Urban Botanical Gardens and the Aesthetics of Ecological Learning: A Theoretical Discussion and Preliminary Insights from Montreal's Botanical Garden

Katja Neves *Concordia University*

Abstract: Although gardens have received relatively little attention from environmental anthropologists, this article suggests that they have great potential as sites for studying the complexity and versatility of human relations with non-humans. By means of a theoretical discussion illustrated through the example of the Botanical Gardens of Montreal (Quebec, Canada), this article scrutinizes the kinds of ecological learning that can occur in urban botanical gardens. It explains how the ephemerality of gardens ultimately leads to the emergence of an ecological aesthetic of attachment, relationship and holism whereby human selves come to conceive of their existence as inextricably linked to non-human selves.

Keywords: ecological learning, holistic aesthetics, botanical gardens

Résumé : Les anthropologues de l'environnement ont accordé relativement peu d'attention aux jardins. Pourtant, comme le soutient cet article, ces lieux ont un fort potentiel en ce qui concerne l'étude de la complexité et de la versatilité des rapports entre les humains et les non humains. Au moyen d'une discussion théorique basée sur l'exemple du Jardin Botanique de Montréal (Québec, Canada), cet article scrute les types d'apprentissages écologiques pouvant se produire dans un jardin botanique en milieu urbain. Il explique la façon dont le caractère éphémère des jardins mène ultimement à l'émergence d'une esthétique écologique de l'attachement, de la relation et de l'holisme par lesquels les êtres humains en viennent à concevoir leur existence comme inextricablement liée aux êtres non-humains.

Mots-clés : apprentissage écologique, esthétique holistique, jardins botaniques

Introduction

> They always called it Magic and indeed it seemed like it in the months that followed–the wonderful months–the radiant months–the amazing ones. Oh!, the things which happened in that garden! If you have never had a garden you cannot understand, and if you have had a garden you will know that it would take a whole book to describe all that came to pass there. [Burnett 1998:282]

In this article I address the intersection of human–non-human natures in the context of urban botanical gardens in North America, and more specifically at the botanical gardens of Montreal, Quebec, Canada. In so doing, I contribute to efforts within environmental anthropology to scrutinize the myriad of socio-culturally situated processes that inform the interactive formation of human knowledge of non-human systems. Nevertheless, I take this important body of literature further by arguing that even though the context of botanical gardens—and indeed gardens in general—has received little attention by environmental anthropologists, it has enormous potential for a better understanding of the complexity and depth of human–environment relations. As such, this article represents a small but significant contribution to anthropological engagements with human–nature interfaces.

To be sure, there exists an extensive anthropological literature on the human ecology of gardens in non-urban and non-Western settings that came out of a tradition of anthropological research in the Indonesian archipelago (for example, Eyde 1983; Rappaport 1968; Sillitoe 1983). The gardens in these studies, however, are qualitatively different from the types of gardens with which I am concerned in this article. Specifically, the gardens that interested Oceanist anthropologists are said to either mimic or to be, to a great extent, embedded in surrounding ecosystems. As more recently described by Tsing (2004),

there is significant ecological and aesthetic continuity between these "farm" gardens and the rainforest ecosystems in which they have been established.

Western gardens, by contrast, and urban botanical gardens in particular, are most commonly described as quintessentially non-nature. This perspective is understandable, since these gardens are often enclosed by high walls and surrounded by (sub)urban landscapes with which they appear to have no continuity whatsoever. Moreover, botanical gardens bring together assemblages of plants that do not exist together in natural ecosystems, which are manicured into fanciful shapes, and which are frequently displayed according to historical relationships between colonial powers and colonized peoples. In the context of environmental anthropology's constructivist turn, therefore, it should come as no surprise that these types of gardens are usually described as modernist abominations in which nature must submit to colonial fantasies of conquest and mastery (see for example Verdi 2004; Sharma 2006).

There is no doubt that botanical gardens often do reflect modern values of control and colonial fantasies of conquest. In spite of this, however, gardens are the only spaces that many urban dwellers have for engaging with non-human natures—regardless of the extent to which humans have already transformed these natures. As Cooper contends (2003), Western gardens are places where people living in cities can consider, negotiate and perform relationships between human and non-human ontologies, thus setting limitations and creating possibilities for what can be perceived and known. He further argues that these types of relationships and performances can occur in spite of the ephemeral nature of urban botanical gardens. In this article I go one step further, showing that the ephemeral nature of botanical gardens is actually essential to these relationships and performances. In other words, I contend that these relationships and performances occur not in spite of, but rather precisely because of, the ephemeral nature of gardens.

At first sight, this argument appears to contradict classic philosophical discussions of ontology, which assume that ontologies are either fixed or that they unfold around stable and clearly identifiable forms. As Butler (1993) demonstrates, however, not only do such fixed ontologies not actually exist, but believing in them has the effect of rendering invisible the reality of actually existing relationships. The ephemeral nature of gardens makes them especially promising places for to people move beyond the illusion of stable forms; in this case away from conceptualizing nature as an object that is fundamentally separate from humans.

In ephemeral contexts, there are no interactions among fixed forms but rather complex relationships among dynamic systems. Botanical gardens may appear as fixed inert landscapes and indeed this is how they are experienced by many of the people who visit them. For the gardeners, however, what occurs at the juncture of human and non-human interactions is experienced as a constantly changing living space in which the non-human has its own ideas of what it wants to do and how. What results, therefore, is a process of constant negotiation between gardeners and plants, in which the gardener learns which forms of interactions with plants allow them to bring a particular garden into existence. It is, therefore, through the ephemeral that the apparent permanence of the garden is brought into existence. As a result, there is a constantly shifting tension between the two. Negotiating this tension teaches that human and non-human ontologies are mutually constituting and this is what educational programs at botanical gardens can potentially instill in urban dwellers. For these reasons, in this paper I argue that gardens may even promote the type of environmental perception that entails a recognition of degrees of shared ontology between humans and all the other biological entities that inhabit gardens (Bateson 1979). I will also contend that consequently gardens constitute crucial venues for child and adult ecologically-sensitized education in urban centres.

Indeed, the main purpose of this article is to develop a general exploratory approach to the kinds of deeper ecological learning that visitors and gardeners may potentially experience in gardens. It stems from the recognition that many educational programs at botanical gardens share the premise that by learning to cultivate or to actively appreciate gardens, people acquire sets of mental and practical skills that promote the aesthetic appreciation of "Nature." I am particularly interested in accounting for the kinds of gardens and gardening experiences that promote types of transformative experiences whereby human-selves come to appreciate the extent to which the nature of being human is at once similar and different from being a plant, a bee, a tree, a flower or a bird for example. It is this type of transformative learning—whereby human and non-humans selves become implicated in one another—that I call an aesthetic process of ecological learning. In turn, this entails the emergence of an aesthetic of attachment and relationship: an aesthetic where the person recognizes their ecological embeddedness. In other words, I argue that when one is in the presence of ecological learning, rather than more narrow forms of instrumental ("how to") practical learning, the very notion of what constitutes a self changes into

a holistic concept of the self—forming a basic cognitive, emotional, sensorial gestalt—that is in turn understood as always relationally and dynamically connected to the surroundings of which the person is a constitutive part.

In this context, the aesthetics of ecological learning is conceptualized as a twofold process through which persons learn about the biological and ecological processes that take place in gardens, and in so doing, they open themselves to learning about the living patterns that connect (Bateson 1979; Ingold 2004a, 2004b) human beings to all the other species that inhabit gardens. This is an important pursuit for environmental anthropologists, as it has often been proposed that such appreciation increases the likelihood that people will become stewards (Ingold 2000; Milton 2002) not only of the gardens in which they dwell but also of other environments with which they subsequently engage. It is hoped—and I believe with good reason—that deep aesthetic appreciation of one environment, even in the case of the highly landscaped garden, is transferable to other very different contexts.

In engaging these questions, I will follow a non-conventional understanding of what constitutes environmental learning, knowledge and teaching. In the present context, these are understood not as instances of instrumental knowledge transmission, but, as Catherine and Gregory Bateson advanced (Bateson and Bateson 1988; Bateson 1979), as processes where issues of epistemology (the fundamentals of knowing) and issues of ontology (the conceptualization of being) intersect. Indeed, Gregory Bateson (1979) and Catherine Bateson (Bateson and Bateson 1988; Bateson 2004) introduced the theory of learning that informs my analysis of the educational intents of Montreal's Botanical Gardens in this article. Basically, the two anthropologists developed their work as an alternative to a branch of behavioural science that explained learning almost exclusively in terms of conditioning, the acquisition of bodily skills and instrumental memorization. The Batesons argued that human beings are also capable of "deutero learning." Or that, in simpler words, humans "learn how to learn" (Bateson and Bateson 1988). This is the type of learning that emerges as people develop the capability to be responsive to the feedbacks that are produced by changes in the environments—and relationships—of which they are a part. This entails not only the purposeful adjustment of habitual embodied practices and thinking habits according to perceived contextual alterations, but also an awareness of the perceptual shifts that this carries. This notion of learning is particularly relevant in the context of the ephemeral reality of gardens where plants, trees, flowers, insects, worms (to name a few of its constituent inhabitants) undergo constant change.

While the discussion that follows is predominantly theoretical, I illuminate my theoretical discussion and conceptual points with substantive descriptions of scholarly studies and accounts of gardening activities, as well as with materials I collected on three educational programs at Montreal's Botanical Gardens (MBG). Section 2 of this article provides a general anthropological context for exploring the issue of human–environment engagements, which I adapt for the study of botanical gardens. Section 3, in turn, provides a brief survey of sociological and philosophical studies of urban gardens on the basis of which I suggest anthropologists could expand their approaches in order to contribute to these studies with innovative understandings of how learning takes place in urban gardens. Section 4 takes this line of investigation even further to suggest a scholarly approach more specifically devoted to ecological learning at botanical gardens and which I subsequently apply in the final substantive section of this paper (section 5) concerning the Botanical Gardens of Montreal.

In so doing, I build on, and take further, current sociological and anthropological studies of gardens and gardening (see Bhatti 2003, 2006; Bhatti and Church 2000; Chapman and Hockey 1999; Morris 1996; Percival 2002; Sime 1993) to provide a much needed discussion of the deeper forms of learning that often take place at botanical gardens. In a world of unprecedented environmental crisis, it is critically important to account, as the present article does, for the emergence of the types of ecological aesthetics whereby human selves are conceived in essence as connected to the non-human selves with whom they share their existence (see also Berleant 1997; Carlson 2000). To be sure, as Harries-Jones says of our current attempts to overcome human–nature dualism, "ecological aesthetics has a key role to play in overcoming the apart-ness of the industrial sciences from the rhythms and patterns of biology and in awakening our senses to a perception of the destructiveness and obscenities of this apart-ness" (2005:67).

A Brief Theoretical Discussion of Botanical Gardens and Their Unique Potential for Learning

In Western societies, strongly influenced by Judeo-Christian world views, the Garden of Eden occupies central stage in cosmological explanations for the existences and destinies of billions of people. Longing and searching for "paradise lost" has justified and legitimized the institutionalization of religious belief, practice and political organization. Wars have been fought to ensure that "the right people," those elected by God, are bestowed the honour

of ascending to paradise upon their death. Even our current environmental crisis is often presented around themes of gardens of paradise. The solution to global climatic change is often discussed in terms of restoring the planet to its Eden-like state—that which humans *supposedly* enjoyed until their industrial, scientific, modernist, Faustian downfall. And yet, we know so little about gardens and how much they tell us about the ways in which human–environment relations in such places promote deep forms of learning about the inextricability of human and non-human natures.

Throughout this article, I will illuminate the unique nature of ecological learning at gardens through an engaged review of anthropological and sociological studies that support Ingold's (2000) hypothesis that "dwelling," actively engaging with an environment, accentuates our capability to empathize with "nature" thus dismantling human–nature duality. He demonstrates that human environmental knowledge results from active engagement with biophysical surroundings, and from learning how to be attentive to the clues and signs by which environments—in this case gardens—open up "creative receptivity" (Cooper 2003). Relying on detailed ethnographic information from hunter-gatherer cultures, Ingold reports that "humans...are brought forth into existence as organism-persons within a world that is inhabited by beings of manifold kinds, both human and non-human" (Ingold 2000:5). Ingold's work is thus directly applicable to the discussion of human environmental relations in landscaped gardens.

I will also build on and expand Milton's (2002) argument that environmental commitment depends on emotional attachment. The two interrelated concepts of "dwelling" and "emotional attachment" underscore the significance of understanding the ways in which environmental knowledge and environmental commitment stem from sensorial and emotional interactions with "nature" (however constructed such "nature" may be). As such, they are highly pertinent and easily applicable to the study of human–environment interactions that take place in gardens with educational mandates.

In spite of the fundamental importance of these works, however, a rigorous and effective understanding of ecological learning cannot rest at accounting for the sensorial and emotional dimensions of ecological knowledge and learning. Indeed, the major challenge "in any ecological aesthetics is to find ways of delving beneath the surface of direct sensory experience of nature to include the less visible aspects of natural history, such as diversity, complexity, and species interactions in ecosystems" (Harries-Jones 2005:70). This gestalt perspective advocated by Harries-Jones both engages with and expands upon the sensorial-emotional perspective advocated by Ingold and Milton. This is essential to developing more holistic approaches to ecological learning and knowing at botanical gardens (see also Ingold 2004b).

In order to effectively expand on the emotional-sensorial perspective, two additional analytical processes are required: (1) understanding the ways in which emotions and sensoria affect one another; and (2) accounting for the ways in which culture, sociality and historicity affect people's sensorial and emotional experiences through time and vice versa, how sensorial and emotional processes become part of cultural, social, political and historical processes (for example, Classen 1998; Howes 2005). These two analytical processes are essential for a holistic theorization of ecological learning as advocated by Gregory Bateson and Catherine Bateson, which in turn is crucially important in the context of our current environmental crisis and can be readily observed in the context of learning in botanical gardens.

The main theoretical contribution of this article will be to illuminate these processes of ecological learning in the context of urban landscaped gardens. As Bhatti and Church (2001) have argued, the social sciences have not yet engaged the full potential of gardens for addressing a series of crucial environmental questions: is it possible—and to what extent—to conceive of gardens as spaces of transformative knowledge-acquisition, whereby people develop an aesthetic appreciation of "nature" that allows them to overcome human–nature dualisms? Can gardens be understood as dwelling spaces where urban citizens pursue the kinds of ecological inskillment that lead to unified perceptions of human and ecological environments? Is this distinct notion of ecological learning a potential step toward teaching urban children and adults about human–environment holism? And finally, what is the potential for such transformative aesthetic appreciations to translate into ethical commitments to environments and into concomitant ecological practices?

In relation to all of the above, Cooper (2003, 2006) argues that *some* gardens constitute not only objects of profound thoughtful appreciation, but they do so in a unique fashion. Contrary to the earlier perspectives that Cooper challenges, he argues that gardens are fundamentally distinguishable from art *and* from pristine nature since in gardens falsely assumed schisms between subject–object or human–nature, do not hold true. Given its relevance for the present article, let us consider this line of reasoning a bit more closely.

First, as Cooper argues, in promoting integrated multi-sensory, emotional, cognitive, and meditative per-

ception, gardens are far more complete—*gesamt*—than any form of art—*Kunst* (Cooper 2003:105). Second, gardens should not be seen as imitations or symbolic representations of "wilderness" which, as Cooper points out, amounts to a very poor conceptualization of mimesis (Cooper 2003:107). Consequently, the experiences that most people have of gardens are not reducible to the expression of meanings that derive from socially constructed semiotic conventions for the representation of nature. In this sense gardens do not communicate specific messages about human–nature unity—or lack thereof. As we will see below, if gardens do communicate "something" about humans and nature, they do so at a much deeper epistemological level whereby the very of notion of what constitutes a human self is transformed to be conceived—in essence—as part and parcel of a relational and dynamic process that inextricably connects humans and non-humans.

For Cooper then, what is unique about some gardens, rendering them objects of a serious and distinctive form of aesthetic-environmental appreciation, is that they evoke imagination, possibilities and connections, thereby allowing people to consider things that they would not normally consider in their day-to-day lives. This is what he calls the "penumbral capacity" of gardens. He argues that this "penumbral capacity" of gardens provides an "aptness for evocations of what would otherwise be difficult, even impossible, to render present and palpable" (Cooper 2003:109). The learning that can take place in gardens is therefore qualitatively different from the learning that can take place in learning contexts that are more concrete and structured. This argument builds on the assertion that the artistic production of gardens is best described as a form of "creative receptivity." Quoting from Gabriel Marcel, Cooper explains that the artist is "creative" because there is no "debasing of [themselves] in dull imitation of the empirical world" while at the same time they are also "receptive," in the sense that there is the humble recognition that "even our most creative efforts owe to something that [is] granted to us as a 'gift'" (Cooper 2003: 110).

As I understand it, Cooper's argument implies three sets of aesthetics that intersect in gardens: (1) the ecological aesthetics of organic species; (2) the aesthetics of the gardener who relies on such "nature-given aesthetics" and on dynamic environmental processes to compose particular living landscapes; (3) the aesthetics of the garden's visitors. I would like to emphasize that even though there is an element of learned embodied aesthetic-sensitivity (Classen 1998) to something that is partly "given," "creative receptivity" occurs both in producing *and* in experiencing the garden.[1] I suggest that the unsettled impositions of these three aesthetics are the bases of the "penumbral capacity" of gardens, or what I would call their evocative-allegorical potential. In fact, it is only insofar as the intersections of these aesthetic realms open up—rather than close—experiential, cognitive, and semiotic *possibilities* that gardens spark "creative receptivity." In so arguing, Cooper allows us to contend that it is by stimulating "creative receptivity" that *some* gardens become objects of serious, distinct appreciation and embodied sensitivity. Such reflection, in turn, brings forth human–nature unities as they manifest themselves in our awareness that "our activity [aesthetic appreciation] originates neither from outside nor from the inside: self and other are co-originating through mutual expression" (Cooper 2003:111). In fact, a core goal of gardens that promote deep ecological learning is to increase awareness and responsiveness to the patterns that link the aforementioned processes of co-construction.

This process of co-construction emerges from the fact that "the garden is one of the most ephemeral of human creations[, s]ubject to everyday vagary of the weather, to changes in fashion and changes of ownership" (Mosser and Teyssot 1991:11). The constantly changing nature of gardens recruits people to act. Because of it, there is no predictable outcome to how gardens work. As such, it is necessary for people to pay very close attention to the unfolding of events and to fine-tune their understanding and actions to the plants. As Latour (1991) has argued, interactions between people and plants (and other non-human species) creates a hybrid field that is neither human nor plant, but both at the same time. Within these fields, the actions of either side have effects on the other side. From this perspective, gardens may very well be the result of human constructions of nature, but this does not equate with human control of nature. Herein lies a great opportunity to overcome human–nature dualism and to understand the mutual causality that connects humans and non-human beings (see also Neves-Graca 2005). In the next section I look at empirical examples from the social sciences that reveal these dynamics in action.

Building a Social-Scientific Approach to Dwelling, Learning and Environmental Appreciation in Gardens

Social science approaches to ecological learning in gardens provide theoretical and empirical illumination of Latour's concept of hybridity, which revolves around actor-networks that connect ontologies that may initially appear to be different or even incompatible. In fact, these ontologies only come into being through these networks

and in relation to one another. Emma Power, a cultural geographer, relies on actor-network theory and methods to overcome a series of human–nature binaries that are often present in scholarly approaches to gardens and gardening (Power 2005). The notion of "enrolment" is the key concept grounding Power's analysis. Quoting Hitchings, Power reports that her focus on enrolment "describes a process through which actors attempt to enlist the interest or action of another so that their own desired performance can take place" (Power 2005:41). The data that Power collected by observing and interviewing 22 gardeners reveal growing levels of gardener reflexivity as gardeners engage with the highly dynamic and complex phenomena of plant, flower and tree growing. In the words of one of Power's research participants, enrolling plant collaboration in gardening activity is rarely a straightforward process: "I put a lawn in and went out to a nursery and bought a whole lot of plants...stuck them in and half died" (Power 2005: 45). In fact, as another participant points out, in any successful garden, plants do as much enrolling of humans as do gardeners of plants: "each tree has individual needs in terms of water, sunlight, protection from the winds... all that sort of thing, and I've been learning all this sort of thing, year after year" (Power 2005:46).

Power's ethnographic endeavours are in line with Cooper's philosophical argument that "nature" and gardeners co-construct one another within the confines of the garden. Power's contribution stems from her critique of scholarly accounts of gardens that "emphasize the triumph of human action over an inert and docile landscape" (Power 2005:39). She contends that if we are to fully understand the learning processes that supposedly take place in garden setting—the specific character and form of which have "received little attention within academic writing" (Power 2005:39)—it is essential that we also consider the agency of non-human entities. The main contribution of her research is to show that:

> when gardening is understood to involve a dynamic engagement between human and non-human actors, gardens can no longer be read as simple reflections of human cultures and understandings. Rather, there are a myriad of non-human actors whose interactions with each other and the gardener contribute to the appearance of the garden and how gardeners understand and engage with the space. [Power 2005:49]

Bhatti and Church (2001) have accounted for private home gardens and gardening in order to explore the dynamics of human–environment relations. They reveal that gardens are ideal sites for understanding how lay environmental knowledge develops and how human–nature connections are forged. This is another crucial step towards building a social-scientific approach to dwelling, learning and environmental appreciation in gardens. As Bhatti and Church explain, their approach uses "gardens as an everyday site for considering how human agency through routine practices connects with the sensory presence of nature...and how these connections are structured through broader economic, social and cultural processes" (Bhatti and Church 2001:366). In short, these authors raise two crucial points related to the theorization of ecological aesthetics: first, that it is in the actual practices of gardening that people learn about nature and how to face ecological dilemmas, ambiguities and opportunities (Bhatti and Church 2001: 370-374); second, that it is paramount to consider that the human–nature connections that people develop in the garden are to a great extent made possible, and sustained by, social relations with family and friends. In their words, "past and present social interactions are important in the construction of the garden not just as a leisure space but also as a site for understanding and sensing nature" (Bhatti and Church 2001:178).

The core argument here is that ecological sensitivity and commitment to environmental goals and values emerge not only out of dwelling and experiencing nature (however commoditized and under "control" this nature may be), but also through socializing with other individuals. I will return to this point in my discussion of ecological-educational programs at the MBG. For the moment though, I would like to stress its importance. What Bhatti and Church say is key not only for a rigorous social-scientific understanding of the unity of the sensory, emotional, cognitive and social processes in human–nature relations: it is also central to avoiding the deadly pitfalls of idealized transcendental notions of ecological aesthetics (see Biehl and Staudenmeier 1995).

As I stated above, these studies provide a solid scaffolding to develop an analytical model that accounts for ecological learning in gardens. However, I also proposed that I subscribe to a non-conventional understanding of ecological learning, one that promotes "the recognition of degrees of shared ontology between humans and all the other biological entities that inhabit gardens." More specifically, I argue that ecological learning extends beyond Ingold's (2000) situated "dwelling" and Milton's contextual emotional attachment. I argue that ecological learning and the emergence of an aesthetic of relationship, holism and attachment amounts to a transformative experience whereby the self becomes deeply aware of the continuum that exists between self and environment. In ecological learning, human selves become aware that their

actions and existence are not separate from those of the non-humans with whom they engage and interact. Thus, the very conceptualization of "self" is transformed into a gestalt where self-connected-to-surrounding is the basic unit of perception and action. Following Gregory Bateson, I call this holistic form of awareness "ecological aesthetics." In the section that follows therefore, I will provide a brief discussion of the notion of ecological aesthetics in relation to the issue of ecological learning as well as to the more speficic development of educational projects designed to bring forth integrated views of self and nature.

The Aesthetics of Ecological Learning

This section follows Cooper's (2003, 2006) proposition that some gardens provide opportunities for "profound" ecological learning to occur. In the field of anthropology, Bateson and Bateson (1988) offer the most sophisticated discussions of such "serious" learning. Therefore, this section relies mainly on their contributions.

Catherine Bateson is no stranger to the serious and profound kinds of learning that can, and do, take place in gardens. Recounting the story of her arrival in Tehran with her husband and her two-year-old daughter in 1972, Bateson relies on the experiences she shared in a Persian garden to tell us about important lessons she and her daughter learned that day. In that garden, mother and daughter observed the ritual slaughter of a goat. This was, in and of itself, a very new experience for both of them. But part of the newness of that experience was the fact that the entire garden in which they were—from the geometrical patterns of the landscaping, to the plants that inhabited it, to the ways in which garden and non-garden were clearly demarcated—was a reflection of a cosmology that differed from that which Catherine and her daughter had known in the United States. Nevertheless, as much as mother and daughter may have been taken aback with the differences that separated guests from hosts in that garden, participating-observing the ritual they came to see that beyond the surface of difference there lay a commonality expressed in the desire to learn how self and other were all at once similar and dissimilar. For Bateson and her daughter, these were lessons about themselves, their relationship, about the people of their new home-country, about how to live with—and even transcend—cultural difference. She tells us:

> That brief encounter in a Persian garden offered its participants many kinds of experience. There was room for hostility, anxiety, for fear of strangeness and distaste at reminders of the flesh and of mortality. There was room for awe in the presence of humankind's transcendent visions imposing its abstract geometries...The sacred was represented and so was the organic, intimacy and strangeness...With so many layers of possibility, there was room for a great deal of learning, but reason too for rejecting learning. [Bateson 1994:13]

Bateson's understanding of knowledge is holistic, and process-based: she does not see knowledge as a series of pieces of instrumental information about the world that are then safely tucked away in people's heads, but rather as a process that is inherent to this affair we call living (see also Belenky et al. 1997). Rather than talking about knowledge (as if "it" were an object), Bateson prefers to talk about "paths of attention and improvisation...across the life cycle" (1994:10). She urges us to look for the "habits of learning and the ways of building a repertoire from which to improvise, the metaphors that link one experience to another" (Bateson 1994:10).

One of the most interesting venues for investigating issues of ecological learning is to look at the ways in which children undergo such processes. Lindeman-Mathies (2005) for example, provides interesting insight into how children come to appreciate nature and to develop emotional attachments to non-human beings by means of school-related activities. Lindeman-Mathies researched the implementation of an educational program, "Nature on the Way to School," meant to increase children's aesthetic sensitivity to the common plants and animal species of their environments. Before the program was implemented, children were more attracted to exotic species and pets than they were to endemic plants and animals. The program consisted of a series of strategies by means of which teachers guided students in the "discovery" of the nature that surrounded their schools and villages. Most of these activities entailed outdoor trips in search of environmental clues about specific plants and animals. Or, as in the case of one particular task, students had to find an ordinary local plant of their preference and frame it in situ to draw to people's attention to it, whereupon the student would explain what they found so special about that plant. The results are undisputable. Most children widened their knowledge of biodiversity by a considerable degree, and most became very fond of their newly discovered species (Lindeman-Mathies 2005).

While "Nature on the Way to School" was not situated within the confines of a garden, it bears great similarity to the educational intentions I have observed at MBG, and which I describe in further detail in the penultimate section of this paper. Lindeman-Mathies' work shows how crucial a role aesthetics may play in ecological education, which is also at the core of some of MBG's edu-

cational programs. Moreover, her work is a case for the importance of ecological teaching that results in increased appreciation of biodiversity and recognition of its value. This is most certainly crucial in view of our current global environmental predicament.

Thorp (2005, 2006) offers additional insight into possible strategies for conceptualizing a socio-anthropological approach to issues of environmental learning and appreciation in gardens. Her work documents an educational project at an elementary school in Michigan that consisted in transforming part of the school's grounds into a vegetable garden. The initial intention was to use the gardens to educate students about basic science, but it soon became obvious that deeper kinds of learning were taking place. Thorp 2006 contains descriptions of how the school's environmental learning project unfolded. It makes clear how important these lessons were for the children. A note from one of the student participants reads, "last year there was not even plants thise year there are lots of plants ther are pumpkins tomatose and sun flours and ther are butifl." Other pages of Thorp's book are rich in pictures of smiling children dwelling within the school garden, or proudly standing in front of their "crops."

Echoing Ingold (2000) and Milton's (2002) propositions, Thorp found that in dwelling within the garden environment, and in actively engaging with the processes of planting and growing "crops," the children learned about the connectedness of humans and nature. In Thorp's words "stepping out of the classroom and into the garden, we enter a place of rhythmic continuity. For our children, the garden offers an alternative to the dissociation and fragmentation of modernity" (2005:126). She thus comes to see gardens as spaces of connection among people, and between people and the garden, place and food. Her findings also show that children became highly committed to their gardens, as well as to the social relations they developed amongst themselves in order to cultivate the gardens.

In Thorp's words (2005), there is great hope in the potential that gardens have for ecological learning: "perhaps for these children this is their first small step toward constructing a cosmology of interdependence rather than of dominance. In that small patch of earth outside the cafeteria doors, students come to understand that by caring for the earth, the earth reciprocates with great bounty" (Thorp 2005:127). The story of these children's environmental learning in the school garden is a story about the unfolding of human–nature relations, beauty, community spirit, love, reciprocity and wonder (Thorp 2006). Judging by the enthusiasm with which some of the children spontaneously extended these experiences to their own homes and through time, this is also a story about a growing commitment to sustain human–nature relations.

As we will see in the section that follows, educators at the MBG have aimed to teach children and adults a repertoire of experiences and lessons from which they may improvise successfully—sustainably—in their interactions with nature. This repertoire builds on metaphors of unity and connectedness and thus the attempt to develop new habits of learning that overcome human–nature dichotomies. Nevertheless, as the popular saying goes, old habits die hard and new habits are difficult to imagine. Thus, the challenge of implementing holistic ecological education programs occurs at two levels: first, there must be willingness to learn (Bateson 2004); second, this willingness must entail openness to a transformative process whereby the self becomes aware of the patterns that connect it to an arbitrarily conceived "other." It is here that the Batesons' notion of "deutero learning" becomes relevant (Bateson 1979; Bateson and Bateson 1988; see also Harries-Jones 1995 for a thorough discussion of Gregory Bateson's work).

The point is that deutero learning is a conceptualization of knowledge as a constantly unfolding process, and not as the static accumulation of bits of information about the world. One must consider, however, that some sociocultural settings are likely to create incentives, opportunities and freedoms that encourage people to learn how to learn, while others might go as far as repressing deutero learning altogether. I suggest in the next section that, even though only at the implicit and non-articulated level, the central educational intention of the MBG is to promote the type of environment where deutero learning may indeed occur.

To the extent that deutero learning can be understood as "the type of learning that emerges as people develop the capability to be responsive to the feedbacks that are produced by changes in the environments—and relationships—of which they are part" (see above), it dovetails with Gregory Bateson's notion of aesthetics: a form of awareness and responsiveness to the pattern that connects humans with non-human creatures (Neves-Graca 2005). The challenge is that Bateson's notion of aesthetics surpasses the phenomenological level of the sensoria. While the etymological roots of the word aesthetics refers to our sensory capabilities, for Bateson aesthetics entails "responsiveness to the pattern which connects" which, in turn, entails knowledge that is not completely accessible at a phenomenological level. At the same time however, Bateson's notion of ecological aesthetics entails a much more holistic understanding of human–environment phe-

nomena in that it calls us to account for the inter-relatedness of two very wide gestalts: human sociocultural contexts and processes in relation to the historicity of ecosystems. Harries-Jones captures this issue most cogently when he argues that the challenge of ecological aesthetics is to be able to approach people's ecological responsiveness as entailing much more than direct sensorial and emotional experience by also encompassing, as cited above, "less visible aspects of natural history, such as diversity, complexity, and species interactions in ecosystems" (Harries-Jones 2005:70). Hence, Harries-Jones adds a warning for those of us who might feel inclined to, like fools, quickly rush into describing and analyzing such aesthetic experiences:

> The conjoining patterns of change that make up biological order, make it difficult for any observer to construct any single point of reference and to rely upon that point of reference in order to appraise unity and interconnection in natural order. Not only are there multiple levels of connection in an ecosystem which have to be taken into account, but no observer is able to step outside an ecosystem and look back at it from above and so achieve some sort of visual look at its unity. [Harries-Jones 2005:70]

What kinds of educational programs then, might we consider as promoting awareness and responsiveness to the patterns that connect humans to non-humans while avoiding the pitfalls of producing simplistic maps for navigating such unchartable existence? The next section of this paper offers few preliminary clues.

Montreal's Botanical Gardens: Educational Intents

The idea of using botanical gardens as educational spaces overlaps with their raison raison d'être. Many of the Botanical Gardens I have explored in Europe and North America offer a range of educational programs for adults and children. It is rare, however, that one encounters educational programs based on the "aesthetics of ecological learning" as defined in the previous section. It is in this sense that gardens like the MBG are truly exceptional.

An example of an educational program at a botanical garden that approximates the mandate of an ecological-aesthetics educational agenda, is the Environmental Journalism Fellows Program,[2] which runs at the National Tropical Botanical Gardens (NTBG) in Kauai, Hawaii (Valenti and Tavana 2005). This program, focuses on educating journalists from around the world (though mostly from the U.S.) on issues pertaining to botanical sciences, ethnomedicine, biodiversity and sustainability. The core objective of this program is to educate journalists who cover environmental issues on how it is that science is produced, as well as on the basic background that is necessary for a well informed understanding of scientific developments.

However, the Environmental Journalism Fellows Program seems to have also had a very "fruitful" unintended consequence. This occurred in a context where participants became aware that their own tendency to see "nature" and human as ontologically separate entities said more about their own taken-for-granted cultural views than about actual human–nature separateness. In the words of one participant: "the fellowship allowed us to escape the dualism of Western environmental thought by showing positive ways a culture uses the land for everyday purposes as models of humans interacting with nature while managing to respect and protect it" (Valenti and Tavana 2005:306). Some of the participants in this program developed a deep appreciation of the NTBG, which they describe as follows, "it stretched my mind...All my senses are charged giving me a sense of hope, with a new beginning" (Valenti and Tavana 2005:308).

Expanding on such transformative experiences so that people may increasingly recognize degrees of shared human–nature ontology is also at the core of the educational goals of the MBG. It would be impossible, nonetheless, for a single educational program to promote the type of aesthetic responsiveness I discussed in the previous section in relation to deutero-ecological learning. In effect, since ecological aesthetics entails an irreducible gestalt, ecological knowledge can only stem from multifarious perceptual-emotional-cognitive engagement, appreciation and reflexivity.

The irreducibility of ecological aesthetics makes it inaccessible through single-level unilinear experience. This obviously relates to Harries-Jones' warning (see above) concerning the complexity of ecosystemic dynamics, especially their multi-level connections, which make it impossible for a knowing subject to stand outside an ecosystem to grasp and produce a map of its unity. Let us see then how a series of educational strategies at the MBG aim to increase people's responsiveness to patterns that connect people to nature without reducing such patterns either to bits of instrumental knowledge or giving people the illusion that they are about to "achieve some sort of visual [external, all encompassing] look at its unity" (Harries-Jones 2005:70).

MBG is organized such that it provides an array of contexts for learning about nature and human–environment relations. These include, for example, long-term hands-on gardening programs and a courtyard of the

senses where people are invited to explore their sensory connections to a diversity of plants. There are numerous spots to rest, meditate and appreciate beauty, day camps for youth, short-duration "theoretical" courses, horticultural workshops, thematic exhibitions, guided tours and, of course, the less visible labs where scientific research is conducted. People with "friends of the garden" membership also receive a quarterly magazine with detailed information about the learning projects that take place at the garden and information regarding specific horticultural and gardening topics.

Having talked to some of the people responsible for organizing these programs, I learned that ideally garden visitors or better said, garden "friends," would experience the multifaceted nature of these numerous programs such as to approximate, as closely as possible, the conditions that are more likely to induce Bateson's "responsiveness to the patterns which connect humans and nature." In effect, during my conversations with those who are responsible for the gardens, I carefully explained my hypothesis concerning the relation between aesthetics and ecological learning. Much to my pleasant surprise, my ideas were not only understood quite immediately, but I also found my interlocutors to be in agreement with—even excited about—my interpretation of the garden's educational intents.

For the sake of brevity, I will describe three educational projects that have been developed for children in order to show how each entails a particular subset of a holistically-orientated understanding of education pertaining to human–environment connectedness. These three examples are: "Butterflies Go Free," "Halloween Pumpkins" and "Youth Gardens." These are but a few examples of a much wider program so that, as I said, ideally the same children would participate in these and additional educational activities that take place at the gardens, *each proving a particular set of part-whole perspectives.*[3]

The "Butterflies Go Free" program[4] consists of a temporary exhibition at the gardens' main greenhouse. It normally runs each year from the last week of February to the end of April. It is organized by the Montreal Insectarium at the MBG and is a very popular event. The greenhouse's humid-warmth is a welcome respite in view of the inhospitable temperatures that characterize Montreal's winters. Upon stepping into the greenhouse, one is immediately embraced by a most agreeable fragrance released by dozens of different flowers that are put there to feed and host butterflies. It is an explosion of colour, scent and form. Of the several multi-sensory exhibitions that MBG hosts, this is certainly one that has a great impact on visitors.

First of all, children—as well as their adult companions—learn about the bodilyness of environmental perception. They learn to use the senses to pay attention to the species with which they interact: to use visual clues, to pay attention to smell and to learn the importance of touch. They also learn about the emotional connections they can develop during such interactions with each other and in relation to the butterflies that are released.

The display is organized such as to emphasize these points at various levels with posters and with the help of enthusiastic and knowledgeable guides. Secondly, there is plenty of information on posters and leaflets that explain the biology and behaviours of butterflies and moths. Thirdly, the same sources make links between the ecosystemic context of butterflies, the importance of worldwide biodiversity, and related cultural diversity, myths and narratives. Finally, the display extends beyond the spatial confines of the greenhouse and the temporal constraints of the exhibition. There are, for example, comprehensive programs that teach people how to engage in butterfly farming in their own backyards and, in the summer, children have an opportunity to help tag monarch butterflies before their great migratory voyage to Mexico. These are most certainly lessons that include a much wider sensitization to relations between biodiversity and cultural diversity or to the global scope of ecosystems and related human activity.

"Youth Gardens" is an educational program developed for children from eight to 15 years old.[5] It runs from April (when students plant vegetable seeds), through May and June (when students spend time caring for their seedlings, planting and growing), through the summer (spent tending these gardens two days per week), to mid-September when students harvest their crops. This program brings back reminiscences of Thorp's (2005, 2006) ethnographic descriptions of a similar plan and therefore, I will not dwell on its educational importance any further. Nevertheless, I do wish to point out that this is the type of context where students learn about nature through direct engagement that requires the capability to become attuned to environmental feedback. To be sure, crops will fail if they are not watered in the proper amounts and at the right points in time. Hence, I suggest that this is the type of learning context where, by dwelling within an environment and becoming attuned to it (Ingold 2000), students may overcome human–nature dualism, and even develop, as Thorp's students did, deep emotional attachments and commitment to nature (Milton 2002). As with the butterfly program, "Youth Gardens" also extends beyond its immediate scope and is linked, for example, to the wider schooling community through "Teachers in Action."[6]

Having learned that in the garden human–nature relations entail reciprocity, another program focuses on the pleasure of engaging actively with "nature" and of being able to share artistic endeavours with family, friends and the wider Montreal community. I refer here to "Pumpkin Carving" events. These are held in the fall and consist of a call to submit carved pumpkins that are then put on display in the same greenhouse where "Butterflies go Free." This program is particularly successful in teaching young children about the incalculable value of enjoying the connectedness of nature, beauty appreciation, human creativity and human *communitas*. Put together, all these lessons are certainly a very good step in the direction of a more holistic understanding of human–environment relations in the urban context of a botanical garden.

Concluding Thoughts

Gardens, especially highly landscaped urban botanical gardens, have been neglected as a serious venue for discussing and understanding human–environment relations. This situation is slowly changing as philosophers and social scientists alike begin to explore gardens and the environmental experiences of learning they may afford. Still, the potential to consider fully the possibility that serious learning about environmental processes can occur in gardens has not been realized. I argue in this paper, however, that such a lacuna can be tackled, for we have at our disposal solid sociological and anthropological scaffoldings upon which to build new and more comprehensive approaches.

In the final instance, I suggest that the educational programs of MBG have been designed such that—intentionally or coincidently—they provide people with multi-referential, multi-level, sensory, cognitive and emotional opportunities for bringing forth and analyzing holism and relationships as part and parcel of much wider ecological patterns (Harries-Jones 1995). Moreover, I argue that they have done so without reducing this unity to single-level reductionist forms of representation and teaching. As an ensemble, the educational programs of MBG do not entail abstract or detached lessons about nature and how nature works. Rather, they provide a multi-perspectival context for students to form emotional connections with other persons and with the gardens at the same time (Milton 2002). These in turn, are achieved through encouraging participants to actively dwell in and engage with the garden environment, and thus learn how to pay attention—attune their perceptual and cognitive apparatuses—to environmental clues, changes and beauty (Ingold 2000).

Paraphrasing Bateson (1994), I would say that the educational programs of MBG motivate people to build a repertoire of human–nature connective metaphors that may inform new improvisation of habits for their relations with the environment and, thus, increase their responsiveness to patterns that connect humans to other humans, as well as to plants and to animals (Bateson 1979; Bateson and Bateson 1988). In gardens, people discover the joys that come from sensorial engagement with their surroundings. In so doing, many people develop emotional ties with these landscapes and become committed to such places. For some people, this amounts to a much deeper form of aesthetic appreciation and to a form of ecological learning that transforms their understandings of human–environment connectivity. I suggest that for the latter, this entails a renewed comprehension at the gestalt level of the unity that exists between human social-cultural worlds and the ecosystems in which they are embedded.

Katja Neves, Department of Sociology and Anthropology, Concordia University, 1455 DeMaisonneuve Blvd. West, Montreal, Quebec, H3G 1M8, Canada. E-mail: knevesgr@alcor.concordia.ca.

Notes

1 Obviously, they also reflect the aesthetic orientations of particular societies, classes, genders and cultural views at specific political-historical junctures (Bhatti 1999; Bourdieu 1984). However, this particular issue is not the focus of the present paper.

2 See for example www.ntbg.org/cms_files/EnvironmentalJournalismFellowship_2007Announcement_081106.2.pdf.

3 See also http://www2.ville.montreal.qc.ca/jardin/en/menu.htm.

4 See http://www2.ville.montreal.qc.ca/jardin/en/info_verte/papillons/papillons.htm.

5 See http://www2.ville.montreal.qc.ca/jardin/en/act_educ/camps.htm#jardins_jeunes.

6 See http://www.fondationmuseums.qc.ca/teachersinaction/index.html.

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