

Learning to Love the Natural World Enough to Protect It

Louise Chawla

When I was a Fulbright Scholar at the Norwegian Centre for Child Research (NOSEB) from 1994 to 1996, NOSEB was housed in an old farmhouse that overlooked the university buildings at Dragvoll. Per Olav Tiller had a sunny office near mine, and in his office he had a sketch of a young man on horseback, surveying a meadow of spring flowers. Per Olav explained that it was a drawing of Henrik Wergeland, and that according to legend, this Romantic poet's affinity with nature was so strong that wild flowers sprang up as he passed by. I learned with time that Wergeland expressed some of Per Olav's deepest feelings, including his fierce love for Norway as a nation, which was inextricably connected to his love for the beauty of the land.

These feelings were related to the reasons that brought me to NOSEB. I had already done extended interviews in the state of Kentucky in the United States, trying to understand what motivated people who had taken action to protect the land, air, waters or wilderness of their regions, often at great personal cost to themselves. I wanted to know what Norwegian environmentalists would say when they were presented with the same questions. First, I asked them to tell the story of the most significant actions that they had taken to protect the environment. After they told these stories, I asked, "How would you explain the sources of your commitment to protect the environment? What personal experiences turned you in this direction and inspired you to pursue it?"

Over the course of my first year in Norway, I interviewed 26 people from Trondheim to Oslo, and then compared their answers with those of

30 Kentuckians. In both locations, I sought as much diversity as I could find: men and women, young and old, professional and working class, with a history of engagement in a variety of issues, including habitat and wildlife preservation, land use planning, transportation, waste management, mining, nuclear energy, air and water pollution, and environmental education. My analysis of what people told me and my review of related research were published as two articles in the *Journal of Environmental Education* (Chawla 1998, 1999).

I failed to pursue this subject further because the Centre for Child Research was planning an international conference on Urban Childhood in celebration of 1000 years since Trondheim's founding in 997. I suggested that one way to mark this event would be to revive the Growing Up in Cities project of UNESCO, which was originally conceived by the urban designer Kevin Lynch in 1970 (Lynch 1977); and with help from Childwatch International and the Norwegian Ministry of Child and Family Affairs, we succeeded in doing so. Researchers from eight countries presented their project fieldwork at the Urban Childhood Conference (Chawla 2002, Driskell 2002), and since this time, the project has spread to more than forty new sites in six continents and continues to gather momentum. Whereas my interviews with environmentalists asked adults who were already active for the environment why they made this commitment, Growing Up in Cities engages low-income children and youth in action-research to introduce them to activism on behalf of urban life quality.

Although I continue to work on Growing Up in Cities initiatives, I have lately been returning to the questions that first brought me to Norway. The answers that people in Norway and Kentucky gave about what motivated them to take action for the environment turned out to be remarkably consistent, despite differences in culture and people's diversity. In this article, I will briefly review what people told me, and then share my understanding that these results are precisely what the theory of ecological psychology would predict. Although this theory is the work of the late 20th century, its intellectual roots reach back to Henry James (Heft 2001) ... and between James in the second half of the 19th century and Wergeland in the century's first half, one can trace a current of evolutionary thinking which both men assimilated. For Wergeland, the connectedness of all things in nature was a spiritual creed. For James, writing after Darwin, it was the scientific foundation of his psychology. Given ecological psychology's roots in ideas of James, it is not surprising that theory in this field turns out to be particularly well adapted to explain the development of en-

vironmentalists, whose actions are also guided by a belief in human beings' relatedness to the larger web of life. More broadly, its theory can be applied to any child's developing connection and concern for the natural world.

Motives for Action

Table 1 presents the motives for activism that environmentalists in Norway and Kentucky gave. Although there are some interesting differences between the two countries, the similarities are most striking. The two most frequent motives are the same in each country: positive experiences of natural areas in childhood and adolescence and family role models. Almost 90% of the Kentuckians recalled places where they played as children or hiked as adolescents. The proportion from Norway, 65%, would have been higher if some Norwegians had not debated whether playing outside in nature were not too typical for them to mention. Five pondered out loud whether they should include these experiences. In the end, three concluded that they should—that despite the fact that childhood play in nature was almost universal in their country when they were growing up, it was nonetheless an essential source of their environmental feeling. Two men, however, insisted that although skiing or hiking in the woods was personally significant to them, it was “just being Norwegian” and could not set them apart from anyone else. I accepted the first reasons that people offered, without prompting. It is possible that other Norwegians carried on a similar internal debate and also concluded that their play in nature as children was too common to merit attention.

About three-quarters or more of each sample also talked about family members who directed their attention to elements of the natural world: usually a parent, but sometimes a grandparent, uncle, or older sibling. These two most frequent sources of commitment often went together, as 77% of those who talked about a childhood place also talked about a special relative in childhood who confirmed nature's value. The third most frequent explanation that people gave for their activism, reported by more than half of each sample, was participation in an organization. I counted this answer only when people said that their environmental feeling originated or significantly deepened during participation. For example, several people spent time in the woods as Boy Scouts or Girl Scouts, or joined an

environmental group at a friend's insistence, only to find themselves become authentically involved. Others learned strategies and skills that led them to see themselves in a new way, as an activist. Although other reasons that people gave for their environmentalism are also important--including education and witnessing pollution or habitat destruction--these reasons were cited by less than half of each sample.

Table 1. Sources of Commitment to Environmental Protection in Interviews with Environmentalists (% Mention Rate).

Sources of Commitment	Kentucky (n=30; 20 M, 10F)	Norway (n=26; 15 M, 11F)	Total (n=56; 35M, 21F)
Experience of natural areas	87	65	77
Family			
Parents	67	61	64
Others	13	12	13
Total	80	73	77
Organizations	53	58	55
Negative experiences			
Habitat destruction	23	23	23
Pollution, radiation	10	23	16
Total	33	46	39
Education	40	35	38
Friends	23	42	32
Vocation	30	23	27
Sense of social justice	23	27	25
Book or author	7	35	20
Principles or religion	10	19	15
Concern for children, grandchildren	0	8	4

Note: Average number of responses per person = 4, range = 1-6

These explanations need to be put in context. Nineteen of the people that I interviewed were 50 or older and the youngest were in their late 20s. For all of them, childhood was distant. In their environmental campaigns, they advocated protecting the environment on the basis of well calculated rationalizations: because the pollution that endangers wild habitats also diminishes human health; because the environment is an intricate web of interdependency and human well-being depends on maintaining it intact; because the exploitation of the earth is related to the exploitation of other people; or in the case of several Norwegians, because they adhered to believed in the deep ecology of Arne Næss. But when these people explained why they themselves invested countless hours of their time on the environment's behalf, their reasons were usually much more personal and simple: because of the childhood place where they played, or where they hiked or skied as adolescents; and because a beloved family member directed them to look closely at the plants and animals around them.

Per Olav Tiller is a case in point. Like many urban families in the early 20th century, his family rented rooms from a farmer in the summer months. Come summer, his family packed their bags and climbed aboard the train to travel a few miles outside of Trondheim to a rural hamlet—far enough from the city to be a pastoral paradise for the children, but close enough for his father to join the rest of the family on weekends. From his grandfather, Per Olav absorbed a sense that the pastures and forests were infused with a sacred fire of life, akin to the feeling for nature that Wermland expressed. Back in the city, his grandfather planted a pine tree in their back yard as a way to bring the forest closer, and when he lay dying, he asked to have a tub of meadow grass placed beside his bed. As an adult, one way that Per Olav expressed his grandfather's legacy was by joining demonstrations against nuclear energy in Oslo, taking to the streets in the company of his wife Guro.

A succession of studies which have asked other activists or environmental educators what inspired their commitment to the environment have reported similar results (Chawla 1998, Tanner 1998, 1999, Eigner & Schmuck 1998, cited in Bögeholz 2006). In countries as far flung as England, Germany, Greece, Slovenia, Australia, Canada, El Salvador and South Africa, from half to more than 80% of the respondents mention childhood experiences of nature as a significant influence. Typically, they mention family members or other role models equally often or second in importance. Like the activists whom I interviewed in Norway and the

United States, smaller percentages mention organizations, education, and witnessing the destruction or pollution of a valued place.

This is simple descriptive research, but several large comparative studies validate these results. Two surveys in the United States involved a measure of “environmental sensitivity,” which included reports of childhood experiences of natural areas through hunting, fishing, camping, and family vacations—all activities that a child would typically do with older mentors. This measure turned out to be a leading predictor of self-reported action for the environment in a number of groups (Sia, Hungerford & Tomera 1985/86, Sivek and Hungerford 1989/90). Another United States survey of 2004 randomly selected adults found that nature activities in childhood predicted pro-environmental attitudes and behaviors like recycling, “green” voting, and participation in programs like Earth Day (Wells & Lekie 2006).

A survey of a representative sample of 1004 Swiss citizens showed that those who took action for the environment through recycling, voting, signing petitions, and civic engagement at the local level were likely to have a history of nature experiences (Finger 1993, 1994). They were also likely to say that they had these experiences before they were 20. Among 281 German citizens, interest in nature, indignation at its inadequate protection, and “emotional affinity” toward nature, in the sense of love for it and a sense of safety and oneness in it, were significantly related to time spent in the natural world, including time in childhood, and the meaningful company of family members or teachers (Kals, Schumacher & Montada 1999). Emotional affinity toward nature, interest, and indignation, in turn, predicted a willingness to protect nature.

Young people themselves talk about similar experiences. When high school students in Wisconsin were asked why they joined environmental action clubs, the majority spoke about their experiences of natural areas around their home or school (Sivek 2002). Role models came second in importance, but in this case, these young activists spoke most often about teachers and environmental club advisors who sparked their interest in the club. A German survey of 1243 ten through 18 year olds, which included students active in nature and environmental clubs and those who were not, found that the strongest predictors of a stated intention to protect nature were the environmental behaviour of parents, nature experiences, and the behaviour of peers (Bögeholz 1999, cited in Bögeholz 2006).

All of these studies are descriptive or correlational rather than causal. It is possible that underlying differences led some children to gravitate to

nature and evoke sympathetic behaviour toward nature from parents and teachers, explaining the preceding findings. Certainly relations between children and adults are interactive; but given children's limited control over adult behaviour, it is likely that respondents were at least partly responding to access to nature and adults' demonstrations of its value. Because my own study followed people's accounts of their developing activism across their lifespan, it was able to show that people later built on childhood experiences of free play in nature and influential adults through processes of education, work, or membership in environmental organizations, learning the skills necessary to turn an initial interest in nature into a vocation or avocation (Chawla 1999).

The Relevance of Ecological Psychology

How can we explain the importance of special childhood places and people, when environmental activists and educators account for the paths that their lives have taken? The best answers that I have found to this question lie in the ecological psychology of James and Eleanor Gibson (E. J. Gibson 1969, J. J. Gibson 1979) and Edward Reed (1996a, 1996b). This section reviews principles of ecological psychology which make it well suited to explore this question. Later sections suggest that these principles illuminate the formative childhood experiences that environmentally committed people describe.

Ecological psychology is grounded in evolutionary theory and a realist philosophy. It views human beings like other creatures in the web of life with which they have co-evolved, claiming that people, like other organisms, encounter the physical world directly, with the ability to perceive qualities of the world that are really there rather than merely mental constructions about the world. In this respect, it shares basic assumptions with the environmental movement: It assumes that human beings are dependent on intrinsic qualities of the physical world, its resources, and its limits, and they can discover what these resources and limits are through direct perception in order to adjust their behavior in adaptive ways.

This realist foundation of ecological psychology descends from the radical empiricism of William James (1912/1976). James held that we encounter the world through an ongoing stream of pure experience which contains many-faceted possibilities for knowing. From this stream of in-

formation, we select what we attend to. Guided by our interests, our society, and our culture, we focus on some features of the world at the expense of others, but the information that we notice reflects qualities of the world that are really there.

These ideas may sound like common sense, but in fact this realism of William James, ecological psychology, the environmental movement, and naïve common sense runs counter to dominant theories in psychology and the sociology of childhood, which place the mind and the physical world in separate realms and claim that all that people can know are their mental representations of the world, which are constructed by gender, class, culture, ethnicity and other social contingencies (Heft & Chawla 2006). Although ecological psychology does not deny the powerful influence of socialization and culture (Reed 1996a), it argues that these influences affect how we select and use the information that we receive, but they do not prevent us from receiving direct information about the world's true qualities.

Ecological psychology also speaks to people's developing relations with the world because it emphasizes agency. According to James and Eleanor Gibson (E. Gibson & Pick 2000, J. Gibson 1966, 1979), to be a living animal means first and foremost to be *animate*, moving. This is the case whether it be a paramecium, sand crab, seagull, or person. A newborn human, for example, may have little control over its body, but it immediately begins to explore its surroundings with the movement of its eyes and its mouth. By middle childhood, children in a secure country like Norway are discovering their world through wide ranging movement through their town and surrounding trails for hiking, biking and skiing. As animals move, they are acting on the world, and coordinating information from vision, touch and other senses. As a consequence, ecological psychology is interested in environmental learning and action in every setting—informal community settings as well as classrooms--and it is particularly well adapted to describe what happens when people learn through autonomous movement and exploration, such as children at play outdoors.

By seeing people first and foremost as moving organisms in the environment, ecological psychology sees them as part of a relational system. This way of viewing the world is central to James Gibson's concept of *affordances* (Gibson 1979). Affordances are functionally significant properties of the environment which are defined by the relationship between the environment and an organism. For example, a tree affords climbing for a child only if its lower branches reach down to a child's grasp, relative to

the child's height, and the child has strength to pull itself up, relative to its weight (Heft 1988). The affordance is neither in the tree, nor in the child, but in the relationship between them. So it is with all creatures' abilities to take advantage of the resources that the environment contains. Success depends not just on the qualities of the environment, but equally on the perceptual systems that creatures have evolved to detect information about these qualities, as well as the particular capabilities of individual organisms.

Marketta Kyttä (2006) has observed that environments vary in the quality of the affordances that they provide for children. From Edward Reed (1996a), she has borrowed the concepts of "fields of free action," "promoted action," and "constrained action." In fields of free action, children can explore the world without guidance or interference from others. In fields of promoted action, other people encourage the child to act in certain ways: for example, by providing a stool so that a child can reach a basin of water; by placing a toy within reach; or by telling a child to go out to play. In fields of constrained action, people limit what a child can do: placing bars on cribs, locks on cabinets, or making rules against crossing the street. Combining these concepts with her research about affordances for children in different communities in Finland and Belarus, Kyttä identified four types of places for children. Some can be described as "wastelands," where even if children have freedom to move about independently, there are few affordances to engage their interest. Other places may be described as a "cell," where children's mobility is so restricted by physical and social constraints that they know very little about the world around them. In "glasshouse" places, children can see that the world is rich with possibilities for action, but they are excluded from their use. In the fourth and best place, children can move freely through their world, and the world that they discover rewards their efforts. This setting, Kyttä notes, is characterized by positive interactive cycles: the more widely that children move through their world, the more satisfying encounters they have with engaging affordances, which motivate them to explore yet further. As the next section will show, the natural environment is particularly rich in reinforcing and motivating opportunities of this kind.

Ecological psychology is also relevant to environmental activists' stories because it pays close attention to the dynamics of perceptual learning—an organism's ability to extract new information from its surroundings. In numerous experiments, Eleanor Gibson and colleagues (Gibson & Pick 2000) have shown that people have an innate drive to notice more and

more about their environment, insofar as it relates to their interests. For example, when she and James Gibson asked children and adults to match cards with scribbles that sometimes differed in small details, both groups sorted the cards more accurately on successive trials, even though they received no explicit teaching or extrinsic rewards, and their performance improved with age (Gibson & Gibson 1955).

Commonly, however, perception is shaped by processes of joint attention, when people attend to the same thing together. Around six months of age, children begin to turn their attention to features of the environment that another person is attending to, and they soon begin to direct attention themselves by pointing and calling out the names of things. Much of this perceptual learning is informal. Because a father pays attention to a passing thunder storm, his son gives it his attention too. While a grandmother works in her garden, she teaches her granddaughter to notice the parts of flowers. As an uncle tracks the flight of a bird, his nephew follows it with his eyes. Later, all systems of apprenticeship and formal learning, including formal environmental education, are built on these basic processes of joint attention. Children are most likely to stay attentive and engaged, however, when the features of the environment that they notice are responsive and give them immediate, pleasurable feedback about the effects of their actions (Heft & Chawla 2006). In this way, they learn simultaneously about properties of the world and their own capabilities, and develop competence.

Another principle of ecological psychology relates to the value of organizations, which environmental activists also credited as an important influence in their childhood and youth. Roger Barker (1968) developed the concept of “behaviour settings,” which are standing patterns of behaviour in designated places where people gather to engage in particular activities at particular times, such as a class, a soccer game, or the meeting of an organization. These settings are constituted by the coordinated actions of the people there as well as the affordances of the place which support these actions. For example, a meeting of an environmental club requires members, officers, and a suitable room where people can sit in a circle and make plans without distractions. Barker found that the best predictors of people’s actions include the behaviour settings which they occupy, for people quickly learn the programs for different settings and take up appropriate roles. Like larger scale environments, however, behaviour settings vary in the opportunities that they provide. Some relegate most participants to the passive roles of onlookers, audience, or members with poten-

tial rather than immediate power (for example, merely holding the right to vote for others who will represent them). In Barker's words, people learn best in settings where they can assume the roles of "active functionaries" who have power over at least part of the setting, or leaders with decision-making authority over the whole setting. Just as children learn the most about the environment and their own competencies when they have a chance to engage with affordances which give them immediate feedback about the effects of their actions, members of a setting in these roles get to propose and carry out different activities and observe the consequences.

The final principle of ecological psychology which helps explain the formative experiences of environmental activists is the importance of learning about the world first hand through one's own actions in it, rather than second hand as others represent it. Edward Reed (1996b) calls this "the necessity of experience." He has argued that *primary* or first-hand experiences expose people to inexhaustible possibilities for learning, including creative new discoveries. Outdoors especially, a person encounters a dynamic, dense, multisensory flow of diversely structured information, but some places are richer in this regard than others. For example, shoppers are bombarded by more smells, sounds, and sights in a traditional marketplace than in a supermarket, and there is more information in a woodlot than a parking lot. In contrast, in *secondary* experience, when others tell about the world second-hand through a text or an image, information is radically reduced—literally, in most cases, two-dimensional. Primary experience is also necessary because it occurs in the real world of full-bodied experiences, where people form personal relationships and place attachments, drawing motivation to protect the places and people they love and gaining competencies to do so.

The Necessity of Free Play in Nature

Putting these principles of ecological psychology together, they illuminate the childhood experiences that many activists identify as antecedents of their commitment to the environment. First, they suggest why active play in the natural world in childhood leaves such deep impressions. When children enjoy freedom to explore in nature, they are likely to encounter the best kind of environmental conditions, according to the place categories analyzed by Kyttä (2006). The fact that they have this freedom implies

that their parents and other caretakers allow it, and tolerate the scratches, muddy knees, wet shoes, and pockets full of pebbles and other collections that their children bring home. If these resources are not right outside the door, then parents like those of Per Olav make special arrangements like packing the family off to a farm or to a hut in the mountains or by the sea-shore. In this sense, children's free movement in nature is a "field of promoted action," a territory explored with their families' permission and encouragement. Once children head outdoors alone or with friends, however, it functions as a "field of free action" where they can make discoveries of their own, with no adults to tell them, "Don't touch that!" or "Don't get that dirty!"

What they find in the natural world rewards their initiatives and encourages their continuing engagement, for nature is particularly rich in responsive affordances. It provides all the conditions for events that hold children's attention. Children see immediate, reinforcing effects of their actions, which simultaneously show them how the world works and their own capabilities. The wet earth keeps the shape they press it into—unless they add too much water and it turns to runny mud. That means try it again with less water next time. That leads to the next time ... and when the earth moulds just right, nearby stones and grasses make perfect decorative touches. And so the hours pass away, with children immersed in a world that affords a treasury of "loose parts" that they can use for experimentation and construction. As Simon Nicholson (1971) observed, although children can also create with lego sets and building blocks, nothing else comes close to the loose parts of the natural world for the creative versatility that they afford for children at play.

Nor, it can be added, does any other environment offer so many finely graduated levels of challenge that enable children to mark their developing physical competence. The stone that was too heavy to lift yesterday might budge today. *This* tree branch is still just out of reach, but—success!—today *these* branches are spaced just right. In many cases, children are exploring this world along with a brother, sister or friends, and it is then a medium for developing social competence as well, where they have to coordinate their efforts to overcome challenges—such as moving the really big stone together, helping each other into trees, or setting up shop to bargain over shells and feathers. Observations show that children engage in more creative and dramatic social play in natural spaces than they do in built playgrounds or spaces without trees or grass (Kirby 1989, Taylor et al. 1998).

Building on Kyttä's (2006) notion of "positive cycles" of mobility and access, free play in the natural world offers impressive interactive cycles—and therefore it should not be surprising that these experiences leave deeply engraved impressions in people's memories. As Figure 1 shows, such a cycle begins with an animate organism which investigates its world and avails itself of surrounding resources through its self-initiated movement. No person is more animate in this way than a growing child. If a family is fortunate, parents and children alike can find release through the simple command, "Go play outside!" But this mobility requires access to a safe world of engaging affordances and graduated challenges that a child can master—not fast traffic or warring gangs outside the door. When children have satisfying experiences in the world nearby, they are motivated to explore further; and with each feature of the environment that they come to understand and each challenge that they overcome, they build greater levels of environmental knowledge and personal competence.

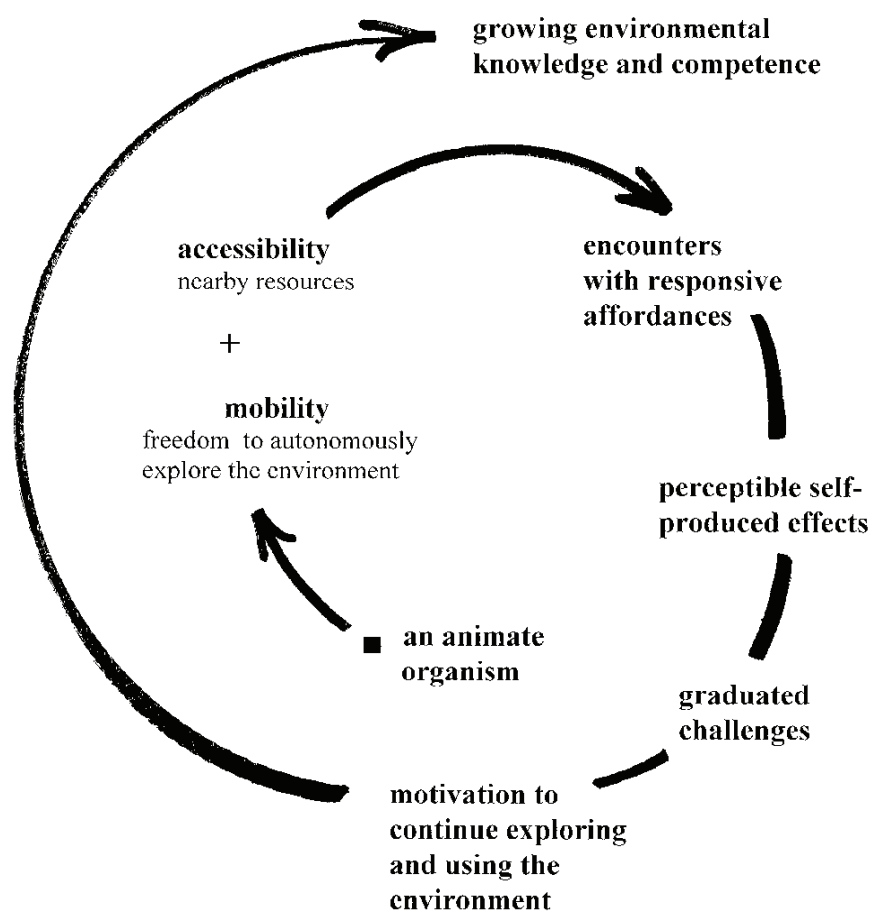


Figure 1: Positive interactive cycle of accessibility, mobility and engagement with the environment.

Given its base in evolutionary theory, ecological psychology also bids us to reflect on the nature of the world that a child encounters. As Reed (1996b) observed, secondary experiences constructed and mediated by others can never match the multisensory flow of primary experiences, when people move and act in the real world with their full-bodied powers. Nor do secondary experiences represented by others offer comparable chances for creative discovery.

The natural world is also captivating because habitats of life offer infinitely new variations. No two crickets and no two birds sing exactly the same song. No two rotting logs hold the same constellation of insects. No stream pools and floods in exactly the same way twice when children dam it, nor does the water flow with the same music and force, or reflect the same gleam of light, on different days in different weathers. No bank of earth has exactly the same consistency at different points along its length. Thus even down in the *same* stream and the *same* mud bank for the 237th time, children can discover a world that is inexhaustibly new. It is also the world in which human beings evolved, with which children have a connection as ancient as the chemistry of their cells. It is the world for which they are adapted, on which human existence depends.

Along with this ever-fresh novelty, the natural world provides continuity. Although not precisely the same, the smell of wet earth in a certain weather can sweep us back to memories of a favourite childhood place. The forests that activists seek to protect as adults most likely bear resemblance to the first forests where they ventured. Nature's newness is composed of established elements and patterns, so that in an approximate way, we can revisit and defend places consecrated by memories of the world as we first knew it.

At their best, city streets offer similar opportunities for safe exploration and graduated challenges in places full of variety and vitality. In these settings, children come to know their society, see how it works, and try out different roles. As the research of Barker and Schoggen (1973) has shown, the more--and the more various--the behaviour settings that children can enter in their community, the more children are likely to play a variety of roles. In this way, they develop social competence. Like natural areas, neighborhoods of this kind can inspire lasting allegiance. Per Olav is an example in this case too, for the human-scaled streets of Møllenberg in Trondheim, where his family resided and where he investigated every nook and cranny as a boy, inspired his enthusiasm and fidelity as much as woods and fields.

In cities that foster children's full development, the discovery of nature and the city are not incompatible. The Møllenberg where Per Olav roamed contained river, fields, and fjord banks—and it still does. When the architect Hanne Wilhjelm (2002a, 2002b) led *Growing Up in Cities* research in Møllenberg in 1996-97, she found that surviving patches of wildflowers and trees were highly valued by local children. In project sites around the world, children identify safe, accessible natural areas for free play as one of the most important components of a good place in which to grow up (Chawla 2002).

Bonds of Attachment and Attention

In processes of joint attention, the social and physical realms function together. People around a child foster a bond with nature not only by giving the child freedom to move about and engage autonomously with natural areas, but also by their own example. What they need to do, it appears, is to set an example of noticing nature in a respectful way. By the direction and quality of their attention, they communicate nature's value and promote the child's interest in this world too.

In story after story, activists told about a family member who took the child into woods or gardens and modeled appreciative attention to plants and animals there. What they did *not* demonstrate was fear, or heedless destruction. Even when people described hunting or fishing with their family as a child, their parents showed a quality of attention that was not purely instrumental. As a Norwegian woman said, when she grew up in the 1950s, all Norwegians were out hiking, picking berries, and fishing, but what distinguished her family was that “my mother knew the names of the plants more than other mothers did. So we talked more deeply about things. We didn't only fetch berries and fish, but talked about it” (Chawla 1999:20). That, she believed, was one key to understanding why she grew up to become a biologist who specialized in the knowledge of riparian systems and fought against damming wild rivers—someone who sought to “let the river live.”

In a similar fashion, a Kentucky lawyer who became a leading organizer of the struggle to save the wild and scenic Red River from damming mused about what made him different from proponents of the dam. Many of them, like him, must have grown up fishing and hiking in Ken-

tucky's woods and fields. "Maybe a lot has to do with who you go fishing with," he suggested. "Or who you're talking to when you're walking" (Chawla 1999:20). In his case, he fished with a father who took time to "appreciate what's there," who didn't just catch fishing bait but watched the insects and worms and noticed the details of surrounding plants and trees.

This quality of attention has been captured in a phrase from a study of amateur entomologists by Janice Mathews (1992). When she asked them how their passion for insects began, 80% spontaneously credited their adult avocation to experiences in childhood and adolescence—and like the activists, their formative experiences were encounters with a rich natural environment and the example of other people. What characterized these examples, Mathews noted, was "a contagious attitude of attentiveness on the part of those adults who have meaningful relationships with the child" (p. 326). This "contagious attitude of attentiveness" in a world of primary experience, it is worth observing, stands at the opposite pole from the culture of consumerism, which sees other things as nothing but a stock for people's taking and which represents the resources that it consumes—if it makes them visible at all—through two-dimensional advertisements.

In my study, a close analysis of the interview transcripts suggested that significant adults gave attention to their surroundings in four ways: care for the land as a limited resource essential for family identity and well-being; a disapproval of destructive practices; simple pleasure at being out in nature; and a fascination with the details of other living things and elements of the earth and sky. (See Table 2.) These qualities of attention were not mutually exclusive, but tended to reinforce each other in activists' accounts. The same parent who taught care for the land was also likely to express disapproval of other people's destructiveness; and fascination with the details of things reinforced lessons about the value of the land, or general expressions of pleasure at heading out into forests and fields.

Table 2. Significant adults' forms of attention to the value of the natural world.

Care for the land: Through example or direct instruction, a person teaches that the land should be cared for because it is a limited resource and essential for family identity and well-being.

“I grew up on a farm. One of the things that you were allowed to do instead of going to church on Sunday morning, if you were asked, was to go on these long walks with my dad over our farm. Because Daddy didn't go to church, Mother did. And I'll never forget those...He would talk about how to distinguish the different types of trees and plants and some of the wildlife, and he talked about what you had to do to really manage the farm for the long-term. You know, he planned to grow the walnut trees for us...It was a sort of constant consideration of the renewing of the earth, of the need to plant certain kinds of things in certain years and in certain areas and protecting the little stream and that sort of thing.” (Karen Armstrong Cummings, Kentucky)

Some of these episodes become family stories that are passed down through generations.

“I've heard my dad talk about his father after a gully washing rain one time, standing down in the lower field of the farm where I live and that I own today, crying and looking at the sheet erosion that occurred in a corn field there. And that sort of said to me that there must be something very valuable about that dirt.” (John Berry, Jr., Kentucky)

Disapproval of destructive practices: With a tone of criticism, a person indicates that certain practices harm the environment.

“I was born and raised in west Tennessee ... and in cotton country, and if there ever was a crop that wore the land out, that was one of them. And as far as a conservation ethic, my father had one...I can remember him saying about a particular farmer that all he knows how to do is to kill the mules because he thinks that to wear a mule out is being a successful farmer, and to wear the land out is a successful farmer. And he would say it with some sarcasm.” (Bill Martin, Kentucky)

Pleasure at being out in nature: Through word or deed, a person shows that the natural world is a source of enjoyment.

“My parents, they were taking me out in nature very often. We had a cabin in the mountains. Also my grandfather, he had a motorbike, so together with him we had lots of picnics in the local environment. He put me in the front of the bike, on the gas locker. A little bit dangerous, but everytime when he came, it was just, Enjoy!” (Pål Kristian Selbo, Norway)

(table cont.)

Fascination with elements of the natural world: A person gives close attention to details of plants or animals, earth, water or sky.

“I had a grandmother always working out in the garden and teaching me about the birds and the flowers, when I was a very little girl. . . . When I started to study [biology and eventually ecology], I remember, I thought lots about my grandma. . . . But also my father was very interested in everything about nature. So I think I learned a lot about it when I was a child. We always were out. I grew up in Norway—*gå tur* is a national sport in Norway. We always did. Picking berries and fishing and everything. So I don’t think that is something special. But my mother knew the names of the plants more than other mothers did. So we often talked more deeply about things. We didn’t only fetch berries and fish, but talked about it.” (Kari Anderson, Norway)

About a father: “Just that he was raised up in the country and had an appreciation of it, and could teach you how to make a willow whistle or a pop gun out of certain things or how to find the fishing bait under the rocks and appreciate what’s there. Or takes you out on the porch when a thunderstorm comes in so you can enjoy it. . . . It was something that he appreciated, but he wasn’t a preacher of it or a teacher of it, it’s just a very subtle thing. And, you know, him with his garden and his plants and all the things that he loved.” (Oscar Gerald, Kentucky)

A final feature of the activists’ stories that deserves attention is who these significant adults were and their relationship with the child. Most often, they were a close family member: usually a parent, but sometimes a grandparent or other relative. Although the activists did not say so explicitly, their stories suggested that the quality of the relationship that they shared with this adult as a child was as important as the quality of the relationship with nature that child and adult shared together. The very fact that a parent or grandparent chose to take the child with them to a place where they themselves found fascination and pleasure, to share what engaged them there, suggests not only care for the natural world, but equally, care for the child.

To address this emotional context of perceptual learning, we need to turn from ecological psychology to interpersonal theories of object relations and attachment, which focus on the quality of a child’s developing bonds with its primary caretakers (Greenberg & Mitchell 1983). Like ecological psychology, this body of theory descends from Darwin, and it too views the world as a place full of real resources and risks that a child and

its family must negotiate. It sheds a deeper light on ideas of ecological psychology when they unfold within the context of a family.

According to interpersonal theories of object relations, the deep mutual bond between a child and its primary caretakers is adaptive (Greenberg & Mitchell 1983). A parent's watchful responsiveness creates a safe space from which a child can begin to reach out, investigate the world, and develop its powers. In this regard, this body of theory is fully compatible with ecological psychology's concepts of "fields of free action," "promoted action" and "constrained action." Many observations of young children and their mother or other close caretaker show that a child moves back and forth from its caretaker to the attractions of the world around it, pivoting around her as a "secure base" that the child keeps in sight and often returns to touch (Colin 1996). The caretaker sets limits to this movement and is quick to draw near if there is any sign of danger (creating a "field of constrained action"), but when the environment appears safe, she encourages the child's exploration and allows an expanding range (creating the conditions for "fields of promoted action" and "free action"). Over time, this back and forth movement has the potential to expand to encompass a child's wide ranging exploration of its community and natural areas, confident that it can always return to the secure base of its home. Research shows that young children explore the world more confidently when they feel securely attached to their mother or other primary figure.

Object relations theory not only provides an emotional context for ecological psychology's ideas about children's movement in the world, but it also adds an important dimension to processes of perceptual learning. Research that it has inspired has shown that children build bonds of secure attachment when they find that their caretakers notice *them* responsively: appropriately responding to their hungers and cries, meeting their gaze, smiling when they smile, and talking back to their babble when they are infants, and as they grow, continuing to attend to what they seek to communicate (Colin 1996). When children learn that they are noticed responsively and their needs are accurately read, they gain confidence to look outward and respond openly to their surroundings. In contrast, fear and anxiety make children self-preoccupied (Sarason 1975).

According to the theory of object relations, a positive emotional foundation enables children to explore the world with confidence and turn their attention outward in any direction. What these directions will be depend on what other people point them to, the places and resources they have available, and their own talents and abilities. The environmental activists'

stories suggest that when children have access to the natural world, and family members encourage them to explore it and give it close attention, they have a strong basis for interest in the environment. To turn this interest into activism, they later need to build on this foundation through education, membership in organizations, or the careers that they pursue; but from their childhood experiences in nature through their own free play and in the company of significant adults, they carry the memory that the natural world is a place of such full and positive meaning that it justifies their most persistent efforts to protect it.

References

- Barker, R. 1968. *Ecological psychology*. Stanford: Stanford University Press.
- Barker, R. & Schoggen, P. 1973. *Qualities of community life*. San Francisco: Jossey-Bass.
- Bögeholz, S. 1999. *Qualitäten primärer Naturerfahrung und ihr Zusammenhang mit Umweltwissen und Umwelthandeln*. Opladen: Leske + Budrich.
- Bögeholz, S. 2006. Nature experience and its importance for environmental knowledge, values and action: Recent German empirical contributions. *Environmental Education Research* 12 (1):65-84.
- Chawla, L. 1998. Significant life experiences revisited: A review of research on sources of environmental sensitivity. *The Journal of Environmental Education* 29 (3):11-21.
- Chawla, L. 1999. Life paths into effective environmental action. *The Journal of Environmental Education* 31 (1):15-26.
- Chawla, L. (Ed.) 2002. *Growing up in an urbanising world*. Paris/London: UNESCO/Earthscan Publications.
- Colin, V. L. 1996. *Human attachment*. Philadelphia: Temple University Press.
- Driskell, D. 2002. *Creating better cities with children and youth*. Paris/London: UNESCO/Earthscan Publications.
- Eigner, S. & Schmuck, P. 1998. Biographische Interviews mit Umwelt- und Naturschützern, *Umweltpsychologie* 2 (2):42-53.
- Finger, M. 1993. *Environmental adult learning in Switzerland*. Occasional Papers Series No. 2, Center for Adult Education, Teachers College, Columbia University, New York.
- Finger, M. 1994. From kinship to action? Exploring the relationships between environmental experiences, learning, and behavior. *Journal of Social Issues* 50 (3):141-160.
- Gibson, E. J. 1969. *Principles of perceptual learning and development*. New York: Appleton-Century-Crofts.
- Gibson, E. J. & Pick, A. 2000. *An ecological approach to perceptual learning and development*. Oxford: Oxford University Press.
- Gibson, J. J. 1966. *The senses considered as perceptual systems*. Boston: Houghton-Mifflin.

- Gibson, J. J. 1979. *The ecological approach to visual perception*. Boston: Houghton-Mifflin.
- Gibson, J. J. & Gibson, E. J. 1955. Perceptual learning: Differentiation or enrichment? *Psychological Review* 62:32-41.
- Greenberg, J. R. & Mitchell, S. A. 1983. *Object relations in psychoanalytic theory*. Cambridge: Harvard University Press.
- Heft, H. 1988. Affordances of children's environments. *Children's Environments Quarterly* 5:29-37.
- Heft, H. 2001. *Ecological psychology in context*. Mahwah, NJ: Lawrence Erlbaum Associates.
- Heft, H. & Chawla, L. 2006. Children as agents in sustainable development. In M. Blades & C. Spencer (Eds.), *Children and their environments*. Cambridge: Cambridge University Press.
- James, W. 1976. *Essays in radical empiricism*. Cambridge, MA: Harvard University Press. (Original work published 1912)
- Kals, E., Shumacher, D. & Montada, L. 1999. Emotional affinity toward nature as a motivational basis to protect nature. *Environment and Behavior* 31 (2):178-202.
- Kirby, M. 1989. Nature as refuge in children's environments. *Children's Environments Quarterly* 6 (1):7-12.
- Kyttä, M. 2006. Environmental child-friendliness in the light of the Bullerby model. In C. Spencer & M. Blades (Eds.), *Children and their environments*, pp. 141-158. Cambridge: Cambridge University Press.
- Lynch, K. 1977. *Growing up in cities*. Cambridge, MA: MIT Press.
- Mathews, J. R. 1992. Adult amateur experiences in entomology. In J. Adams (Ed.), *Insect potpourri: Adventures in entomology*, pp. 321-328. Gainesville, FL: Sandhill Crane Press.
- Nicholson, S. 1971. How not to cheat children: The theory of loose parts. *Landscape Architecture*, 62(1):30-34.
- Reed, E. S. 1996a. *Encountering the world: Toward an ecological psychology*. New York: Oxford University Press.
- Reed, E. S. 1996b. *The necessity of experience*. New Haven: Yale University Press.
- Sarason, I. G. 1975. Anxiety and self-preoccupation. In I. G. Sarason & D. C. Spielberger (Eds.), *Stress and anxiety*, Vol. 2, pp. 27-44. Washington, DC: Hemisphere.
- Sia, A., Hungerford, H. & Tomera, A. 1985/86. Selected predictors of responsible environmental behavior. *Journal of Environmental Education* 17 (2):31-40.
- Sivek, D. 2002. Environmental sensitivity among Wisconsin high school students. *Environmental Education Research* 8 (2):155-170.
- Sivek, D. & Hungerford, H. 1989/90. Predictors of responsible behavior in members of three Wisconsin conservation organizations. *Journal of Environmental Education* 21 (2):35-40.
- Tanner, T. (Ed.) 1998. Special issue on significant life experiences research. *Environmental Education Research* 4 (4).
- Tanner, T. (Ed.) 1999. Special section on significant life experiences research. *Environmental Education Research* 5 (2).
- Taylor, A. F., Wiley, A., Kuo, F. E., & Sullivan, W. C. 1998. Growing up in the inner city: Green spaces as places to grow. *Environment and Behavior* 30 (1):3-27.
- Wells, N. M. & Lekies, K. S. 2006. Nature and the life course: Pathways from nature experiences to adult environmentalism. *Children, Youth and Environments* 16 (1):1-24. Retrieved June 4, 2006 from www.colorado.edu/journals/cye.
- Wilhjelm, H. 2002a. *Barn og omgivelser*. Oslo: Arkitektthøgskolen i Oslo.

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Wilhjelm, H. 2002b. Large but not unlimited freedom in a Nordic city. In L. Chawla (Ed.), *Growing up in an urbanising world*, pp. 161-182. London/Paris: Earthscan Publications, UNESCO.

Louise Chawla
College of Architecture and Planning
University of Colorado
Campus Box 314
Boulder, CO 80309-0314, USA
e-mail: louise.chawla@colorado.edu