end of the beginning.
Winston Churchill

This thesis aimed to contribute to knowledge in the field of organizational change towards sustainability with regards to SMEs. The 1st chapter discussed why sustainability is desirable and what it may mean, particularly for an organization. It also looked at the concept of organizational change towards sustainability particularly with regards to SMEs, the need for further understanding in this area and the objectives of this research. In the 2nd chapter the epistemological position of this research was discussed as was the research methodology and methods (an ethnographic case-study). Ethical issues as well as how the validity of data would be assured were also addressed. In the 3rd chapter, a general overview of the research sample – the Granby Zoo – was provided, followed by a detailed account of why, what and how this organization evolved from a traditional zoo to a centre of conservation. The 4th chapter discussed what could be concluded from the data, including the change drivers, change process, change roles, as well as numerous lessons and hypotheses. In the 5th chapter the contributions of these findings were outlined, by comparing them with literature already written on the topic as outlined in chapter 1. The purpose of this chapter is to conclude by presenting the main research contributions, and how they may assist managerial practice as well as future research in organizational change towards sustainability.

One of the contributions of this research is the demonstration that an organization can make lasting and significant contributions towards sustainable development by intimately tying such change to its *raison d'être* which can also ensure its continued legitimacy. Another contribution is the demonstration of how values evolve over time, influencing change forces and ultimately the favourability of the change context. A model was created to demonstrate such relationships (Figure 4.1).

A further model was contributed (Figure 4.2) to illuminate the change process towards sustainability, highlighting the importance of drivers in raising awareness and acceptance of the need to change (the why), what to change and how to do it. The full change sequence of this process is: awareness and acceptance of the need to change; a vision of what to change or where to go, planning on how to get there, and action to enable changes one project at a time (which ultimately leads to awareness and learning of the need for further change and the repetition of the entire sequence). It was also demonstrated that when awareness and vision (steps 1 and 2) was shared by upper-management and the organization at large, change was significant. At times when awareness and vision were shared by only a few individuals, change was minor.

This research also shows that individuals within the organization (in both management and non-management positions), influenced by industry initiatives (like AZA), were particularly important in encouraging actions which contributed towards sustainability. This research contributes to the field by clarifying the difference between a change agent and a leader, showing that a change agent can but does not necessarily have to be a leader, depending on which roles they assume. These roles as shown in Table 4.3 are: change instigator (who is visionary but not necessarily a leader); change builder (who necessarily is a leader); change coordinator (who is a good manager but not necessarily a leader); and change supporter. In

periods when a change builder was present, who built awareness and acceptance for change, particularly with upper-management, change was major. These principle findings have led to numerous hypotheses and lessons to assist would-be change agents and researchers alike in organizational change towards sustainability efforts as described in sections 6.1 and 6.2.

6.1 Implications for Organizational Change Agents

The lessons for facilitating organizational change towards sustainability that have emerged from the research (discussed in section 4.4) have been rewritten as a series of recommendations for would be change agents in Table 6.1. They are not intended as a "how to" on organizational change towards sustainability, but rather as suggestions for would-be change agents to consider in their attempts towards enabling such change.

Table 6.1 Recommendations for Organizational Change Agents towards Sustainability

1. Look within – find out what your organization is already doing. There may well be several piecemeal individual efforts in place, though their results may be limited if they're not part of a coordinated or strategic organizational wide movement. The people behind such efforts are a valuable source of information, able to reveal change barriers and change levers, and support your own initiatives.
2. Look without – find those trends, tools, or reasons which will help you to (1) come up with better arguments to sell such change efforts, that is, the "why"; and (2) better plan such efforts, that is, the "what" and "how".
3. See big –peripheral activities are important, but your organizations real potential lies in creatively linking its core business or *raison d'êtr*e to sustainability. Competitors and industry specific tools may be more useful than generic sustainability frameworks and models in assisting you to rethink your business.
4. Act small – pick one or a few projects that you can easily sell (because they are easy to understand, accept, and put in place offering big benefits for negligible costs) and build your business case around them. This will allow you to create success quickly, build momentum and convert the cynics early.
5. Build influence – the more authority you have or the more powerful people you can get to buy into your ideas, the more chance you'll have of getting the support you need to realise them. Get creative and get them on board!
6. If you can't push, pull – even if you don't have direct authority over people, there are many creative initiatives that you can be part of which will help raise peoples awareness, understanding and motivation to improve the organization over time.
7. Secure support – the projects will need support in various ways from the top (financially, politically, symbolically, structurally), and securing this requires building awareness and acceptance of the project amongst upper-management which is where your influential people and solid business case will be very useful. Don't be discouraged if you're not supported immediately, maybe the timing isn't quite right.
8. Try your project – this may require bringing in new people or expertise, as well as discussions with various stakeholders and training. It also requires clear and measurable goals, strong evaluation and communication skills, and much creativity.
9. Learn, improve and try again – change towards sustainability is not a project with a clear beginning and end, but rather a long-term programme of continuous improvement

as values, understanding and opportunities evolve, so be prepared for many projects which require much patience, negotiation, discussion and follow-up.

10. Share your success – by celebrating the results of your projects you can strengthen stakeholder relationships, employee motivation and self-worth, change momentum, organizational legitimacy, competitive advantage and more, whilst assisting social development and the health of our planet at the same time.

6.2 Implications for Research

This research suggests several potential areas of study as discussed in chapter 5. Firstly, the importance of values in such change over time (e.g. how values can be influenced to create a better timing for such change). Secondly, the potential realised by tying sustainability to the *raison d'être* of the organization (especially the contributions and benefits compared to solely focussing on peripheral activities). Thirdly, the influence of financial sustainability on organizational contributions towards sustainable development, and the most appropriate support to encourage financially struggling organizations. Lastly, the contributions of industry specific initiatives in enabling change towards sustainability (particularly their relative impact compared to more generic approaches).

This research also led to the formulation of the two models (Figures 4.1 and 4.2) and raises several hypotheses (as discussed at length in section 4.4 and summarised in Table 6.2). These models and hypotheses should be tested through further studies to increase their external validity. Only then could generalisations for a larger population be made, overcoming the main limitation of this research: the small sample size of one case albeit in-depth.

Table 6.2 Hypotheses requiring further Verification

1. Organizations can change in ways that contribute significantly towards sustainable development without using generic change models or sustainability frameworks.
2. Industry-specific tools may provide more effective guidance than generic sustainability frameworks or models, as they better fit the organizations core-business and potential.
3. Organizations contributions towards sustainability may be limited not because they don't value it, but because they don't have the financial flexibility to invest in it.
4. An environmental management system is not required to make significant and rapid advances towards sustainability, particularly in SMEs.
5. Sustainability change can be more easily communicated or sold to stakeholders and realised one project at a time, where clear and more immediate benefits can be demonstrated and actions can be more accurately planned and easily realised.
6. The change process can be broken down into four stages: (1) awareness and acceptance of the need to change; (2) vision of where to go or what to change; (3) planning on how to get there; and (4) concrete action (which repeats with learning and practice).
7. Change agents can take on four distinct roles: change instigator (who is visionary but not necessarily a leader); change builder (who necessarily is a leader); change coordinator (who needs to be a good manager but not necessarily a leader); and change supporter (who assists by breaking down barriers and following initiatives).
8. A change agent, that is someone who influences change, is not always a leader or

recognised as such.

9. There is no one particular leadership style which best enables organizational change towards sustainability; the best style appears to be the one that best fits the situation.
10. When changes are linked to the core business or the *raison d'être* of the organization they are more likely to have lasting and significant impacts than if they are just a side-project of the enterprise.

Verifying many of these propositions would require historical and longitudinal studies that show how influential forces (like values, events and actors within and outside the organization) have transformed over time within their particular context. Such an approach requires a variety of methods (documents, interviews, observations, etc.) and interpretations (economic, politic, etc.). This is a long, costly and time consuming process, which is why this study was limited to only one case. There are possibilities that data is lost as the memory of organizations, like that of people, is vulnerable (Giroux, 1993). However in the case of organizational change it is better to do an archaeological dig to find important happenings, than to look at it like a picture without depth (Giroux, 1993).

As a closing note, one should acknowledge the fundamental importance of *time* and *timing*. Over time the underlining values of a number of environmental, organizational and individual factors evolved to increasingly encourage or support organizational change towards sustainability at the zoo. When efforts were part of a more coordinated movement, during a time when influential people valued such change and thus supported it financially and otherwise, that is the "timing" was good, the results were great. There was a better fit between the individual actors' goals and that of the organization. Therefore, when change agents act in a time when the context welcomes such change or they are able to take the time to create a more favourable context (by building a strong case, lobbying powerful actors, finding financing and other necessary support etc.), the change is more likely to be widely excepted, rapid and significant.
The fundamental importance of time and timing not only applies to practice but also to research, as both are works which are part of time and influenced by the time in which they occur. Detailed case-studies which analyse the process of change in organizations, like the process itself, require considerable time to emerge. Finally, let us hope that organizations, but also individuals and the society at large, will be able to realise a change towards sustainability before time runs out for many of the world's fascinating species and the spectacular ecosystems that support them. It is sincerely hoped that this research about Granby Zoo's change towards sustainability inspires other organizations and individuals to join in this crucial race against time.

APPENDIX A

DATA COLLECTION

A.1 Documents Analyzed for the Documentary Analysis

Annual Reports or Annual Addresses of the Zoological Society of Granby				
• 1955 • 1956 • 1957 • 1958 • 1959 • 1960 • 1961 • 1962 • 1963 • 1964	• 1965 • 1966 • 1967 • 1968 • 1969 • 1970 • 1971 • 1972 • 1973 • 1974	• 1975 • 1976 • 1977 • 1978 • 1979 • 1980 • 1981 • 1982 • 1983 • 1984	• 1985 • 1986 • 1987 • 1988 • 1989 • 1990 • 1991 • 1992 • 1993 • 1994	• 1995 • 1996 • 1997 • 1998 • 1999 • 2000 • 2001 • 2002 • 2003 • 2004 • 2005
Other Internal Documents				

- AZA Accreditation Questionnaire 1995, completed (several hundred pages).
- AZA Accreditation Questionnaire 2004, completed (several hundred pages).
- Conservation et Biologie Rapport d'activités 2002-2003. 2003, p. 20.
- Consommation de l'eau au Zoo de Granby priorité des actions à entreprendre présenté à la direction et au conseil d'administration. 2004, p. 12.
- D'aventure en aventure…Manuel de l'employé(e) Zoo Granby Saison 2005. 2005, p. 21.
- Documentation d'orientation fondamentale. 2004, p. 17.
- Dossier de candidature un zoo vert présenté par le Zoo Granby. 2005.
- Extrait du procès-verbal de l'assemblée du Conseil d'administration tenue le 9 février 2004, p.1.
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- Extrait du procès-verbal de l'assemblée du Conseil d'administration tenue le 13 juin 2005, p. 1.
- Extrait du rapport de la directrice générale remis au Conseil d'administration le 9 février 2004, p. 1.
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- Profil de poste du coordonnateur de la gestion environmnetale. 2004, p. 11.
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- Résolution adoptée par le Conseil d'administration le 9 août 2004. ZSG : Granby, 2004.

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Total Documents = 103

A.2 Interviews

Date	Position	Service at the Zoo (years)	Duration (minutes)
20/9/05	General Director	2	60

	Environmental Coordinator	1.5	25
18/10/05	General Director Director of Maintenance and Construction Coordinator of Construction and Maintenance	2 21 15	55 55 35
18/11/05	Environmental Coordinator Coordinator of Animal Care (former zookeeper) Environmental Coordinator	1.5 18 1.5	70 65 15
22/11/05	Human Resources Director (former zookeeper, coordinator of zookeepers, and director of commercial operations)	27	45
24/1/06	Director of Client Services (former education officer and education director)	20	
2/2/06	Director of Maintenance and Construction Assistant of the General Director (and former assistant of the Director of Maintenance and Construction and Director of Animal Care)	21 27	75 15
5/4/06	Director of Client Services (former education officer and education director)	20	20
12/4/06	Former Director of Animal Care	18	75
	Average	13.6	44.6

A.3 Observations

Date	Area	Hours
10/8/05	Grounds/Animal Enclosures/Facilities	6
20/9/05	Administration (Meeting of Directors) and Grounds	4.5
18/10/05	Administration and Construction and Maintenance	4.5
18/11/05	Administration, Construction and Maintenance and Grounds	4.5
22/11/05	Administration area and Education area	4.5
24/1/06	Administration Area, Lunch Area, Animal Enclosures/Grounds	6
2/2/06	Administration, Construction and Maintenance areas and Grounds	6
19/4/06	Grounds/Animal Enclosures and Press Conference	6
27/5/06	Grounds/Animal Enclosures/Facilities	8
	Total	50

A.4 Initial Exploratory Interview Question for the First Round of Interviews

1. Racontez-moi l'histoire du Zoo Vert.
2. Qu'elles étaient les étapes les plus importantes?
3. Qu'est-ce qui a bien fonctionné.
4. Quelles ont été les difficultés?
5. Comment avez-vous réagi?
6. Quels acteurs sont impliqués dans ce programme et quels sont leurs rôles?
7. Y a-t-il eu des opposants ?
8. Selon vous, quelles sont les personnes qui ont une opinion du programme différent de la votre ?

A.5 Initial Interview Questions for the Second Round of Interviews

	Questions	**Plus de clarification**
S.v.p décrire brièvement votre rôle et depuis combien des années vous êtes au zoo et les postes que vous avez occupé.		

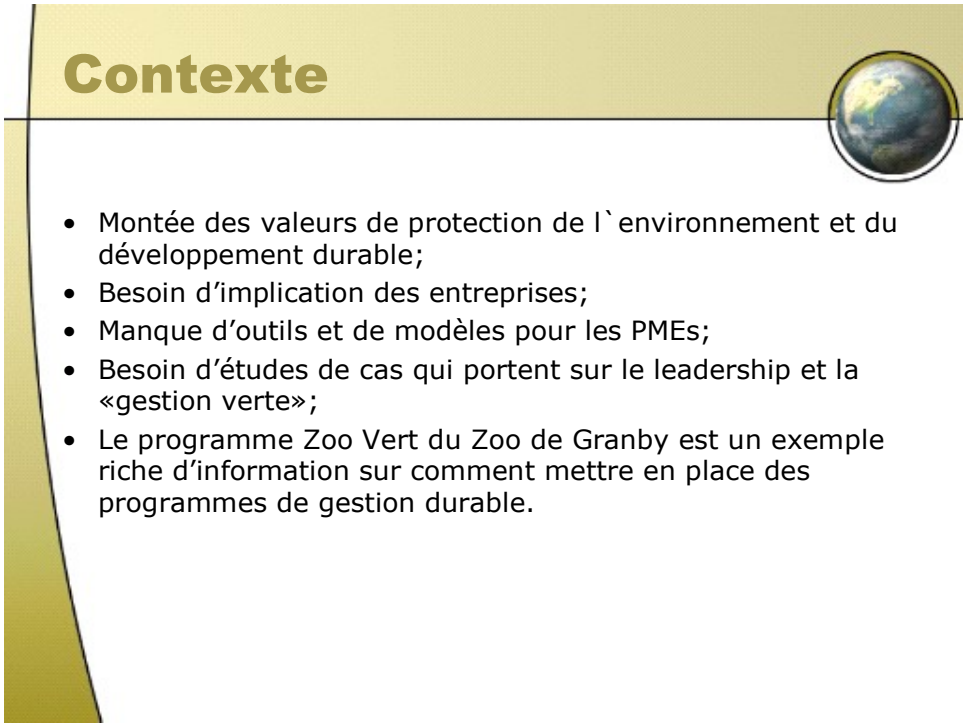
Histoire/Chamgement	Quels changements avez-vous vu au cours des années?	•Le rôle/ les priorités du zoo •Le rôle/nom de votre département •Votre position ou rôle •La gestion, niveau du contrôle, autonomie etc. •Les soins d'animaux (WAZA etc.) •Les ententes/relation/satisfaction clients •La gestion des déchets •Le revenu et le financement •Plus environnementale (une comité d'environnement? Soutenu comment?) •Comment? Depuis quand? Qui? Pourquoi ces actions ne sont-elles pas allées encore plus loin ? Pourquoi ces actions n'ont-elles pas été mises en place plus tôt ? Sont-elles tous positifs/nécessaires selon vous? Pourquoi?
Pourquoi le Zoo Vert	Pourquoi avez-vous commencé avec le programme Zoo Vert?	•Quelle est la vision de ce programme? •Pourquoi n'a-t-il pas commencé plus tôt? •Pourriez vous imaginer un tel programme sous la direction de votre <u>ancien</u> directeur? Qu'est-ce qui est différent sous la direction de la nouvelle directrice ? Comment pourriez-vous décrire son leadership? Pourriez-vous me raconter une histoire qui montre bien son leadership? •Qu'est-ce qui est différent aujourd'hui? •Quels étaient les problèmes à l'époque? •Pourquoi avoir commencé avec l'eau et l`énergie ? •Vous êtes-vous inspiré d'exemples d'ailleurs?
Comment	Comment cela s'est-il déroulé?	•Qui est vu comme le prometteur de ce programme? •Comment est-il communiqué aux employés? •Est-ce que ce programme est important pour le zoo? Pourquoi? •Avez-vous fait un audit, si oui, qui l'a fait? •Comment la décision de réduire votre consommation de a-t-elle été appliquée?
Rôles/ Perceptions	Quels acteurs sont impliqués dans ce programme et quels sont leurs rôles?	•Quel était votre rôle dans cette démarche? •En quoi votre travail est-il différent pour vous/ votre département? •Sur une échelle de 1 (pas de tout) et 5 (très) quelle est l'importance du programme pour vous? •Est-ce que vous avez toujours pensé comme ça? Pourquoi avez-vous changé votre opinion? •Est-ce que ce programme doit être une priorité pour l'avenir? Pourquoi?

Problèmes	Quand le programme zoo vert a commencé cela a-t-il créé des problèmes pour vous?	•Est-ce que vous avez eu des difficultés à convaincre les gens que le programme était nécessaire? •Comment avez-vous réagi? Est-ce que tous les employés sont convaincus qu'un tel programme est nécessaire? Qu'est-ce que les gens disent sur le programme? Est-ce que c'est apprécié?). •Convaincre des employés de s'impliquer (Sont-ils habituer de s'impliquent? Est-ce que tout le monde sont bien informé et sache leur rôle dans la démarche?) •Comment étés-vous encouragé à changer? Est-ce que les gens vous donnent le feedback ou suggestions pour l'améliorer? •Quel impact cela a-t-il sur les relations avec les clients (i.e urinoirs sans eau etc.) •Quelles sont les facteurs de succès? •Selon vous, quels obstacles ou défis doivent être surmontés pour que les changements apportés deviennent permanents? Comment pensez-vous les surmonter?
ValuersPotentiel/	Si vous aviez été à la tête du programme qu'est ce que vous auriez fait autrement?	•Comment le programme peut-il être amélioré? Quels autres changements voulez vous voir? Comment pensez vous que le programme doit évoluer dans l'avenir? •D'après vous quand on considère l'ensemble, le programme vert est-il souhaitable? •Si le programme Zoo Vert était annulé demain, est-ce que vous pensez que tous continueraient à faire un effort?

APPENDIX B

ETHICAL CONSIDERATIONS

B.1 Presentation of the Research to the Board of Directors



Objectifs

Étudier le processus de changement organisationnel particulièrement sous l'angle du leadership. Cela pose plusieurs questions comme:

- Comment le Zoo Vert a-t-il été implanté dans votre organisation?
- Quelles en sont les motivations?
- Comment les leaders ont-ils procédé pour amener ce changement?
- Comment cela a-t-il été reçu? Y a-t-il eu des changements dans la structure de l'organisation?
- Qu'en est-il des valeurs dans l'organisation (de la culture organisationnelle)?
- Comment cela s'inscrit-il dans la stratégie générale du zoo?
- Quels sont les facteurs clés du succès?

Méthodologie (besoins)

- Faire des entrevues en profondeur avec environ 20 personnes (durée moyenne de 1 heure);
- Observer, pendant quelques jours ou semaines, quelques unes de vos réunions et vos opérations;
- Avoir accès à vos documents internes qui portent sur la structure, culture, procédures, gouvernance, prise de décisions, le Zoo Vert et le changement organisationnel;
- Pouvoir distribuer un questionnaire à vos employés;
- Tout se fera dans le respect des considérations éthiques.

Resultats attendus

- Refléter à l'aide des modèles de gestion dynamique de la mise en place du Zoo Vert;
- Comprendre les mécanismes de gestion et les facteurs de succès, de même que les limites et les difficultés d'un programme de gestion environnementale;
- Approfondir les connaissances sur la place du leadership dans la gestion et le changement;
- Rédaction d'un mémoire de maîtrise (MBA-recherche) qui pourra fonder d'autres types de communications scientifiques (conférences, publications académiques, cas pour fins pédagogiques etc.).

B.2 Letter Distributed to Employees Advising them of the Research

Bonjour,

Je m'appelle Annelies Hodge. Je suis candidate à la maîtrise à l'Université du Québec à Montréal (UQAM). Vous allez probablement me voir dans les prochains mois, car je fais actuellement une étude sur les changements organisationnels et le leadership du programme Zoo Vert au Zoo de Granby. Pour ce faire, je devrai observer, faire des entrevues et une revue de vos documents internes.

Les buts de mon projet de recherche sont les suivants:

- refléter à l'aide de modèles de gestion la dynamique de la mise en place du Zoo Vert;
- connaître et comprendre les facteurs de succès, de même que les limites et les difficultés d`un programme de gestion environnementale;
- identifier les mécanismes de gestions utiles et mieux comprendre la place du leadership dans la gestion du changement vers le développement durable;
- contribuer au développement de la science organisationnelle vers le développement durable;
- rédiger un mémoire de maîtrise.

Tout commentaire ou opinion de votre part peut m'être utile pour mieux comprendre les enjeux et ce qui s'est passé. La démarche est faite selon le protocole d'éthique de l'UQAM. Des règles de confidentialité seront appliquées. Si vous avez des questions ou vous voulez me faire parvenir vos opinions, vous pourriez communiquer avec moi ou avec un de mes directeurs de recherche (vous trouverez leur nom sur la page suivante).

Je suis très heureuse d'avoir l'opportunité d'étudier votre organisation intéressante et j'espère avoir la possibilité de tous vous rencontrer au cours d'une de mes visites.

Merci beaucoup et bonne journée,

Annelies Hodge

B.3 Letter Signed by Interviewees

FORMULAIRE DE CONSENTEMENT

Entente quant à la participation à l'étude de l'implantation d'une programme vert et le leadership à Zoo de Granby dans le cadre du mémoire de maîtrise en sciences de gestion (UQAM) de l'étudiante Annelies Hodge (hodge.annelies@courrier.uqam.ca).

Je soussigné(e) _____ consens librement à participer à la recherche ci haut mentionnée qui a pour but de contribuer à la connaissance scientifique sur les conditions de succès comme les difficultés de leadership et les changements organisationnels vers le développement durable. L'entretien porte sur l'expérience d'application des principes verts dans votre organisation. Les données seront traitées dans un but uniquement scientifique dans le respect des personnes et des organisations. Les répondants ne seront pas cités de manière nominative à moins d'en avoir préalablement obtenu le consentement auprès d'eux. Il ne nous semble pas y avoir de risques liés à la participation à cette recherche mais le ou la participant(e) pourra en tout temps interrompre l'entretien. Les résultats de la recherche seront diffusés dans le cadre du mémoire de maîtrise de l'étudiante, de même que possiblement dans des rapports de recherche, des conférences et des revues académiques ou autre lieu de diffusion de la connaissance.

Cette recherche est faite sous la direction des professeurs Marie-France Turcotte (Département de Stratégie des Affaires) et Danielle Desbiens (Département d'organization et ressources humaines), de l'École des Sciences de la Gestion de l'Université du Québec à Montréal. Si vous le souhaitez, vous pouvez les contacter au (514)987-3000#4530 (turcotte.marie-france@uqam.ca) ou (514) 987-3000#3781 (desbiens.danielle@uqam.ca).

Signature du répondant : _____

Date : _____

APPENDIX C

SUMMARY OF ACTION TAKEN TOWARDS SUSTAINABLE DEVELOPMENT

C.1 Summary of Action towards Animal Conservation

Beginning in:	**Steps Taken Towards Animal Conservation**
Early 1970s	Education, conservation and research are noted as a role of the zoo
Late 1970s	Full-time vet hired
	Animal meat fit for human consumption provided
	Began recording animal data in the ISIS program
	First technician in animal health hired
Early 1980s	New policy requiring zookeepers educated in animal health
	New vet area built
Mid 1980s	Responsibility of curator and hiring of zookeepers transferred to the department of animal health
	Established an animal plan
	Established procedures for zookeepers (feeding, cleaning etc.)
	Began educational tables where zookeepers could educate visitors
	Established or improved animal records
	Evaluation of zookeepers based on performance
	Began sending employees to conferences of best-practice zoos
	Favouring animal exchange between zoos instead of animal dealers
	Building animal habitats based on the needs of the species
	Reviewed animal diets and began favouring fresh food
	Focussed on animal enrichment and occupation
	Educated visitors on animal behaviour
	Began supporting or conducting *in situ* and *ex situ* research
Late 1980s	Hired a full-time educator and structured formal educational programs
	Applied for and received CAZA and AZA certification
	Focussed on breading of endangered animals under the SSP
Early 1990s	Constructed a quarantine
	Reproduced endangered lemur cattas and snow leopards
	Received CAZA's Baines award for the new cave and bear habitat
	Pioneered breeding flamingos in small groups
	First caesarean of polar bears in the world
	Established a mobile zoo education unit to visit schools
	Chosen to manage the North American studbook for polar bears
	Began relocating animals with inadequate habitats to other zoos
	Educating visitors on endangered species and human impacts
Late 1990s	Built more appropriate habitats and climate for the primates
Mid 2000s	Responsibility of CAZA and AZA assumed by the General Director
	Created a new vet hospital
	Built more appropriate habitats for the tigers, hippos, amongst others
	Received the go-ahead to breed further endangered animal species

C.2 Summary of Action towards Eco-Efficiency

Began in:	**Steps Taken Towards Eco-Efficiency**
Late 1960's	Need to conserve water is recognized
Early 1970's	Improvements made to water system
Late 1980's	Recycling of aluminium cans by zoo keepers
Early 1990's	The zoo begins printing annual reports on recycled paper
	Water conservation efforts are introduced
	Energy conservation efforts are introduced
	Recycling of paper by office workers
	Environmental club formed with educators and zoo keepers
	Recycling of batteries and oil by construction and maintenance
	Outdoor furniture made from recycled materials
	Products from exhibits recuperated for other exhibits
Late 1990's	Toxic pesticides banned by construction and maintenance
	Construction of pavilions that exceeded insulation standards
	Centralisation of lighting and heating controls for certain buildings
	Water filtration and water saving instruments installed in some areas
Mid 2000's	Commitment from upper-management for the zoo to become greener
	Principles established for all participants in the modernisation project
	Integration of environmental questions into upper-management discussions
	Hiring of a coordinator in environmental management
	Objectives set to reduce water and energy consumption
	Presentation of water saving measures and management approval
	Measuring of the water consumption of buildings and activities
	Inspection of water system, leaks and joints
	Improvements or adjustments to wasteful water use practices
	Repair of the aqueduct system
	Replacement of old water basins with natural basins and filtration systems
	Conversion of toilets to reduce water use and urinals without water
	Acquired subventions for energy conservation measures
	Inspection of energy consumption of existing buildings and new buildings
	Installation of thermo accumulators in new buildings
	Installation of geothermal exchangers in new buildings
	Conversion of certain gas systems to geothermal
	Installation of air exchangers in new buildings
	Installation of energy efficient motors
	Optimisation or replacement of ageing or obsolete equipment
	Creation of a green zoo logo
	Conversion of all soaps and cleaners to organic products
	Documentation of all toxic products used at the zoo and safety plan
	Educating all employees on green practices at the zoo
	Promotion of green practices publicly to external stakeholders
	Measuring of waste and recycling at the zoo and chasing employees
	Creation of the first record of all green zoo practices and green book

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