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The human dimensions of urban greenways: planning for recreation and related experiences

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Abstract

In this paper, we summarize findings from a series of interrelated studies that examine an urban greenway, the 150 mile Chicago River corridor in Chicago, USA, from multiple perspectives, stakeholder viewpoints, and methodological techniques. Six interdependent "human dimensions" of greenways are identified in the studies: cleanliness, naturalness, aesthetics, safety, access, and appropriateness of development. Together, these dimensions form a core set of concerns relating to how people perceive and use the greenway for recreation and related experiences. While these dimensions show good consistency across our studies and are supported by the literature in the field, the quantitative and qualitative methods used also uncovered a rich variation in how the dimensions are construed by different stakeholder groups and along different reaches of the corridor. Using local demonstration projects from along the corridor, we illustrate how principles inherent in each dimension can be applied to improve the success of greenways through design, management, or programming. We conclude by discussing the applicability of these dimensions and methods of study to understand other urban and non-urban greenways, and suggest how the findings from such studies can be used to inform greenways planning, policy, and management.

Keywords: Greenways; Human dimensions; Multi-method research design; Chicago; Cleanliness; Naturalness; Aesthetics; Safety; Access; Appropriateness of development

1. Introduction

Open sewer for the "hog butcher to the world" or green ribbon for the "city in a garden?" Images of the Chicago River associated with these two monikers of Chicago imply old times versus new. Yet when planners began to examine the greenway potential of the multi-county corridor, they were surprised when they found the former image prevailing over the latter in the minds of many residents and visitors (von Klan, 1996). Like many urban rivers across North America, Europe, and other parts of the world, the Chicago River has undergone a remarkable transformation in recent decades. Legislation and programs aimed at water quality improvement are having their intended effect: when assessed along key biophysical quality dimensions such as dissolved oxygen and fish species diversity, major sections of the river are cleaner than they have been in the last 100 years (Moore et al., 1998). So, why have not these data changed people's perceptions of the river?

Unfortunately, while methods to assess the biophysical dimensions of environmental quality are readily available and management professionals commonly collect such data, this is not the case for the equally important *human dimensions* of environmental quality. Aesthetic quality is an exception for which there have been some methodologies developed (e.g. Daniel and

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Boster, 1976; USDA Forest Service, 1995) and many studies and applications over the last few decades (e.g. Ribe, 1989), but there are few parallels for other important human dimensions such as safety (e.g. Michael and Hull, 1994). Perhaps even more significantly, few attempts have been made to comprehensively understand the salient dimensions of people's perceptions and experiences of different environments (Craik and Zube, 1976; Kearney and Bradley, 1998). What key dimensions do people focus on when they perceive a place or landscape? How are these dimensions subjectively evaluated by people in the course of their everyday experience? How do such evaluations affect how people use a place or landscape for a given activity? In the context of greenway planning and development, answers to these questions may not only help explain the differences between perception and reality on such issues as water quality, but may also provide guidance for how we might better plan and manage greenways with people in mind.

To help provide this sort of information for greenway planning efforts for the Chicago River, we undertook a project with the principal objective to understand how people perceived and used the greenway corridor, and how they would like to see it improved for recreation and related experiences. Through a series of interrelated studies—using different methods and involving different stakeholder groups in different locations throughout the corridor—we learned many things about people's current thoughts and ideas for future greenway development (for a complete report of methods and findings, see Gobster and Westphal, 1998). The results from these diverse studies, however, also revealed a core set of human dimensions important to the evaluation of urban greenways that were held in common across stakeholders and localities. These dimensions were cleanliness, naturalness, aesthetics, safety, access, and appropriateness of development.

Our purpose in this paper is to elaborate on these dimensions and their meaning and utility for greenway planning. In the following pages, we describe more fully the background of our project, detailing the methods from three of the main studies from which we draw our results. Then, for each of the six dimensions identified, we highlight results from the studies, tie those findings to the broader literature in landscape perception and assessment, and illustrate how principles inherent in a given dimension have been implemented in the context of local demonstration projects and programs for greenway development in the Chicago River corridor. We conclude by discussing the applicability of these dimensions and methods of study to understanding other urban and non-urban greenways, and suggest how the findings from such studies can be used to inform greenways planning, policy, and management.

2. Project description and methods

From Lake Forest to Lake Calumet, the 150 mile (240 km) Chicago River corridor transects a spectrum of physical environments and human experiences across metropolitan Chicago (Fig. 1). Within Fabos's (1995) typology of ecological, recreational, and heritage greenways, the corridor has the potential to fit the criteria for all three designations. As an ecological greenway, segments of the river support some of the most biologically diverse ecosystems in the state and have been identified for protection and restoration as key pieces of Chicago Wilderness, a regional biosphere reserve (Chicago Region Biodiversity Council, 1999). As a recreational greenway, the corridor hosts some of the most popular bike trails in the state, while the river itself is beginning to attract a nascent pleasure boating population (Dwyer and Schroeder, 1982; Gobster, 1988). Finally as a heritage greenway, much of the river figures richly in the growth and development of Chicago as "nature's metropolis" (Cronon, 1991), and that part of the river within the Illinois and Michigan Canal Corridor is recognized as the nation's first National Heritage Corridor (Ranney, 1998).

Yet while portions of the corridor are highly successful in these respects, as a regional greenway there is much work left to do. Participants in a series of widely attended "Voices from the Stream" workshops in 1991–1992 raised awareness of the corridor's potential, envisioning it as a thread that could weave together the diversity of people and places into a continuous greenway to achieve recreational and related goals (von Klan, 1996). These local efforts drew the attention of Congress, resulting in the initiation of the Chicago Rivers Demonstration Project in 1993. With a broad-based interdisciplinary team of researchers and planners led by the non-profit group Friends of

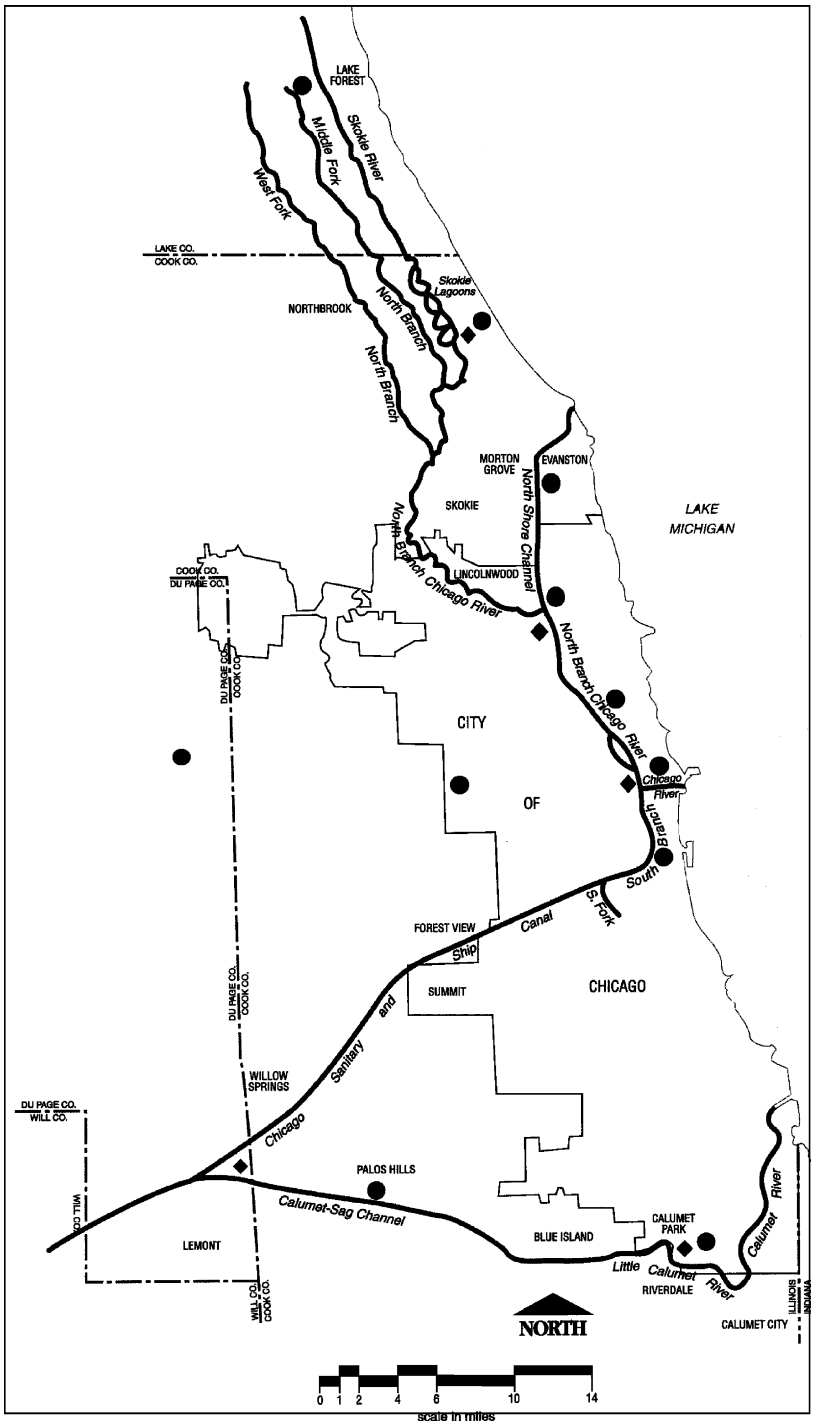

Fig. 1. Map of study area showing focus group (●) and on-site survey (◆) locations.

the Chicago River and the National Park Service's Rivers, Trails, and Conservation Assistance program, Chicago Rivers aimed at understanding users, resource conditions, and their interactions; developing an action plan for river enhancements, and initiating community based programs and projects as a national model for revitalizing degraded urban rivers.

As part of the Chicago Rivers partnership, we designed and implemented a series of studies to answer questions about stakeholders' perceptions, uses, and values. This complemented parallel studies in the habitat, water quality, and reclamation options for the river, while Friends of the Chicago River facilitated public dialogue and the development of local support groups throughout the corridor.

We chose a suite of methods that would effectively include the voices of key groups identified by the partnership: focus groups with nearby residents, on-site surveys with recreationists, and in-depth interviews with resource experts who influence river recreation opportunities. We also collaborated in five other studies to include additional groups and issues of particular social relevance. Ranging from brief chats to 2 h-long interviews, this combined effort resulted in contact with more than 5000 stakeholders. In this paper, we draw from the results of the three studies described in the following sections.

2.1. Nearby residents

Nearby residents are important constituencies for greenways; they tend to use them most often (Furuseth and Altman, 1991) and through their support can play a major role in the success of a greenway (Gobster, 1995). To develop a thorough understanding of this constituency, we chose a focus group methodology (Gobster, 1998a). Focus groups provide a means to obtain detailed, in-depth information from respondents in a way that is impossible in a mail or telephone survey (Krueger, 1994). Nine neighborhood areas on or close to the river were selected to represent the range of demographic and geographic variety found in the corridor. For contrast, two off-river focus groups, one city and one suburban, were also included in the sample. Within each identified neighborhood area, we randomly sampled from reverse telephone directories to recruit participants, using selection criteria to ensure gender and age diversity within and across groups. In all, 98 people participated in the 11 focus groups.

Using quick worksheet exercises followed by in-depth discussion, participants told the facilitator about their outdoor leisure activities; their awareness, perceptions, and uses of the Chicago River in their neighborhoods and beyond; and their thoughts about future river development and enhancements. To get nearby residents to express their feelings about the river in their neighborhood, for one of these worksheets we provided crayons and asked them each to draw a picture of the river, then asked them to turn over the sheet and complete the following statement "I am the Chicago River in your neighborhood. I am . . . " The worksheets were analyzed using descriptive statistics and a content analysis of the drawings. Tapes of the focus group discussions were transcribed and coded to allow for in-depth analysis of the content as well as development of some basic quantitative measures to compare groups and issues.

2.2. On-site users

Another key group in our project included the people who visited the river greenway. In contrast to our study of nearby neighbors, one major purpose of the on-site survey was to understand the wide range of users and activities taking place throughout the river corridor. To reach members of this group, we conducted an on-site survey at parks, trails, marinas, boat access points, and less developed recreation and exploration sites throughout the corridor (Westphal, 1998). We developed a purposive sampling method that would give us the greatest diversity of site types—from a highly developed downtown river walk that drew business people on their lunch hour to an undeveloped ad hoc site often favored by teens and children; and the greatest diversity of times—from the early morning birders to the evening anglers. Refusal rate was around 10%, resulting in a usable sample of 582 users.

A 24-item survey was developed that included both open- and closed-ended questions about the river corridor. Questions aimed at river use characteristics (activities during that visit, visit length, frequency of visitation, and means of transport to the site), perceptions of the river (likes, dislikes, and desired changes; importance of the river; perceptions of recent

improvements; ratings of facilities; potential problems), and demographics (age, gender, race/ethnicity, income, residence). All interviews were conducted face-to-face, with the interviewer noting the answers verbatim. Various statistical analyses were used to determine significant differences across site and activity, including cross tabulations with χ^2 and ANOVA.

2.3. Resource experts

Finally, a critical group to add to our understanding of the issues facing corridor development included those who affect greenway development in a professional capacity. In contrast to nearby residents and on-site users who largely affect the *demand* for recreation opportunities, this group can have an important effect on recreation *supply*. We identified experts in four areas of concern: public land managers, non-profit recreation and environmental interest groups, private commercial recreation providers, and commercial and industrial land and water interests (Gobster, 1998b). We conducted 27 formal, face-to-face interviews with 44 people representing 25 agencies, organizations, and companies. We also contacted several additional people by phone and requested reports and other materials to fill specific gaps in the information we gathered.

We asked each expert a similar set of questions, modifying our questions to fit their specific interests and expertise. Each interview began with a set of questions to characterize the agency, group, or firm in terms of their interests and responsibilities vis-à-vis the river corridor. The next portion of the interview asked about current and potential recreation opportunities with respect to facilities and programs. The final section of the interview focused on perceptions of river recreation opportunities. Interviews ranged between 20 min and 2 h in length. All but two of the formal interviews were recorded, and the interviewer took detailed notes. The interviews were transcribed for analysis, and along with supporting text material we used a qualitative analysis procedure to identify the salient issues and themes within and across groups.

3. Results and discussion

As mentioned above, results from these diverse studies converged on a core set of six dimensions held in common across stakeholders and localities: cleanliness, naturalness, aesthetics, safety, access, and appropriateness of development. We will discuss each dimension in turn. Results for each dimension are first discussed with respect to their common and divergent characteristics as expressed by respondents from the different studies. Next, we place the findings within the broader context of the landscape perception and assessment literature. Finally, each dimension is illustrated with two figures. The first is a representative drawing and statement from the "I am the Chicago River in your neighborhood" exercise that visually and metaphorically capture the essence of participants' feelings about the river with respect to a given dimension. The second illustrates the applicability of each dimension. Because our research efforts were closely tied to the broader objectives of the Chicago Rivers Demonstration Project, findings from our work were used in part to establish funding priorities for local demonstration projects. The photograph and extended caption highlight a project that exemplifies how these findings have been used to contribute to more successful greenway development. A more complete accounting of projects can be found in Grosenick (1998).

3.1. Cleanliness

The cleanliness of the river and its surrounding environment was by far the top concern of Chicago River stakeholders. In the focus groups, "condition and maintenance" was the most frequently discussed topic relating to people's current perceptions of the river, and more than 80% of those comments dealt with water quality (Fig. 2). In the on-site survey, more than half the respondents rated water quality a problem, almost two-thirds rated dumping of trash to be a problem, and one-third rated odor a problem. Some focus group and on-site survey respondents were aware of recent water quality improvements; for instance, a third of on-site respondents felt that rivers in the Chicago area have gotten cleaner. But of the three sets of stakeholders, the resource experts tended to be much more aware of and positive about the recent improvements to water quality.

The Chicago River corridor is very diverse, from its upper reaches in more rural and suburban settings to the main branch in the heart of Chicago and the

shipping-friendly straight channels of the southern reaches of the river corridor. Cleanliness, specifically as it pertained to water quality, was a concern across all the reaches, but the nature of the problem varied at different locations within the river corridor. In the northern reaches, where the river is called "the ditch," focus group participants were more concerned with flooding and debris: "... Our problem managing that ditch is that people do not want their particular bank cleaned. There's a tree that they loved and it falls over into the ditch and they do not want it removed." In the southern reaches, respondents were more concerned with contamination and the perceived toxic load in the water: "If you go into Hammond where the [Grand Calumet] goes into Illinois, they have signs up that say 'Hazardous Water—Danger' along the river. And that's scary, it doesn't even look like water. There is a lot of pollution being put in that way."

One somewhat surprising finding from our focus groups and on-site interviews was that many people held an idealized, even archetypal, image of what it meant for a river to be clean. This was reflected in the "I am the Chicago River in your neighborhood" statements and related discussion by participants (emphases added):

> I am a river. I want to be *clean and clear*.
>
> I'd love to be *clean and blue* as I was before the bad chemicals made me cough.
>
> It's *brownish water and that's ... pollution*, I do not know that you'd go down there and drink it, you know, *it's not a Colorado creek ...*
>
> It would be *nicer if it weren't muddy* and you *saw fish jumping ...*

These comments paint a picture of a clean Chicago River as one that more closely fits the reality of a mountain trout stream in Colorado. But the Chicago River was a prairie slough—it meandered, it moved slowly, it never was blue. Despite this idealized image of cleanliness, respondents in both the focus groups and the on-site survey also tended to hold a pragmatic view of the river, accepting that it is an abused waterway. This tolerance is reflected in the following focus group comments: "... they have polluted it for 200 years; now it could take that long to clean it up, but at least they're working on it," and "It's a break in the scenery and it has prospects for recreation although it is polluted." From this perspective, respondents were ready to recreate along and on the river, "as long as it doesn't stink too bad."

Understanding the basis of these two seemingly paradoxical themes is important to more effective greenway management. It may be that residents feel managers are not doing an adequate job based on residents' expectations of what a "clean" river will look like. The archetypal image might also have an impact on what people *envision* for the river. At the same time, acceptance of the river the way it is indicates planners and managers can move ahead with additional recreational and nature enhancements; these will likely be used and appreciated. Maintaining an awareness of the powerful subtext of the archetypal river might help planners, designers, and managers explain some public responses, and can help frame some outreach activities on behalf of slow moving rivers everywhere.

Cleanliness as an environmental quality issue is reflected in the broader literature as well. Clarity is a common indicator that people use to judge water quality (Smith et al., 1991; Canter et al., 1992; Gasteyer and Flora, 2000). The rapidly improving prospects for urban river greenways rest largely on the impacts of the environmental regulations created over the last three decades. The results of these laws and regulations are creating opportunities across the North America and Europe for recreation and other valuable experiences along the banks of urban rivers (Fabos, 1995; Westphal and Gobster, 1995).

Other issues related to cleanliness are not so clearly understood or readily handled by regulation. Neatness is one aspect of a clean environment where the act of "cleaning things up" may not always be the best solution. For example, mowing vegetation down to the shoreline edge is a common practice in many urban areas that can reduce wildlife habitat, increase surface water runoff, and impair other functional riparian values. Here, design and management might help by providing visual or informational cues that let people know that the landscape is being cared for (Nassauer, 1995; Gobster, 1999) (Fig. 3).

Fig. 2. Cleanliness: “I am the Chicago River in the Lathrop Homes and I am the most disgusting, most dangerous, most foul, and the most dirty body of water in the Chicago area. I want and need to be cleaned. Please save me before it’s too late.”

Fig. 3. Cleanliness: the desire for a cleaner, healthier environment has spurred several grassroots ecological restoration initiatives along the Chicago River corridor. Pictured here, local volunteers help to re-establish wetland and wet prairie ecosystems to improve water quality and reduce storm water runoff at Prairie Wolf Slough near the headwaters of the river (photo credit: Friends of the Chicago River).

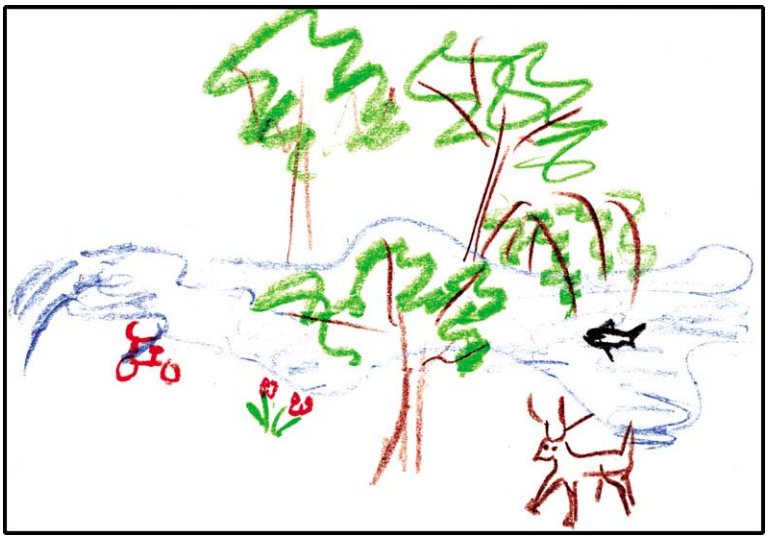

Fig. 4. Naturalness: “I am a haven for many animals. I control the waters against floods. I am a natural showplace of water, trees, and animals.”

3.2. Naturalness

Naturalness is a key dimension that people relate to in any ecosystem, no matter how urban it is. When focus group participants talked about the characteristics of the river that were important to their enjoyment and use, more than 40% of their comments referred to the natural environment, with vegetation and wildlife particularly adding to their experience of the river (Fig. 4). On-site survey respondents

Fig. 5. Naturalness, because of the importance of natural areas, nature restoration was a primary objective in many of the projects that have grown out of the Chicago Rivers project. At Canal Origins Park just south of downtown Chicago, volunteers restored the naturalness of the river bank by re-grading it and planting native vegetation. This project demonstrates techniques for riverbank restoration that do not require riprap or steel sheet pile, currently the dominant shore type along much of the river in its urban reaches (photo credit: National Park Service).

concurred, with trees, wildlife, natural areas, and other nature-related attributes accounting for more than a third of all open-ended comments about what they liked best about the stretch of river they were using that day. Resource managers cited both natural and cultural features as important for attracting recreationists.

In the most remote sections of the greenway corridor, people saw wild nature as a key resource, and mentioned nearby natural areas and ecosystems that should be protected and restored. In the more urbanized reaches, people more often mentioned "tended nature"—landscaped areas of trees, grass, flowers, and other greenery—as a valued feature, and saw the river corridor as a principal provider of nature in their neighborhood. As one participant in our downtown focus group remarked, "You know, it is nice to live nearby. [Across the river, on the other bank] you've got those nice trees. It's the only green we've got around here." But the perception among greenway corridor users and residents that there was a lack of natural areas and conditions was not unique to densely developed areas; in our on-site survey this was rated as a problem by at least a fourth of on-site respondents at all but one of the survey sites—those at a large and popular forest preserve. Our respondents appreciated the existing natural features and wanted more.

The importance of naturalness is well supported by the landscape perception and assessment literature (Hull et al., 2001). A growing body of research confirms and elaborates upon the significance of nature not only as a contributor in people's aesthetic and recreational experiences; it has also increasingly been found to play an important role in people's physical and psychological health and well-being (Ulrich, 1984; Wells, 2000; Kaplan, 2001; Kuo, 2001). Interactions with natural spaces can provide important restorative opportunities, relaxation, and stress reduction (Fig. 5). These interactions can be especially important in urban areas, where access to nearby nature is often limited.

3.3. Aesthetics

People's immediate response to environments is often aesthetic in nature, and how the environment looks can color people's perceptions of how well it is managed. Of the range of positive benefits focus group participants felt the greenway corridor provided, those mentioned most often were aesthetic in nature: the beauty and scenery afforded by river views, the peace and solitude of being down by the river's edge, and the presence of the river as a contrasting element within the urban fabric (Fig. 6). In response to an open-ended question, scenic beauty was also mentioned most frequently by on-site survey respondents as the thing they liked best about the corridor location where they were interviewed, while the related experiences of solitude/quiet and peacefulness were mentioned third and fourth most often.

One inner city focus group participant said that when people get a chance to look at the river and not just the factories "... they feel better." But another participant from the downtown focus group argued that aesthetic value can come not just from the river and natural features, but also from the built environment: "you have the tranquility and peacefulness of being right on the water and yet, this extreme contrast of the incredibly busy city with the beautiful skyline." Consistent with our findings on naturalness, aesthetic experiences were seen as especially important and restorative in a busy, urban life. They can also inspire creativity and the creation of more beauty (Fig. 7).

> We feed the ducks, we picnic along the river frequently. In various spots there are little park-like areas although a lot of people do not know about them so that is part of the fun of kind of exploring the river in the area and you are only a few feet away and you see just millions of people streaming by and you're isolated in a very beautiful little area. You see a lot of people drawing and painting, taking pictures, and filmmaking.

In research on landscape perception, it is the aesthetic dimension that is most often mentioned by respondents and studied by researchers (Daniel, 1999). People's scenic preferences for wildland (e.g. Chenoweth and Gobster, 1986), rural (Schauman, 1998), and urban (Schroeder, 1989) landscapes show a strong favoritism toward natural features, with human-made elements nearly always seen as detracting from scenery. Our findings both agree with and expand upon this past work. While aesthetics was an important dimension in our participants' perception of the river corridor, it tended to be outweighed by other dimensions, especially cleanliness, in terms of the frequency that people mentioned it. And while

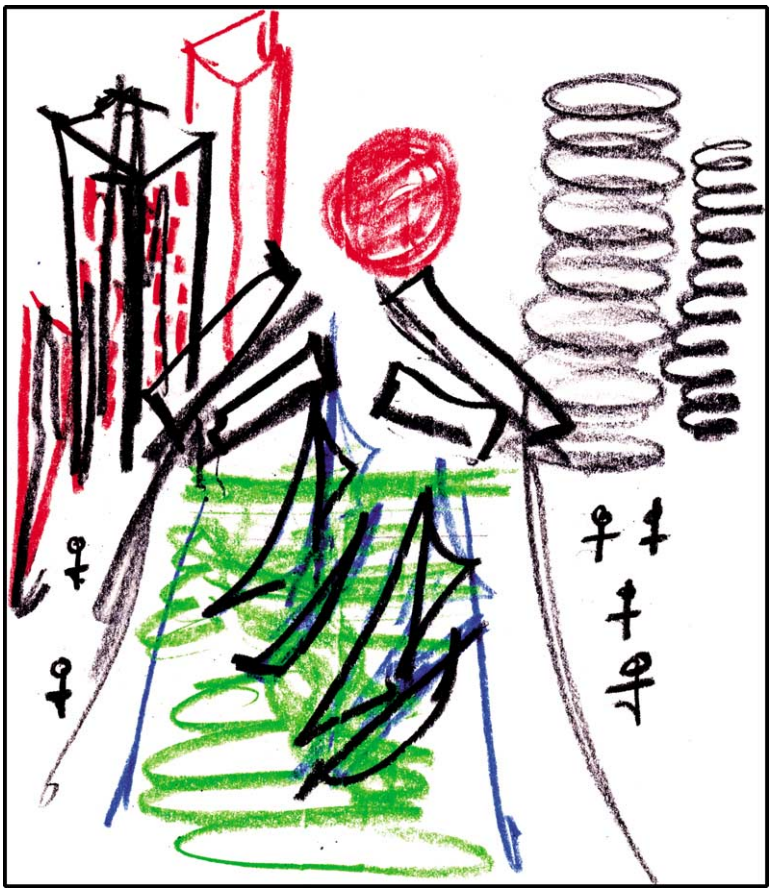

Fig. 6. Aesthetics: “I am the flow of life and beauty, sound and breath off the lake and winds holding back the teeming millions to stop and reflect, look, listen, and smell.”

Fig. 7. Aesthetics: at Gomper’s Park on Chicago Northwest side, a frequently flooded ball field adjacent to the North Branch of the Chicago River was restored by local residents as a 2 acre wetland. Besides serving a range of environmental and educational goals, the project has become a focal point of natural beauty for the community, which has celebrated it through a music workshop and this mural project, done by a local high school (photo credit: Friends of the Chicago River).

natural beauty was important along even the most urban stretches of the corridor, buildings, distinctive bridges, and other human creations also played an important part in people's aesthetic appreciation of the riverscape. These distinctions suggest the need for landscape perception research to take a broader, multi-value approach to the study of environments, especially in urban areas (Gobster, 1999).

3.4. Safety

Safety is an important dimension in the perception of urban environments and one that is sometimes perceived to be at odds with enhancing the naturalness and aesthetics of urban green space. In the Chicago River project, people's concerns focused on two different aspects of safety: *physical* safety—children falling into the river, health concerns about direct physical contact with polluted water; and *personal* safety—the river as a hang-out for youth gangs engaged in criminal activity, a place for drinking and drug use, and as habitat for the homeless (Fig. 8).

There were considerable differences in safety perceptions across the corridor. In one stretch youth gangs were prevalent and limited the use of some of the sites. In other reaches, respondents were concerned about the possibility of having an accident. While the solitude provided by some greenway locations was welcomed, the accompanying isolation was also unnerving for some respondents. As one focus group respondent remarked: "The I&M canal is a little hazardous because you're out there all alone. But Lake Katherine has the peace and the quiet with a general semblance of safety." Our discussions with several resource experts about the prospects of more recreational boating on the river was strongly colored with talk about safety. Marina operators, for example, wanted better boater training and stricter enforcement of safety regulations for drunk driving, while marine police saw understaffing and the multiplicity of jurisdictions as serious impediments to their job. Barge operators were the most concerned and emotional about boating safety issues, and saw the proliferation of smaller pleasure craft on the same narrow waterways with them as a terrible accident waiting to happen "... a tow boat with a bunch of barges can't stop on a dime, cannot turn around. We were working out there. There are too many pleasure craft, they have no idea. It's a safety issue. We don't want to kill anybody."

Much of the landscape perception literature on safety relates to the management of vegetation, which has long been an issue of much conjecture and lore. Research over the years has aimed to understand how to have safe yet appealing parks and greenways. Researchers have found that a more open understory that provides adequate lines of sight increases perceived safety in urban park settings (e.g. Schroeder and Anderson, 1984). This does not require a landscape devoid of understory, but rather suggests that managers should be conscious of where they place and how they manage vegetation in light of personal and physical safety concerns (Nasar and Jones, 1997; Kuo et al., 1998; Kuo and Sullivan, 2001). Design researchers are exploring landscape options that meet aesthetic and safety criteria (Michael and Hull, 1994; Kaplan et al., 1998). Current research also shows that in some cases increasing vegetation can actually *reduce* crime. Appropriate landscaping decreases stress, often a predecessor to crime, by increasing the psychologically restorative benefits of the setting (Kuo et al., 1998; Kuo and Sullivan, 2001). The landscaping also projects that managers care about making the setting a pleasant place to be. And making places attractive to socially desirable uses can in turn create the critical mass and active concern of people needed to repel socially undesirable uses (Luymes and Tamminga, 1995; Kaplan et al., 1998; Kuo and Sullivan, 2001) (Fig. 9).

3.5. Access

Access is an increasingly important topic with regard to the human dimensions of urban ecosystems. Nearby nature experiences are not only lacking in central cities, but development is reducing nature access in suburban and fringe areas. Access emerged as a key dimension in the Chicago River project, and did so in various forms. In our focus groups, on-site survey, and interviews with recreation providers, participants called for better *physical* access to the river through public open space, boat and canoe launches, and riverfront trails. But sometimes all that was called for was better *visual* access; like the drawing and quote in Fig. 10, views to the river are often blocked by fences and weedy growth.

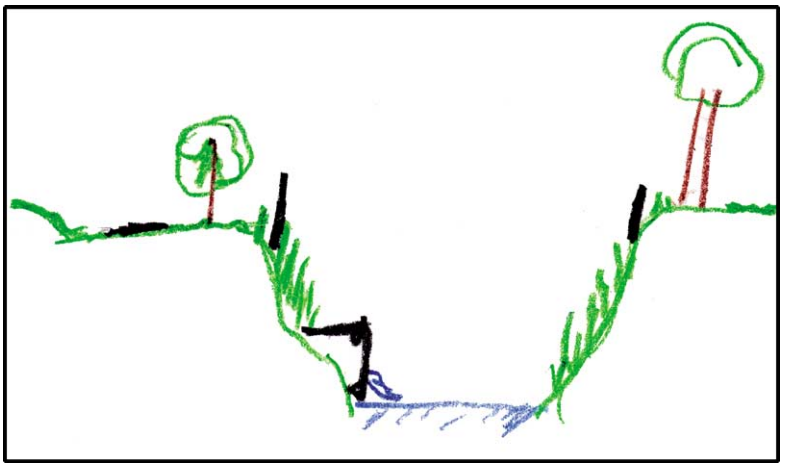

Fig. 8. Safety: “I am deep, dirty, and dangerous. I have many unguarded areas. In winter, children try to cross on the ice. Derelicts sleep under my bridges.”

In many places along the corridor, but especially in its most urbanized reaches, the river provided a visual break. As one focus group participant remarked: “If you have to do something downtown—like go where you pay your traffic tickets—and you walk across the bridge, that’s a nice view.” Visual access to scenery such as the river is often highlighted in real estate ads, where tenants can pay a significant premium for a view. One downtown focus group respondent was eloquent about the delights of her visual access to the river: “My balcony floats over [the river] and I sit mesmerized just about every summer evening. Sometimes

Fig. 9. Safety: rather than “de-vegetate” natural areas to eliminated hiding places, a more proactive strategy may be to “re-people” the area. This strategy has worked effectively at the Beaubein Woods Forest Preserve on Chicago’s South Side, where a pond adjacent to the Calumet River was restored to improve riparian and fish habitat. Fishin’ Buddies!, a youth mentoring group in the local African American community, played a key role in the restoration effort, and today has transformed the pond into a popular place to fish and picnic (photo credit: Fishin’ Buddies!).

Fig. 10. Accessibility: “On one side it is concrete in front of it and over here the weeds are so high that you can’t really see unless you go over the top of the bridge . . . They need to cut some of the weeds down and clean up and then people can, you know, have more respect for it”.

Fig. 11. Accessibility: friends of the Chicago River’s U-Can program trains urban youth in canoeing and other skills so that they can serve as guides and docents in local river adventures. U-Can is one of several initiatives that have been implemented by organizations and municipalities to increase visual and physical access to the river (photo credit: friends of the Chicago River).

there's a blimp, and there's trains. The horses used to go across Kinzie Street bridge, and it's just fun to see all the different things. It's heavenly, really."

Others are not so fortunate with respect to access, and another key aspect that came out of our studies spoke to *equity* or equal access. In our focus group discussions and interviews with resource experts we heard about the disparity of access to the river and to riverside facilities and enhancements on some stretches of the corridor compared to others. While not part of the three studies reported on here, a companion study of the corridor by Nilon and Huckstep (1998) found that those residing in lower income and minority areas in the corridor were most lacking in both the quality and quantity of access.

Support for access as a core environmental response dimension is found in a wide range of literature on environment-behavior issues. In terms of visual access, many researchers argue that humans have an innate preference for landscapes that are at least somewhat open so as to provide a view or "prospect," and do so in ways that afford coherence and legibility to the environment being perceived (Kaplan and Kaplan, 1989). Along with visual access, there is a strong demand for physical access to natural landscapes, especially those with water bodies, and a long tradition in North America and parts of Europe for providing it through public policy (Smith, 1993; Fabos, 1995). In more recent years, the idea of physical access as an equity issue has gained a higher profile as public discourse and policy have worked to expand the opportunities for nature and outdoor recreation experience among older adults and young children, racial and ethnic minority groups, individuals with disabilities, as well as those with new or non-mainstream recreational interests (Gobster, 2002) (Fig. 11).

3.6. Appropriateness of development

Human use and development are facts of life for most urban ecosystems. The key is to encourage appropriate use and development of greenways so that both the ecosystems and the experiences for which they are valued can be sustained. The idea that new development should be appropriate to the context was expressed by people across the range of Chicago River settings. In the wilder sections of the greenway corridor, respondents urged that new recreational development respect the natural qualities of the environment that others were trying to protect (Fig. 12). In some of the central city neighborhoods the idea of appropriate development related more to the cultural context than the natural one, where people were concerned that new development showed sensitivity to the older building styles or to the preferences of the racial or ethnic groups that lived there. And in downtown Chicago, people's desire for nature was no less of a priority than it was in less populated areas, but again people felt that the natural environment should be integrated with sensitivity to the urban context in which it is located.

Many times urban waterfront revitalization projects are thought of as "spectacular" developments (Sieber, 1993; Sandercock and Dovey, 2002), grand redevelopments with an entertainment theme. Respondents in our neighborhood focus groups did not want these types of development for most sections of the corridor, and expressed concern that too much might be built. One debate among participants in a north suburban focus group illustrates this aspect of the issue well:

> [Brian] A paved bike path near where we go would enhance the area. The other thing I think would enhance it without changing the nature area is, and some people will disagree with this, but since I have little kids I would love to see some understated swing sets or something down in that area for kids to play ...
>
> [Vern] I have an objection there. I think the savanna should be made for nature study. I think there are other facilities available for baseball and so forth, but that's a rare, a very rare thing and if we lose it, it's gone forever.
>
> [Sharon] People get carried away once they start cleaning it up and putting in a path. Lake Forest always does the biggest and the best, but then pretty soon you're going to have tennis courts and everything else.
>
> [Brian] What I've seen in other areas first they put in a path, then they do fences and pretty soon you're decorating it up. Just a simple path without decoration is what's best.

Fig. 12. Appropriateness of development: "I have been neglected until recently when interest rose to develop the land, fighting between developers and people wanting to preserve vegetation."

Fig. 13. Appropriateness of development: This river development project, in Chicago's Northcenter neighborhood, aimed for harmonizing recreational use with the quiet neighborhood setting. Local neighbors built a natural trail and informal seating areas along the bank to facilitate nature appreciation and exploration for children and adults who lived nearby (photo by Pete Leki).

While studies of landscape preference have provided much useful information on how to manage environments to maximize aesthetics, because of people's anti-development bias this research has not been very helpful in telling managers how to best design or site new development that will inevitably take place. Alternatively, studies of the appropriateness of development have been conducted to provide information on how people perceive "what belongs where" (e.g. Wohlwill, 1979; Groat, 1988). Our studies provide good support for the idea that different levels of development are appropriate for different types of settings, and suggest that design solutions for greenway trails, water edge treatments, vegetation management, and other facility and design features should be fine tuned to the physical characteristics of the place and the desired experience of the greenway user (Fig. 13). The USDA Forest Service's new "Built Environment Image Guide" (2001) is a good example of how these principles can be applied to different forest areas and regional settings.

4. Conclusions and implications

In this paper we describe six valued human dimensions of urban greenways: cleanliness, naturalness, aesthetics, safety, access, and appropriate development. We do not claim that these are entirely new ideas. In fact, as our results and discussion indicated, there is strong support for their existence and validity based upon three decades of research in landscape perception and environment-behavior studies. Several of these dimensions—naturalness, aesthetics, and appropriate development in particular—can also be traced back to ideas of 18th century Romanticism brought forth by philosophers such as Thoreau and put into practice by landscape architects such as Olmsted.

What we find to be significant is that while most prior research has focused on one single dimension or another, our findings point to the multi-dimensionality and interdependence among human concerns about landscapes, in this case an urban greenway. Additionally, we think it is noteworthy that these dimensions emerged from a set of studies with different methods and target populations, and that they were as fundamental in the lush neighborhoods of the rich and powerful as they were in the distressed neighborhoods of public housing developments. Consequently, we advocate that these dimensions be used to understand and measure the success of greenways in other locations, in both urban and non-urban settings.

However, within these dimensions it is important to recognize that there could be substantial variances by culture and location. That is to say, what is beautiful in Germantown might not be beautiful in Chinatown, and what is appropriate development in a downtown area might not be appropriate in a rural stretch of the same greenway. Cleanliness was the most obvious human dimension with variation across the greenway corridor. Cleanliness was important everywhere, but the salient characteristics varied from downed trees to drowned rats to concern about toxins.

Still, these dimensions will likely hold in many diverse settings, and therefore they offer a starting place for greenway planners, designers, and managers. Our study was in a quite urban, developed setting. For contrast, consider applying these dimensions to a wilderness setting. Access and naturalness are defining features of wilderness, access because it is limited and naturalness because it is assumed to be absolute. Safety is not likely to be associated with a fear of criminal youth gangs or hazards from toxic dumping, but rather the perceived risk of getting lost or having an accident. Cleanliness is embodied in the dictum "leave no trace." Appropriate development is set in law: wilderness shall contain no human development. And the aesthetic experience of untrammeled nature was a fundamental idea behind the official designation of Wilderness Areas in the United States (Nash, 1982; Petulla, 1988). Thus the criteria within the six dimensions will vary, but the dimensions themselves are likely to hold across a range of natural and open space environments. Consequently, we suggest that greenway planners and managers can use these dimensions to frame their inquiry, participation, and design processes, and set about discovering the criteria unique to their greenways and constituencies.

The dimensions we have discussed here are not discrete, but should be considered interdependent with one another. For instance, oftentimes aesthetics and naturalness go hand-in-hand, cleanliness is frequently associated with safety, and managing a site to maximize aesthetics can sometimes impact people's perceptions of appropriate development. This interdependence underscores the importance of understanding the multi-dimensionality of people's concerns about greenways and other landscapes, and the hazards of dealing with them from a single-value framework (Eaton, 1995).

The Chicago Rivers Demonstration Project was a large, involved, long-term effort that addressed a river system so large that it pushes the boundaries of "greenway." Still, the methods we used—a suite of assessments in a wide range of sites—are applicable at a smaller scale. The key factors are to recognize *all* the stakeholder groups and potential sites and areas of interest, and to attempt to understand these groups through a coordinated set of investigations. In Chicago Rivers we resisted the assumption that natural areas matter only in the suburban areas, and worked in dense urban and inner city neighborhoods where nature and our ideas of it challenged us to think outside established conventions. The findings from this component of the project were critical, and the research led to invigorating partnerships between environmental non-profits and local communities.

Another key factor of the success of the Chicago Rivers Demonstration Project was the intertwining of research and application. The research was developed to address the real needs of Friends of the Chicago River and others who would implement the greenway concept across the river corridor. What we learned in the research fed directly into planning and organizing, which in turn led to the criteria used to select the demonstration projects. The research process itself raised awareness among residents of the metropolitan region of the improvements that had occurred in the river corridor, and the improvements that were possible in the future.

Such a research approach could be especially helpful with managing "third generation" greenways (Searns, 1995), multi-functional greenways that build upon the first generation focus of boulevards and

parkways and the second generation of trail-oriented recreational greenways. Managing the multiple uses of the third generation greenway presents serious challenges (Moore and Scott, 2001). How do planners and policy makers incorporate the views of diverse publics in the redevelopment plans? One approach is to foster public dialogue and participation (Sandercock and Dovey, 2002). In a region as large as the Chicago metropolitan area, accomplishing this is no small task. The research outlined here intersected and supported the public outreach and organizing efforts of a non-profit, as well as the planning process for the City of Chicago and other jurisdictions through the corridor. In this way, we were able to provide necessary information as well as a platform for understanding the various visions and interests of a range of publics throughout the metropolitan region.

We have stated throughout this paper that the dominant theme identified by our respondents was cleanliness. But perhaps on an even more fundamental level what surfaced most clearly in our findings was the depth of caring people exhibited for the greenway corridor. This caring about their river and environment was evident in each focus group and in the on-site and expert interviews as well. Such deep interest and concern can provide a major opportunity for greenway planners, designers, and managers as they strive to create clean, natural, aesthetically pleasing, safe, accessible, and appropriate spaces that improve the quality of life of urban dwellers. To the extent this concern can be transformed to action, greenway planners and managers will have a powerful force for positive change, as we witnessed near the close of one of our focus group discussions:

> [James] Instead of talking about it, they should do something about it.
>
> [Lee] Who do we need to contact for the making of a better river?
>
> [Terell] Let's get some action.
>
> [Maxine] We can start this weekend by helping out on the river cleanup.
>
> [Lee] But is that our job?
>
> [Maxine] Yes. It's our community and if we don't put something into it, no one else will, either.

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