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Abstract

This article examines a case of managing local change to achieve global sustainability goals, allowing zoos to do well by doing good. Many factors, such as the rapid disappearance of species worldwide and the increasing knowledge in the field of animal conservation, have evolved the mission of many zoos around the world from being just a local park offering amusement to local citizens towards global arks offering conservation of endangered species and education within global networks of cooperation. Now leading zoos are improving eco-efficiency and becoming models of conservation in a larger sense. In the process, zoos have learned to respond to a broader stakeholder base and found new legitimacy in their renewed *raison d'être*. This article presents findings from the case of one best-practice North American zoo and its process of changing from a traditional zoo to a centre of conservation, demonstrating how leading zoos do well by doing good. In exploring the change drivers and the role of change agents in affecting this change, it raises a number of lessons to stimulate practice and research in the field of organizations and the environment.

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

Table of contents

Introduction

It is difficult to imagine a more publicly visible organizational change that is contributing towards sustainable development than the evolution of the modern zoo. The concept of menageries goes back many centuries, with numerous cultures like Egyptian Pharaohs and European royal families having kept certain exotic animals to please crowds or their noble guests, some of which metamorphosed into public collections as early as the 18th century (like the Vienna Zoo in 1752 and the Paris Zoo in 1794). Perhaps less well known is that many of the zoos in both Europe and North America displayed human "savages" alongside animals until the Second World War (and if the Brussels World Fair can be counted, until as late as 1958). An inconceivable thought today, it demonstrates how values and social consciousness can evolve in only a few decades. Traditional zoos kept most animals behind bars in cement enclosures too small for their size. They rarely bred, were fed poorly, died early, and exhibited unnatural behaviour like pacing, rocking and swaying. With limited life spans and little breeding success, such animals had to be regularly replaced from the wild. Zoos' missions at that time were principally to entertain visitors, and whilst many of their practices can be deplored today, very few individuals both within and outside zoos were aware of how inappropriate animal care was back then with little information about wild animals available or understood.

The 1960s and 1970s marked the beginning of a new era in the midst of growing societal concern about the environment and animal rights, which saw radical changes in traditional zoos as they began emphasising scientific research, conservation and education. Since then bars have made way for more natural habitats, taking wild specimens from nature has become more of an exception than a rule, and leading zoos have regrouped into international networks focussed on breeding, understanding and where possible reintroducing endangered

species. Whilst zoos cannot save the majority of animal species from extinction (zoos could potentially ensure the survival of more than a 1000 key species through coordinated captive breeding, currently hundreds of thousands of species are estimated as seriously threatened and zoos do not have the funds, space or capabilities to save thousands of additional species), they are helping to save some of the largest specimens from extinction by housing certain species like modern Noah's Arcs, and where possible, reintroducing extinct species in the wild back into nature. For example, the Przewalski Horse, European Bison and Arabian Oryx were maintained as biological species only through reproduction of zoo populations and successfully reintroduced into the wild. With around 10% of the worlds ever more urbanised and growing population passing through zoos each year, the importance of zoos to raise awareness about conservation issues can not be overemphasised. Today leading zoos are also practicing eco-efficiency, viewing conservation in a larger sense and seeing their potential as models of sustainable development. Eco-efficiency together with education and species protection are noted as necessary steps towards sustainability in the most renowned publication on the topic, Our Common Future (WECD, 1987).

The spectacular evolution of zoos in just a few decades offers an interesting insight into organisational change towards sustainability and corporate social responsibility in small and medium enterprises (SMEs). The purpose of this article is to contribute to knowledge in this field by divulging the results of a 1.5 year study into the metamorphosis of one best-practice North American zoo (during which visitor numbers and revenues reached record highs, demonstrating how leading zoos do well by doing good). It is divided into five sections. Section 1 presents the theoretical framework and research questions. The 2nd section outlines the methodology, an ethnographic case-study approach. Section 3 presents the change process one particular SME's evolution towards sustainability. In section 4 we analyse

these findings with a particular emphasis on change factors and agents. The final section discusses how these findings contribute to literature and the implications for future research in this field.

Theoretical Framework and Research Questions

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. 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).

Organizational change towards sustainability has increasingly interested researchers in recent years. Publications have demonstrated organisational motivations for undertaking sustainability initiatives (Turcotte and Pasquero, 2001; Gendron, 2004; Dunphy *et al.*, 2003; Sharma and Starik, 2002; and Arnold and Day, 1998), defined or conceptualized such change (Willard, 2002; DeSimone *et al.*, 1997; Doppelt, 2003; Gendron, 2004; Winsemiums and Guntram, 2002), and provided models for enabling this process (Doppelt, 2003; Dunphy *et al*., 2003; Hoffman, 2000; ISO 14001). Other studies of organizational change provide common elements in successful initiatives such as communicating openly (sharing intentions, listening),

collaborating or making decisions in teams, widespread participation, demonstrated visible and consistent support from top management, tying the change to business needs, effective governance systems and sufficient leadership (Nattrass and Alomare, 1999; Doppelt, 2003; and Covin and Kilmann, 1990). Certain authors note the particular importance of cultural or value changes, for sustainability initiatives to be successful (Doppelt, 2003; Piasecki, 2000; and Schmandt and Ward, 2000).

Despite all the research, difficulties in defining or making sustainability operational remain. Most organisations find it difficult to turn the concept of sustainable development into practical policies and programs (Doppelt, 2003). Models are often hard to apply and it is unclear how useful they actually are (Doppelt, 2003). Many approaches were developed from research on large enterprises and their usefulness for SMEs, which represent the majority of organizations and face quite different dynamics than larger ones[1], remains to be demonstrated. Regardless of size, few organizations today fully embody the socio-and eco-centric ideals of sustainability by actively supporting 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 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). Best-practice 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. It appears that installing necessary values that Piasecki (2000) refers to - like restraint, quality and devotion (which would mean

[1] 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).

uprooting the assumptions on which many organizations are built) - is not an easy task.

Given this situation, several authors highlight the need for further research on organizational change towards sustainability. Doppelt (2003) states that more knowledge is needed on the process to assist companies in applying sustainable development, noting that discussions about *what* to do dominate the public dialogue on sustainability whilst practitioners place comparatively little emphasis on *how* organizations can change their internal thought processes, assumptions and ingrained behaviour to embrace new tools and techniques. Piasecki (2000) notes the lack of research on the role of individuals or leaders, with Schmandt and Ward (2000) stating that it remains unclear as to how leaders are influencing the establishment of radically different mindsets, values and patterns of behaviour. 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 to date, particularly in North America, including the need to understand and diffuse best practice cases in companies (Starik and Marcus, 2000). Cao *et al* (1999) and Haines *et al.* (2005), by criticising the impoverished view of change programs that lack a systemic perspective thereby ignoring the dynamic or complex nature of today's organizations, point to the need for contingency perspectives on change that are adapted to organizational contexts. Other authors suggest that more studies are required to build the business case for change towards sustainability, noting that the lack of an appropriate business case is one of the reasons why businesses have been slow in changing (Willard, 2002). This is backed by a 1999 study that found that environmental initiatives often only sustain themselves and grow

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).

Recognition of the need for SMEs in particular 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 Castka *et al.*, (2004), European Commission (2001), Five Winds International and Pollution Probe study (2005), Department of Trade and Industry (2002), and World Business Council for Sustainable Development (1999) - call for further research to provide SMEs with guidance and tools that will incite and enable them to become more sustainable. Others suggest that specific analyses of factors common to SMEs that have become successfully engaged could help create a common framework for other embarking on this journey (Castka *et al.*, 2004). Further authors like Doppelt (2003) claim that certain methods are applicable for all sized firms 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.

RESEARCH OBJECTIVE

Given the necessity of organizational change towards sustainability and the need for more understanding on how SMEs are making this transition, this present article aims to present the process of organizational change of one SME that has already made significant contributions towards sustainable development. In exploring this process, it seeks to highlight why, what and how this change occurred, including the role of individuals in influencing change. 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 this area.

Methodology

In order to study a change process and a relatively new phenomenon, a case study was undertaken as recommended by Yin (1984), Poole *et al* (2000), Merriam (1988) and Roy (2003). The case chosen was Granby Zoo, an SME in Quebec, Canada, that has made significant progress towards sustainability since its inception and can be considered a best-practice organization within its industry. It fulfils the four essential properties of a qualitative case-study (Merriam, 1988). It is *particularistic*, in that it allows us to concentrate 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.

Multiple sources of evidence were used in order to verify conclusions and reduce subjectivity assuring construct validity. This included the observation of the organisation in its real surroundings as recommended by Schwartzman (1993), on 9 occasions for a total of 50 hours. This provided insight into the zoo from a visitor and 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 throughout the data analysis.

An analysis of 103 documents, including official organizational documents (all annual reports as well as minutes of meetings) and external documents (such as books and articles written about the zoo throughout its history) varying from single pages to several hundred pages, was also conducted. These documents were used to understand the context, goals and actions of the zoo over time, allowing the construction of a detailed story about how eco-efficiency and animal conservation efforts evolved, and served to verify data or highlight information.

Open-ended interviews were also conducted with nine employees (approximately 15% of total full-time employees) for

an average duration of 44.6 minutes. 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. 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 which were adjusted as data was collected to allow for further details to emerge and the clarification of conflicting evidence. 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. Validation discussions were also conducted with key employees involved in the change effort after they reviewed the final synopsis of findings.

The analysis was based on the inductive compilation and interpretation of qualitative research findings, whereby the researcher explored the phenomenon in question throughout the data collection period, whilst refining and testing hypothesis and conclusions that emerged throughout the investigation as recommended by Miles and Huberman (2003). Reliability was addressed by developing a case-study database which clearly documents procedures and appropriately documents records as recommended by Rowley (2002). 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). Findings or relationships were verified or modified through further data collection and analysis, which enabled the presentation of a

more complete and persuasive explanatory account of the phenomenon as recommended by Strauss and Corbin (1998). The final detailed 45 page chronological description of the change was verified by three key individuals involved in the zoo's sustainability efforts. These findings were analysed using tabular displays as recommended by Miles and Huberman (2003) separately, paying particular attention to change forces, particularly individuals, and change lessons.

Whilst this kind of methodological approach is suited for explorations, it does not allow for the generalization of findings but does allow for the grounding of theoretical concepts (Westley and Vredenburg, 1996). It should be noted that space restrictions allow presentation of only a limited sample of the material gathered and the most promising conclusions.

Description of the Change

Granby Zoo is an example of the metamorphosis that leading zoos have made. Beginning as a menagerie in the backyard of its charismatic founder and mayor of Granby for 25 years, Horace Boivin, the Zoological Society of Granby was founded in 1953 to make a more serious zoo (Historia, 2004) following several troubling incidents that led to 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). 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.

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, with the International Species Information System (ISIS) beginning the year after to monitor and assist the resilience of captive populations, 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). 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. The 1970s was a financially challenging period for the zoo, with labour disputes leading to bad press (affecting visitor numbers and revenue) and one salary rise after another for its unionised workers. This, coupled with several years of poor weather led the zoo to make losses or near losses in 1975, 1976, 1977, 1978, 1979 and 1980 necessitating drastic cuts to infrastructure investments (ZSG, 1977). 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, both amongst zookeepers and

upper-management (which only consisted of a few employees back then).

The vet at the time pushed for many changes, and whilst she described incidents of repeated blockage with other employees in a critical book she published on Granby Zoo after she left in the early 1980s, she was successful in pushing through a few improvements. The zoo began purchasing meat fit for human consumption for its carnivores (thus the animals began receiving more of the nutrients they needed to help them be healthier, live longer and possibly breed), began recording animal data in ISIS in 1978 (previously no animal records existed making everything from treatment to diagnosis or breeding difficult), and in hiring the first zookeeper educated in animal health (Beaudin, 1986). By 1982 the zoo had an official policy in place to hire zookeepers trained in animal health, an avant-garde requirement which certain Quebec zoos still don't demand (former Zookeeper in interview).

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 and most management staff including the General Director, Manager of Construction (who also managed zookeepers and acted as curator).

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. 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), 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[2]), upper management continued to support improvement initiatives. It agreed to invest in employee trips to conferences for all disciplines[3], 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 (Chaire de Tourisme, 1999). Joining AZA

[2] 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).

[3] 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.

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[4]. Several notes from the president at the time highlight the difficulties of such decisions and the growing awareness of their importance:

> "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 in other institutions, that we hurry and relocate them. We cannot, in too tight 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).

Several other improvements were made in the late 1980s and 1990s including creating an education department in 1989, with education becoming central to the mission of the zoo. This expanded beyond animal behaviour to look at human impacts in endangered rainforests, a project funded by government grants, and the trade of artefacts made from endangered species (in cooperation with the International Union for the Conservation of Nature). The department also set up a mobile zoo so that educators could visit schools to teach children about animals, a first for Quebec. In the early 1990s the zoo also built a quarantine to restrict the risk of diseases spreading and

[4] 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 (which allows membership in WAZA too).

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.

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, and in 1992 Granby Zoo also became the first zoo in Quebec to succeed in reproducing pink flamingos in captivity, a tribute to the creativity of employees who placed mirrors in the birds enclosure. This was followed with the world's first caesarean of polar bears, which 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).

However commitments towards animal conservation, including AZA accreditation and participation in species survival plans, 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 well into the mid 1990s. The ensuing restrictions on expenses and the rationalization of personnel had repercussions in various departments (ZSG, 1992, 1993a, 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 more throughout the 1990s. Around this time measures in the zoo towards eco-efficiency become apparent. Beginning in the early 1980s with aluminium can recycling (an initiative of the zookeepers to fund their activities), and early 1990s with the creation of a short-lived environmental club (another initiative of employees in the education and animal health department), by the 1990s several initiatives were instigated by the Director of Construction and Maintenance. 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… The results are encouraging: energy costs decreased by 4% and gas costs decreased by 29%, saving a total of $18 072. 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).

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 since 1991, 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. 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 heating and lighting is lowered at night. 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" (Director of Construction and Maintenance).

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 little physical capability or financial support:

> "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).

Despite employee efforts and receiving substantial grants for new constructions and projects[5], 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

[5] 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).

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. The success of this pavilion, constructed with the animals and visitors well-being in mind (ZSG, 1996), was apparent in the animals behaviour (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 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)[6]. 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

[6] 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).

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). 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 by 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). 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). 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). Whilst certain key employees at the time were concerned that an aquatic park would detract from the focus of the zoo, on conserving endangered animal species, they were won over:

> "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 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).

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[7]. In February 2004, the new General Director received word that the grant of $36 million (mostly from the federal and provincial government) would be arriving shortly to fund the zoos modernisation. 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

[7] 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).

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 (this was lost once the old General Director departed), 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).

The orchestrated effort in terms of eco-efficiency began towards the end of 2003 following the arrival of a new General Director, someone with the environment at the heart of her life (Renault, 2005). 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, which highlights her environmental values. 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, which became to be known as the Green Zoo program.

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).

With funding received and the modernisation project going ahead, 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 zoo 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 required managing water quality of Amazoo over the summer 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. 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…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).

The zoo decided to begin by focussing on energy and water savings, which required setting objectives, studying current consumption and practices, testing and installing new technologies, and measuring progress supported by numerous grants. For water, the zoo estimated that it could quite feasibly save 20% of its consumption in 2004 and 40% in 2005. In reality 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 as the zoo itself does not pay for water (ZSG, 2006). For energy, it wanted to double its installations without increasing the energy bill, which was $490 000 for 62 buildings at the time. 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. In 2006 it was the biggest user of geothermal based energy in Quebec, and although the energy needs have increased substantially with the new constructions energy costs only increased by a small fraction. This figure is expected to lower further with the conversion of existing buildings to geothermal. The payback for geothermal is an average was 2.5 years, making it by far the most economical choice for heating and cooling purposes, and allow 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 revealed series of wells to be discovered, which are now being tapped into for some of the zoos water needs.

In 2006 the Environmental Coordinator began numerous other activities too. He began tracking and measuring the recycling of materials in the zoo, discovering 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%), where employees were educated of zoo practices and received green prizes for their participation too.

In 2006 most animals can be observed in relatively natural and 'green' 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 has over 60 full-time employees, and almost 500 during its summer open season, as well as a collection of 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 such as ensuring sufficient space for newborns (ZSG, 2005a). The zoo continues broadening its 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, and enlarging its eco-efficiency efforts.

Granby Zoo continues to be recognized for its efforts. For example, in 2005 it was accepted into WAZA to become one

of only a few in Canada and 217 odd institutions worldwide in this prestigious association. It is also rated in the top 5% of the 650 institutions that are part of ISIS for the quality of its data, and it has won much publicity, awards and recognition for its eco-efficiency efforts too. Whilst employees recognize that much remains to be done such as formulating an environmental policy and an ethical purchasing policy, installing signage highlighting green practices, composting employee scraps, distributing plant trimmings to the animals for food or enrichment purposes, and characterising waste amongst other things, they remain committed to continuing this ongoing improvement across all levels and departments. Considering all the continued efforts that Granby Zoo has made for over 20 years (see annexe A and B), animal conservation, and more recently resource conservation too, appears very much part of the zoo's *raison d'être*. Through such efforts the zoo has evolved from a living museum entertaining a curious local public to a modern conservation center working towards global conservation efforts, ensuring its continued legitimacy in the new millennium.

Analysis of the Change

CHANGE DRIVERS

Several factors facilitated or hindered Granby Zoo's change towards sustainable development to varying degrees throughout its evolution. Many of these forces have already been demonstrated in literature, such as institutional forces (Hoffman, 1999). So too has the influence of stakeholders (Sharma and Henriques, 2005), competitive drivers (Aragon-Correa, 1998; Dean and Brown, 1995; Sharma and Vredenburg, 1998), organizational context and design (Sharma *et al.*, 1999), role of leadership values (Egri and Herman, 2000), and environmental champions (Andersson and Bateman, 2000). The case of Granby Zoo highlights how interrelated such factors are, responding to calls in Sharma and Starik (2002) for integrative studies examining interacting institutional, organizational and individual variables influencing organizational "greenness". For example, as

far as external factors are concerned, industry factors proved particularly important in Granby Zoos progress towards sustainability. The accreditation and networking possibilities surrounding the industry best-practice organizations that emerged in the midst of changing social values and environmental factors played an important role in the zoos action towards animal conservation, once individuals were able to implement such initiatives within the organization. Regarding internal drivers, it was the individuals who were aware of and valued conservation, having followed formal training on animal issues and seen industry best-practice initiatives, who played a fundamental role in integrating such values into the zoos practices.

Two factors which permeate all the change drivers and are readily apparent in the significant evolution of zoos over the past few decades are values that changed through time. As values evolved to increasingly embrace sustainability over time, many of these change drivers increasingly encouraged such change. For example prior to mid 1980s animal conservation was not highly valued at the zoo, so little efforts were made in this regard. This issue was not seen as important by citizens or the government either, so there was no encouragement from these factors either. 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 standards emerged, the cost of buying animals increased substantially, and new employees educated in animal care who valued conservation entered the zoo raising management awareness of the problems and opportunities, ultimately evolving the zoos *raison d'être* to encompass such values. Likewise, social 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, growing environmental challenges saw efforts such as recycling and energy saving becoming household priorities by the 1990s. Many employees within the zoo were aware and tried implementing 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 for government and industry 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 and ensuring the zoos continued legitimacy. Evolving values over time have increasingly created a more favourable context or timing for change towards sustainability.

CHANGE ACTORS

Individuals, who played a role in enabling or actively affecting change towards sustainability at Granby Zoo being change actors as it were, did so in four principal ways. Either they instigated change within the organization, built acceptance for and actively facilitated change (comparable with the role of a change champion or leader described in other literature, see Andersson and Bateman, 2000 and Caldwell, 2001), coordinated the implementation of change initiatives, and/or actively supported the change (see Table 1). By breaking this process into four periods - before major change occurred towards animal conservation; when major change occurred towards animal conservation; before major change occurred towards eco-efficiency; and after major change occurred towards eco-efficiency - insight into these roles can be gained which may assist in understanding why change was less or more far-reaching (i.e. minor versus major).

Table 1
Comparisons of the Change Agent Roles over Time

	Animal Conservation		Eco-Efficiency	
Change Agent Roles	P 1	P 2	P 3	P 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

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 like financing issues. 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. However other individuals were also change agents, assisting in facilitating the change in the organization albeit in different was. 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.

Although literature often describes change agents only in leadership terms or in one-dimensional models underestimating the significance of other individuals in the change process (Caldwell, 2003), these findings suggest that a change agent may take on several roles. Furthermore it suggests 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 and builder from the outside once she left the zoo, by raising awareness through the writing of a book and subsequent publicity. 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 to encourage others to accept and follow the change. In the two periods where change builders were present, change was widespread. In both cases these leaders had significant authority; they were also dedicated, energetic, visionary and inspiring individuals who used a combination of push and pull tactics. Furthermore, these findings suggest that leaders and managers perform complementary roles in organizational change, supporting the findings of Caldwell (2003).

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 exposing more than 500 000 on-site visitors to conservation issues each year, making it Quebecs' most popular zoo, and many more off-site through external conservation programs, press coverage and school visits. Thus, through the initiatives of various change agents at the micro level within the zoo, the zoo itself has become a change agent or change builder at a macro level by assisting in raising awareness beyond its organizational boundaries of the need and opportunities for change.

Conclusion

Zoos have indeed come a long way from their early vocations as entertainment centres for a curious public. Today serious zoos present themselves as modern Noah's Arks or conservation centres, focussing on breeding and saving endangered animal species in more natural environments, raising public's awareness of sustainability issues, and increasingly serving as a model for what is possible in terms of eco-efficiency for SMEs despite their often precarious financial situation. By adapting to new social and ecological realities, leading zoos like Granby Zoo have succeeded in renewing their *raison d'être*, ensuring their continued legitimacy and becoming valuable tools towards sustainable development. They prove that one can do well by doing good.

This paper has examined the change process towards sustainable development in an SME that has made significant progress in this regard over the last few decades. As such it responds to calls from various research groups and bodies for: descriptive studies on how organizations are changing (Sharma and Sharik, 2002); integrative studies examining the role of various variables in effecting such change (Sharma and Sharik, 2002); business-case or best-practice cases on such change (Starik and Marcus, 2000; and 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).

A particular emphasis was placed on the role of individuals in enabling change towards sustainability both in terms of animal conservation and eco-efficiency, responding to calls from Sharma and Starik (2002) for such research. 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. Individuals at lower levels 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). This paper contributes to theory on change towards sustainability by proposing a typology of change agent roles. Four roles were introduced – change instigator (who is visionary but not necessarily a leader); change builder (who is necessarily 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) - demonstrating that change agents can be leaders but don't necessarily have to be although these two terms are often used interchangeably in literature. It is hoped that this contribution will assist in bringing clarity to the role of individuals in change processes, and spark interest for further research in this area. These roles remain to be verified in other organisations, and eventually expanded to the role of external change agents in situations where they have facilitated the change either by creating crises – like we have seen in the case – or in other ways, like consultants for example. These are promising projects for future research.

This research highlights the particular importance of industry initiatives in organizational change towards sustainability, with organizations like ISIS and AZA forming networks and alliances that greatly assisted the zoo in terms of animal conservation. Animal conservation is, after all, directly linked to the *raison d'être* of zoos and not just focussed on peripheral activities. Industry models, rather than generic sustainability frameworks and models (such as ZeroWaste and The Natural Step), were used and were arguably better adapted to the particular situation and potential of zoos in terms or animal conservation (and not just eco-efficiency). It is also a promising area of research to look at industrial association as agents of

change, or as “institutional entrepreneurs” toward sustainable development.

Also, as we have seen through the case, periods of financial difficulties were sometime conducive to sustainability initiatives, especially in the area of eco-efficiency, while they were sometime hindering the implementation of sustainable practices, for lack of resource and time available. In periods of prosperity, it was felt that it was easier to implement sustainability practices, although it was not always the case. There is no clear relationship between financial situations and change toward sustainability. Nevertheless, in a perspective where change agents enact their environments, it would be interesting to study more thoroughly how change agents frame the issue of financial resources This represents another interesting avenue for future research, using a discourse analysis framework.

Annexe A 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

Annexe B 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

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