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Urban parks as green walls or green magnets? Interracial relations in neighborhood boundary parks

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Abstract

A recent paper in this journal (Solecki and Welch, 1995) describes how urban parks that lie between racially different neighborhoods can become ''green walls'' or barriers to use and appreciation. Although this phenomenon is well grounded in the experience of many who plan for, manage, and live near parks in racially and ethnically segregated cities, an analysis of the authors' logic and methods suggests that there may be better ways to test the green wall thesis than with physical–biological measures of park tree condition. Examples from research in Chicago area parks illustrates how alternative methods and measures from the social sciences might more clearly and directly identify the perception and experience of racially defined barriers. A case study of Chicago's Warren Park provides a counterexample of a boundary park that acts more like a ''green magnet'' than a green wall, and addresses the potential role of such parks as active agents in improving interracial relations. © 1998 Published by Elsevier Science B.V.

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1. Introduction

In a recent paper in this journal, ''Urban parks: green spaces or green walls?'', Solecki and Welch (1995) ask a provocative question about the ability of urban parks to provide amenity values to adjacent communities that differ socially and economically from one another. They hypothesize that when parks lie between neighborhoods that are distinct in terms of race and class, the parks can act as boundaries that ''may also function as barriers between neighborhoods and discourage passage between them,'' and could result in a ''lack of use, community neglect and eventually lack of maintenance'' (p. 94) of the park. Solecki and Welch call such parks ''green walls'', and test their thesis by identifying boundary parks in two historically segregated Boston communities. By comparing the tree conditions in four boundary parks with non-boundary parks in the two communities, they conclude that at least some of the boundary parks they identify act as green walls to reduce the amenity values provided to adjacent neighborhoods.

Solecki and Welch address a critical issue concerning urban parks, and one that is often neglected in park planning and management. As noted by Jane Jacobs, 1961; in *The Death and Life of Great American Cities*,

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parks can be volatile places for social interaction, and a park's physical location and design can help to determine whether it will be bustling with activity or a "dispirited city vacuum." Thus, if parks form boundaries that are perceived by nearby neighbors as green walls rather than green spaces, it behoves planners and managers to develop strategies and alternatives to counteract the vacuum effects of boundary phenomena.

This paper is in part a critique of the Solecki and Welch green wall thesis and in part what I hope will be seen as a constructive expansion of the discussion on the social use and values of park space in diverse urban communities. The paper begins by examining the logic and methodology by which Solecki and Welch arrive at their identification of boundary parks as green walls and how such parks result in diminished amenity value for neighboring residents. The argument is made that just because a park forms a boundary between two distinct groups, it does not necessarily follow that the park will be perceived as a barrier to use that will result in the decline of its amenity value. Additionally, it is suggested that the physical and biological measures of park condition used by the authors as evidence of reduction in park amenity value may not provide the best test of the green wall thesis.

Following this critique, examples are given for how alternative social science research methods might be used to examine the green wall phenomenon – whether it exists or not, how it might function, and what its consequences might be. Examples draw on recent work on parks in Chicago, a city that, like Boston, has experienced significant interracial problems over the years.

The paper concludes with a case study of a Chicago park that conforms to Solecki and Welch's definition of a boundary park yet functions more like a "green magnet" than a green wall. In questioning whether Solecki and Welch's finding in Boston is a foregone conclusion, the case study highlights the existing and potential roles that urban parks can fulfill as recreation resources, and in a larger sense, as active agents in improving interracial relations in urban communities.

2. Critique of the green wall thesis

Solecki and Welch begin by describing the process through which a park becomes a green wall and loses its amenity value. The three main steps in the process are paraphrased below:

- Formation of a boundary – Social and political forces such as zoning, public and private development projects, and race and class divisions help to shape the urban landscape. Large, single land uses such as parks become boundaries when decisions are made that drive adjacent development and settlement patterns. In their case study communities of Roxbury and North Dorchester in central Boston, the authors cite suburban "White flight", "redlining", lending discrimination, and university expansion as forces dividing residential neighborhoods along race and class lines, and examine parks as the boundaries along which upper income Whites and lower income African-Americans are divided.
- Perception/experience of a barrier – When parks act like boundaries that separate highly segregated communities, and especially when the boundaries persist, parks can become barriers between different residential neighborhoods. No longer a part of the community, the park is seen as a wall discouraging use and passage through it. No neighborhood feels ownership or control over the park, and thus the park lacks a strong constituency to ensure its maintenance. The park itself plays no active role in this transformation from boundary to barrier, but is merely a "passive agent" governed by external social forces.
- Reduction in amenity value – Beliefs and experiences that the park is a wall to the adjacent neighborhoods result in lower use, minimal through traffic, and poor maintenance of park conditions. These factors indicate a reduction in the amenity value of the park and its viability as a recreation resource.

2.1. Measurement of boundary formation

This element in the authors' thesis is the least troublesome, and provides partial evidence of the existence and persistence of boundary conditions in their study parks. Using maps of U.S. Census Bureau tract level data for 1990, the authors found 4 parks out of a possible 58 lying along lines where census tracts

were more than 50 percent White on one side and 50 percent or less White on the other. Further analysis of 1980 and 1990 census tract and block area data showed the formation and in some cases persistence of socio-economic differences along the edges of the study parks.

From the analyses and qualitative descriptions the authors present, it is revealing to see how large single land uses or physical resource features like parks can become boundaries between socio-economic groups. While an important part of landscape ecology is concerned with understanding the flows and interactions among adjacent landscape elements (e.g., Forman, 1995), few studies have examined the movement and alignment of urban communities in relation to physical landscape patterns. In this respect, the authors' work contributes to a better understanding of the landscape ecology of urban environments.

2.2. Measurement of barrier perception/experience

As stated at the outset of this paper, just because a park forms a boundary between two different communities does not mean that it is or will become a "green wall," or barrier to use. On this important step in the process whereby a boundary park may lose its amenity value, the authors offer no explicitly collected data to determine whether the four boundary parks they identified are perceived or experienced as barriers by the adjacent neighborhoods.

A major part of the problem in the authors' analysis appears to lie with their ambiguous use of the term "boundary park." They state that "Boundary parks, by definition, are located between different neighborhoods"; they "can act as sharp dividing lines separating highly segregated residential neighborhoods"; and "In extreme cases, these boundary parks may also function as barriers between neighborhoods and discourage passage between them" (p. 94). These early references connote a neutral value to the term boundary park, and it is only when the barrier function of a boundary is present that its negative impact might be felt. This reading generally conforms to dictionary definitions of a *boundary* as "a line or strip that marks or shows a limit or end (as of a region or a piece of land)," and a *barrier* as "something immaterial that separates or marks off or serves as a barricade" (Webster, 1995). Shortly after this and for the remainder of the paper, however, the authors use boundary park as a negative term: "If a park functions as a boundary in these neighborhoods, it will be argued that it is not fulfilling its primary role as a recreation and open space resource" (p. 94). What the authors are really talking about here is barriers, for it would be incorrect to say that "If a park is located between different neighborhoods (their original definition of a boundary park), it will be argued that it is not fulfilling its primary role as a recreation and open space resource" or that "If a park is located between a lower income African-American neighborhood and an upper income White neighborhood, it will be argued that it is not fulfilling its primary role as a recreation and open space resource." The authors do not assert these relationships, yet by not differentiating a boundary from a barrier their analysis of boundary formation and persistence is left open to these interpretations.

2.3. Measurement of reduction in amenity value

Even if the authors believed that boundary parks as they identify them are automatically perceived and experienced as barriers, they provide little if any evidence that such parks reduce the amenity value available to adjacent neighborhoods. The authors state: "There may be numerous indications that a park functions as a boundary and is neglected by the surrounding neighborhood: low rate of use, minimal through traffic and little maintenance as evidence by trash problems, weed and turf overgrowth, and trees in poor condition" (p. 95).

Behavioral measures of use would seem to be the most direct indicators that the park's amenity value to adjacent neighborhoods has been reduced – if a park is truly a green wall, one should be able to measure, as the authors cite, lowered levels of use and few pass throughs by neighborhood residents. Information on neighborhood residents' perceptions, attitudes, and reported behaviors or intentions would also help to gauge lowered use and other outcomes related to a park's diminished value as a recreation resource. Indirect physical and biological measures of maintenance could also be useful, and it is in this way that the authors attempt to quantify a reduction in amenity value. How they frame their analysis and what mea-

sures they use, however, are problematic in a number of ways.

First, they attempt to tie indirect indicators of park condition to community neglect resulting from lack of a strong constituency, stating that boundary parks ''might be in poor condition relative to other parks because no single neighborhood will apply political pressure to have the park maintained'' (p. 94). While this may be a sufficient condition in some cases, including the study parks, it is not a necessary one. Simply because a single group does not exert control over the entire park does not rule out the possibility that there will be strong support for maintaining and enhancing the condition of a park. In many cases, multiple user groups, even groups that conflict with one another, will form coalitions to argue for maintaining and improving the condition of the facilities they use.

Second, while a strong, supportive community constituency can certainly encourage park administrators to keep a park in good condition, it would be incorrect to assume that park upkeep depends solely on pressure exerted at the local level. Many park districts have maintenance and landscape divisions that operate at the regional level; and trash pickup, mowing, tree planting, and related activities take place relatively independently of how active or inactive local neighborhoods might be in the park decision making process. Likewise, citywide watchdog groups often make up for the lack of local activism in ensuring that resources for park maintenance and enhancement are allocated in an equitable manner.

Finally and most importantly, the choice of specific measures of park condition is problematic in several aspects. Of the types of indirect measures considered, the authors dismiss trash and weed and turf overgrowth because they ''indicate only short-term neglect,'' and settle on measures of tree condition because they ''are more indicative of the quality and level of longer-term maintenance programs'' (p. 95). While this long-term approach may have some merit, there could be a considerable lag between the time that a park becomes a boundary park and the time the conditions of the trees change. For example, the authors state: ''Two parks in North Dorchester, Ceylon and Corbett, for example, most likely changed roles from boundary parks to neighborhood recreation resources when the African-American neighborhood expanded to enclose the parks'' (pp. 94-95). Using the authors' indicator, one would expect to see an improvement in the condition of the parks' tree vegetation. But realistically, how long would it take for tree condition to improve? In developing strategies to address boundary phenomena, a more temporally responsive measure might be better.

Three measures of tree condition are used to examine the effects of being a boundary park: percent of trees in good condition, species diversity, and size class diversity. In applying these measures, the authors find partial support for their thesis, showing some differences between boundary and non-boundary parks. But while these measures may reflect a reduced amenity value in a general sense, it is questionable whether one can ascribe this reduction to any kind of boundary phenomenon. For their strongest measure, this is evident when one looks at the percent of trees in good condition relative to other indicators of amenity value cited by the authors – use levels and maintenance. In some cases, poor tree condition can result from high use and improper but unintentional mistreatment of trees by park users and maintenance crews, rather than from low use and lack of maintenance. For example, Lincoln Park is the most heavily used park in Chicago, but a 1991 survey of the park's vegetation found that only 9 percent of the trees were healthy. More than 80 percent of the trees were in poor condition; 50 percent of the younger trees showed serious basal injuries caused by lawnmowers and weed whips, and 25 percent of the older trees showed decay caused by park users dumping hot charcoal from their barbecue grills at the bases of the trees (Green, 1991). Instead of being a sign of neglect, this report of poor tree condition in Lincoln Park was a wake up call to park planners that the park was being loved to death (Williams, 1990).

As for the measures of tree species and size class diversity, a host of intervening factors might complicate their interpretation as indicators of reduced amenity value: park size, park age, environmental factors (e.g., slope, soil type), original design intent, and so on. Each of these factors could be important reasons for park tree diversity, irrespective of whether a park may be a green wall. For example, although it would not fall under the authors' definition of a boundary park, Chicago's Grant Park would rate below average in amenity value due to the low species and size class

diversity of its trees. Yet Grant Park is one of the most highly regarded parks in Chicago, in part because it claims one of the largest monoculture stands of mature American elms (*Ulmus americana*) left in the US (Kendall, 1995).

3. Toward an improved understanding of parks as barriers

Despite the issues raised about Solecki and Welch's paper, there is little doubt that the green wall phenomenon is a serious reality in some urban parks, including perhaps the parks these authors identified. Many parks do deter use and passage by individuals from their surrounding neighborhoods and through neglect are diminished in their amenity value as recreation resources. But to understand these outcomes, one needs better knowledge and measurement of the barrier aspects of boundaries as they relate to surrounding communities. This is the missing link in Solecki and Welch's discussion of the green wall thesis. Social science research methods can help to identify the existence, function, and consequences of racially related park barriers, as shown in some recent investigations in Chicago.

3.1. Lincoln Park ethnicity study

As part of a framework plan developed to guide future park planning (Chicago Park District, 1995), research was undertaken to examine perceptions and recreational uses of Lincoln Park. Because many racial and ethnic neighborhoods abut the park, part of this research focused explicitly on current and potential minority park users. An on-site survey of 500 African-American, Hispanic, and Asian-American park users found that approximately 10 percent of minority park visitors had experienced racial discrimination in the park sometime in the past (Gobster and Delgado, 1993). Most incidents of discrimination resulted from interpersonal interactions with park visitors of other racial or ethnic groups; these incidents included verbal harassment, physical gestures or assaults, and non-verbal behavior resulting in a feeling of not being welcome. A follow-up study of 289 individuals in 35 ethnic minority focus groups (Delgado, 1994) provided additional information on how racial tensions can alter use of the park. For example, in a focus group of Chinese-American senior citizens, several individuals remarked they were afraid to use certain areas of Lincoln Park because of verbal harassment by African-American teens. The seniors concentrated their use in one area and visited the park only during the morning. In another focus group, Cambodian-American adults mentioned incidents where White adult park users told them to leave an area because they didn't "belong" in that part of the park. Similar kinds of incidents were reported in focus groups with African-American and Hispanic teens, who described barriers within the park, defined by teen-aged gangs from different ethnic groups, beyond which they feared to travel. And among the African-American adult focus groups, several participants who lived away from the park felt it belonged to the White Lincoln Park community and thus refrained from going to the park or minimized their visits.

3.2. Chinatown Park study

To prepare for development of a new park in Chicago's Chinatown, personal interviews were conducted with 203 Chinese-American residents in the community to understand their leisure preferences and open space needs (Zhang and Gobster, in press). Although the new park could alleviate a severe open space deficiency in the community, problems with "personal safety" and "discrimination" mentioned by a significant number of study participants could restrict use of the park. Because the park lies between Chinatown and a public housing development occupied largely by African-Americans, many study participants feared that past incidents and tensions between the two communities might carry over into the new park when it is built.

3.3. Chicago Rivers study

A series of investigations were conducted to explore user and interest group perceptions of the Chicago River, a 154-mile corridor running through the Chicago metropolitan area (Gobster and Westphal, in press). In one study, the physical characteristics of riparian open space in nine neighborhood areas were examined in relation to the socio-economic characteristics of census block groups within the neighborhoods

(Nilon, in press). A comparison of these two data sets showed that open spaces nearer the center city that bordered block groups having predominantly lower income African-American renters tended to have a lower percentage of closed forest vegetation units, a higher percentage of areas with environmental disturbances (trash, dumping, and vandalism), and a higher percentage of fenced areas blocking access to the river than more distant, suburban sites bordering block groups having predominantly upper income White homeowners. A related study (Gobster, in press) of focus groups with residents in each of the same nine neighborhoods generally supported these findings. For example, participants who lived near riparian open spaces where environmental disturbance was high and access limited tended to have a more negative perception of the Chicago River in their neighborhood.

3.4. Summary of barriers research

The first two examples summarized here illustrate how different social science research methods can help to shed light on the perception and experience of urban parks as barriers by different racial and ethnic groups. The studies show that interracial tensions over park space: (1) can exist among minority groups as well as between majority and minority groups; (2) can serve to produce physical harm as well as feelings of fear and discomfort; and (3) can result in lowered use, temporal and spatial displacement of a group, and racial and ethnic segregation of users within a park. Although neither of these examples identified how such barriers might affect a loss in amenity value of the physical environment, the third example shows how information on the physical environment might be used to assess barriers to open space opportunities that are related to race and class. Although quite different from the cause-and-effect relationship implied by Solecki and Welch's work, Nilon's research (in press) nonetheless uses similar types of data to find that lower income African-American neighborhoods lack the same high levels of environmental quality of and access to the river in their neighborhood that higher income White neighborhoods have. There are many non-racially motivated reasons for this disparity – neighborhood age, development density, different municipal jurisdictions, and so forth. Nevertheless, these findings can be useful in helping the planners to identify priorities for environmental improvement so that all corridor residents can benefit from high-quality nature access opportunities (Nilon, in press). In this respect, it would be interesting for Solecki and Welch to re-examine their data to see how their measures of park condition vary based on whether parks are in predominantly African-American, predominantly White, or mixed areas.

4. Boundary parks as green walls: another view

This paper closes with a case study of Warren Park, a Chicago park that conforms to Solecki and Welch's definition of a boundary park, yet defies many of the indicators of amenity value loss they would associate with such a park. This case study is included not only to provide a counterexample showing that Solecki and Welch's green wall thesis is not a foregone conclusion for parks in diverse neighborhoods, but also to explore why Warren Park meets the needs of diverse neighborhoods and what benefits might accrue from such parks.

4.1. Neighborhood description

Warren Park is located in the center of the Rogers Park/West Ridge community areas on Chicago's Far North Side. U.S. Census Bureau block group statistics for 1990 show a pattern of boundary formation around the park similar to that described by Solecki and Welch for their Boston study area. Neighborhoods to the north and west of Warren Park were predominantly White (>50 percent White), while a significant portion of neighborhoods to the east and south were predominantly non-White ($\leq$50 percent White) (Fig. 1). Also supporting Solecki and Welch's designation are 1990 data showing the median family income for the predominantly White block groups at an average of $33,000, versus $27,000 for residents in the predominantly non-White areas.

These statistics, however, belie the variation inherent in neighborhoods surrounding Warren Park. For one, individual block groups in the predominantly White areas range from 51 percent to 90 percent White, while non-White areas range from 57 percent to 73 percent non-White. Moreover, the non-White

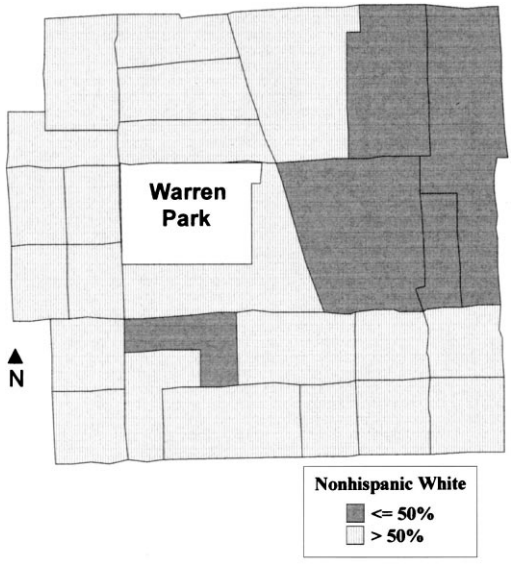

Fig. 1. Percentage of White/non-White residents in census block groups adjacent to Warren Park, 1990.

population of the area is far from homogeneous; on average, block groups surrounding the park are 12 percent African-American, 19 percent Hispanic, and 16 percent Asian-American. African-American and Hispanic neighborhoods are concentrated to the east of the park, with Asian neighborhoods (primarily Indian-Pakistani) to the south. Even the White population exhibits an uncommon diversity, with a substantial number of Eastern European Jews recently settling into neighborhoods near the park.

4.2. Park description

In 1976 the 82-acre park was converted from a private 18-hole golf course into a primarily active use public park, featuring a variety of facilities including a field house, ball fields and courts, a sledding hill, and playgrounds. A smaller, 9-hole golf course remains in the center, fenced off from the rest of the park. There is a small passive use area for seniors near the center that has horseshoe courts, seating areas, and tables with built-in chess/checker boards. A bench-lined, 1.2-mile loop trail encircles the golf course, with spurs extending to park facilities and adjacent residential neighborhoods (Fig. 2).

The redesign of the landscape spared many of the older trees in the golf course portion of the park and in a few selected areas of the park proper. At the time of conversion, numerous other trees were planted along the trails and playfield perimeters. These trees are now just beginning to give users of these areas the feel of being in a mature landscape. In 1993, more than 100 trees were planted in small groves throughout the park. This effort was part of an aggressive park tree planting program by the Chicago Park District aimed at increasing the quantity and diversity of trees in Chicago parks citywide (Kendall, 1995).

Although no systematic vegetation assessment was undertaken for this case study, most trees appear to be in good condition. New trees have been mulched, and trees planted during park development show few dead limbs or basal injuries from charcoal or lawn maintenance. Older trees within the golf course are watered and cared for as part of the course's routine maintenance. Plantings from the original golf course, the 1976 park development, and the recent tree planting program provide good age diversity in the park as a whole, though tree cover in the more active use areas does not have the substantial large tree component found in the golf course. Species diversity is also quite good overall, with more than 25 species present (Table 1). Again, the golf course has more tree diversity than the park proper.

4.3. Use description

In 1989, an observational study of Warren Park was conducted to identify user characteristics, use levels, and user interactions. Over an eight month period, systematic observations of park trail users were made and information was recorded on more than 5000 individuals in more than 3000 parties during 151 visits to the park. The visits varied by season (winter, spring, summer), time of day (morning, midday, afternoon, evening), and day of the week (weekday, weekend). On a given visit, observations were made during one lap around the trail, and characteristics were recorded for each individual encountered on or near the trail (e.g., age, sex, race, etc.), activities engaged in, number in group, location within the park, and other information. Weather conditions were also noted. Presentation of this case study summarizes and expands the original analysis to focus on park use by different racial and ethnic groups. Complete details of study methods are available in Gobster (1992).

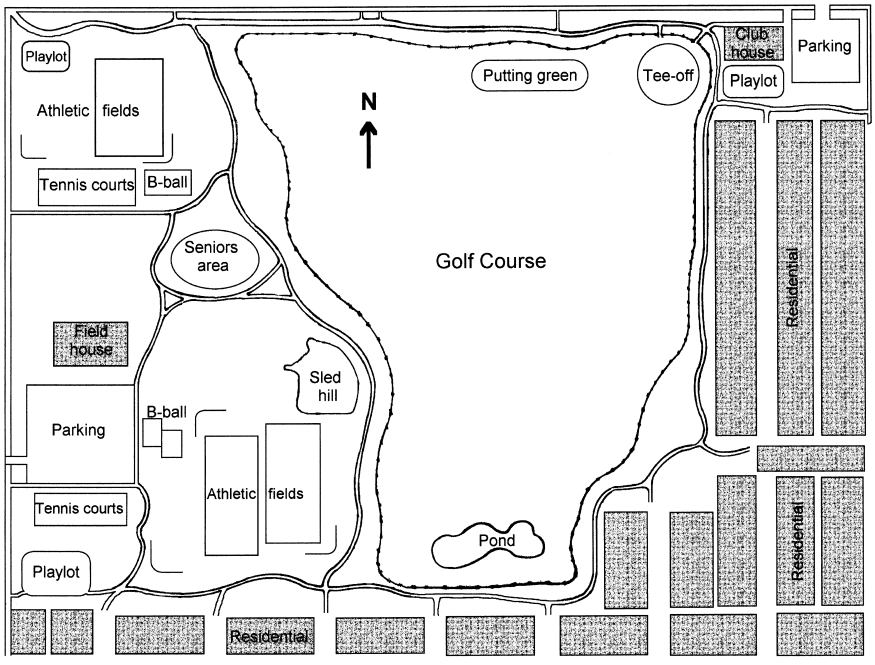

Fig. 2. Map of Warren Park, showing location of facilities.

Warren Park was revisited in 1996 to collect additional observations on some of the use areas away from the main trail. During a $3\frac{1}{2}$ month period (May 15–August 30), 50 visits were made to the park, primarily on weekday afternoons during good weather. On each visit, use of several different park areas were noted, including the basketball and tennis courts, passive use areas, golf course (practice putting green and tee-off area for the first hole), playfields, and playgrounds. An average of 1 h was subsequently spent examining the use of one of the three playgrounds; here playground use and interactions of the children and adults were looked at more closely. These more in-depth ''participant'' observations helped to complete the larger picture of park use quantified by the trail data (Fig. 3).

4.4. Use characteristics

Whites accounted for 62 percent of Warren Park trail use. This percentage corresponds roughly with the 52 percent population of Whites residing in census block groups adjacent to the park (Table 2). At least from this measure there does not appear to be any sharp difference between the proportion of users from White and non-White groups and those from the population of nearby residents. Non-White trail users were identified as 5 percent African-American, 20 percent Hispanic, and 10 Asian-American; again, roughly paralleling the racial proportions found in the surrounding block group areas as mentioned above.

Although no exact counts were made in the 1996 observations, the proportion of users from different racial and ethnic groups seemed to vary significantly across many of the activity areas off the trail. These differences included a higher proportion of Whites at the golf area and in the passive seating areas, and a higher proportion of African-Americans and Hispanics at the basketball courts. When used for soccer, the playing fields were used almost exclusively by Hispanics. Otherwise, for free play, football, and baseball, all groups were fairly well represented, as they were at the tennis courts and playgrounds. Trail activity data from the 1989 study helped to support these findings: Whites and Asian-Americans more often were observed carrying golf equipment and African-Americans more often were observed carrying balls

Table 1
Tree species found in Warren Park

Boxelder	*Acer negundo*
Norway maple*	*Acer platanoides*
Red maple	*Acer rubrum*
Silver maple*	*Acer saccharinum*
Tree of heaven	*Ailanthus altissima*
River birch*	*Betula nigra*
Hawthorn	*Crataegus* sp.
Russian olive	*Elaeagnus angustifolia*
Green/white ash	*Fraxinus pennsylvanica/F. americana*
Ginkgo	*Ginkgo biloba*
Honeylocust*	*Gleditsia triacanthos*
Crabapple*	*Malus* sp.
Mulberry	*Morus* sp.
Mugo pine	*Pinus mugo*
Austrian pine	*Pinus nigra*
Pine-other	*Pinus* sp.
Sycamore	*Platanus* sp.
Cottonwood	*Populus deltoides*
Poplar	*Populus* sp.
Cherry	*Prunus* sp.
Pear*	*Pyrus* sp.
White oak	*Quercus alba*
Black locust	*Robinia pseudoacacia*
Willows	*Salix* sp.
Yew	*Taxus* sp.
Linden*	*Tilia* sp.
American elm	*Ulmus americana*
Chinese elm	*Ulmus parvifola*

* Most prevalent species.

and other sports equipment on the trail than were other groups, while Hispanics more often watched others play (especially weekend soccer matches) and Asian-Americans more often engaged in free play than other groups. One likely explanation for this difference between trail and activity area observations is age – minority households in Rogers Park/West Ridge are significantly younger – median age is 45 years for White and 27 years for non-White (U.S. Bureau of Census, 1990) – and younger individuals tend to engage in more active park activities. Another explanation may be that the racial composition of the area and thus the park has changed between the 1989 trail observations and the 1996 use area observations.

Table 2
Race/ethnicity of community and park trail users (percent)

Race/Ethnicity	Block Group [a]	Park Trail [b]
White	52	62
Non-White	48	38
African-American	12	5
Hispanic	19	20
Asian American	16	10
Other/Unidentified	1	4

[a] U.S. Bureau of Census, 1990 Statistics.
[b] Gobster (1992).

Despite these differences, both sets of observations showed that park users differed not only in racial and ethnic background, but also in other important demographic variables. Trail data showed significant proportions of females (38 percent), adults over 55 (14 percent), and children under 13 (20 percent), and a predominance of social groups made up of single adults, adult couples, or families with young children. Male teens were primary users of the court facilities, but were also seen playing chess in the ''seniors'' area of the park. Adult males used the golf course more than other groups, and young children and their mothers dominated the playground areas. Together, these data indicate the park is used by a broad, representative cross section of people, and not dominated by ''roving teenage gangs'' stereotypically associated with barrier areas.

4.5. Use levels

Trail use accounts for only a fraction of the use of Warren Park. Still, use level data for the trail give a relative indication of the viability of the park as a recreation resource. Trail counts ranged from 0 to 167 individuals per visit, with an average of 36 individuals. Trail use levels were related (R^2=0.43) to season (intercorrelated with temperature), day of week, time of day, and cloud cover, with highest uses on spring and summer weekend evenings when skies were sunny or partly cloudy. Trail use on the most favorable days reached levels where traffic problems started to occur, especially at trail intersections near activity areas.

The participant observations found that, except for the seniors' passive use area in the middle of the park, most of the activity areas appeared to be well-used. The two main basketball areas were usually in use, with additional groups often waiting to play the winners. The same was true for the golf course, with parties lined up to tee off at the first hole. Although the playing fields were unused most of the day, they filled late in the afternoon and on weekends for league baseball, school football practice, and other games.

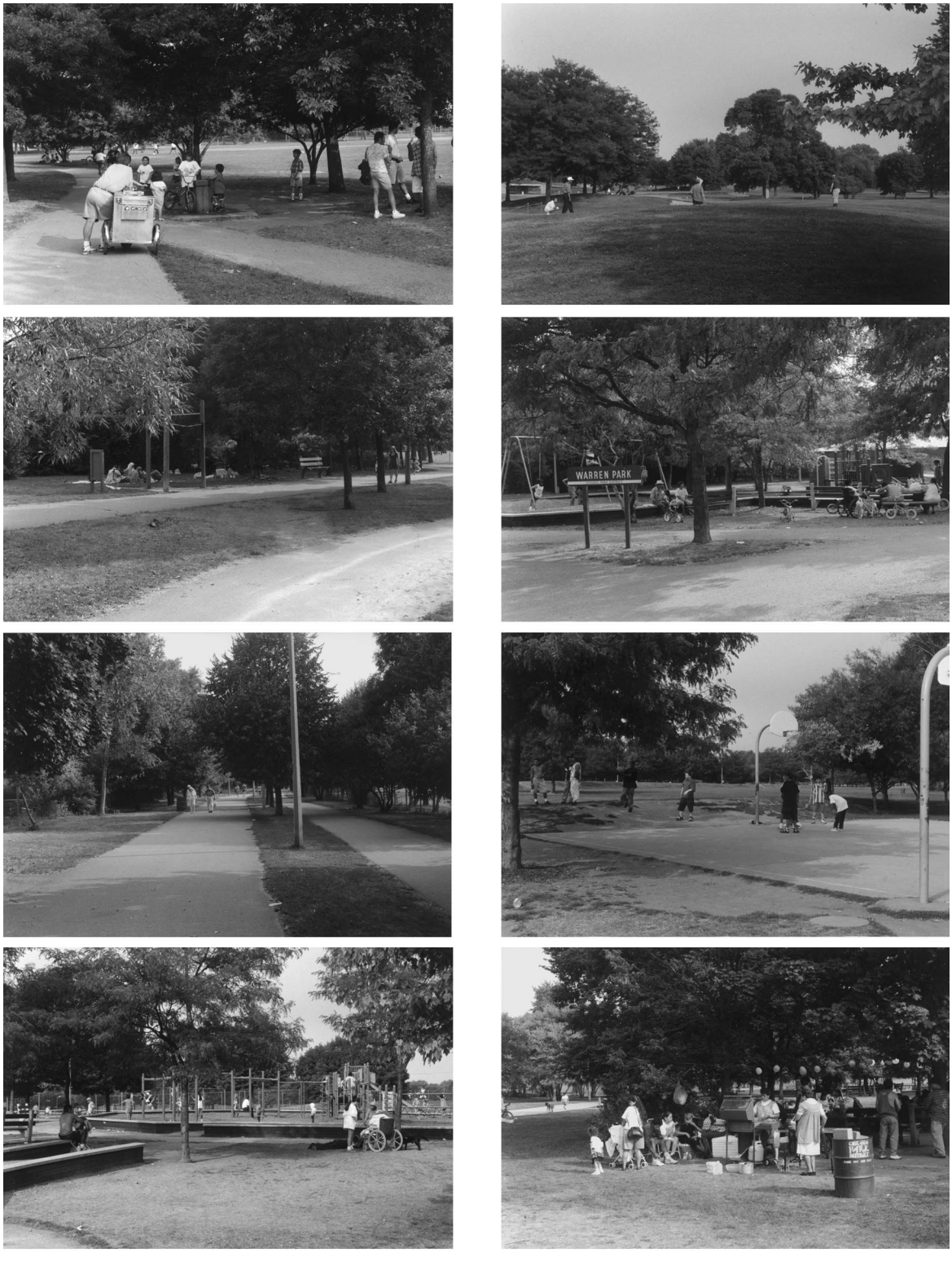

Fig. 3. Some active and passive use areas in Warren Park.

Spectators often filled the sidelines for major weeknight and weekend games, with African-American and Hispanic groups often preparing large picnic meals on site. Tennis courts were usually available, but more often than not parties were using 3 or more of the 12 courts. Playgrounds averaged 10 children at a time, plus their teen and/or adult guardians. Trailside benches and other passive use areas received moderate use, especially those located in the shade of larger trees. Two festivals – one ethnic and one community-wide – that took place during the observation period were each well attended by several hundred participants.

4.6. User interactions

Available trail study data showed limited interactions between people of different racial and ethnic groups. First, most trail parties (parties>1) were of the same racial or ethnic group, with only 59 of 1290 (4.6 percent) parties identified as being made up of individuals from more than one racial or ethnic group. Second, while only 30 instances were observed where different parties who encountered each other on the trail interacted with each other, only 3 (10 percent) of these interactions were between parties of different racial and ethnic groups. Two of these were amiable greetings between the two parties, while the other one resulted from the dog of one party annoying the other. Third, there was some evidence of segregation of users within the park by race/ethnicity, with groups of older White individuals tending to congregate on benches along a quiet, shady stretch of trail in the southeast corner of the park and larger groups of Hispanic families picnicking and watching soccer games on weekends near the trail at the park's northwest end. This relationship, however, is confounded by age, activity, and environmental setting, so it is difficult to tell if race plays a role in spatial segregation in the park.

Observations at two of the active use areas of the park show a somewhat different picture of interracial interaction. Basketball games more often than not included players from different racial and ethnic groups, with most games made up of teenage males. The two most frequent groups of players were African-Americans and Hispanics, but significant numbers of Whites and Asian-Americans were also present. Children at the playground quite often interacted with other children of different racial and ethnic groups. Whether engaging in a spontaneous game of follow-the-leader or fighting over the use of a swing, race or ethnicity did not seem to play much of a role in interpersonal interactions. Interactions between adult guardians were more reserved, but greetings and other brief but amiable interactions were common. Adult guardians frequently responded nonverbally to other adults and children irrespective of race or ethnicity, though verbal communication between individuals of different races and ethnicities was often hampered by the different first languages used by many of the adults.

5. Summary and conclusions

Despite significant problems with the testing of their green wall thesis, Solecki and Welch have identified an important area of research related to the provision of open space opportunities in socio-economically diverse urban areas. This paper attempts to clarify some conceptual and methodological issues related to their work, identifying how barriers are perceived and experienced and how they might be measured. With examples of recent work in the Chicago area, the paper shows how a variety of social science research methods were used to understand how parks are perceived and experienced as barriers. In these studies, perceptions of fear and safety and experiences of discomfort and physical harm resulted in reports of lowered use (or expectations of), displacement in time or space by one group due to another's presence, and spatial segregation of users within a park. Additional research identified that, even if interracial and ethnic tensions do not exist, lower income minority neighborhoods may not have access to quality open space environments like upper income majority neighborhoods do.

Although these examples provide methodology and findings to support the green wall thesis, the Warren Park case study stands as a counterexample showing that reductions in amenity values do not necessarily follow when parks form boundaries between diverse neighborhoods. By comparing the proportion of park users from different groups to the proportion of their populations in the nearby neighborhoods, by estimat-

ing use levels and the presence of different social and activity groups within the park, and by looking at the kinds of interactions that take place between individuals who are from different racial and ethnic groups, Warren Park appears to work reasonably successfully in serving diverse neighborhood residents.

What are the reasons for this success? Various external factors – those operating outside the park – may play a role. For one, Rogers Park/West Ridge has a long and well-known history of racial and ethnic diversity. For decades it has been regarded as a ''port of entry'' for newcomers to Chicago; this has generally resulted in a tolerance for, and in many cases an appreciation of, different cultures and lifestyles (Chicago Historical Society, 1996). This cultural diversity is coupled with a related social diversity of park users of different ages and household compositions who have varying time schedules and activity interests. This social diversity, according to Jacobs (1961), can provide a consistent flow of use throughout the park, throughout the day, and prevent it from becoming a vacuum. Another external factor operating at Warren Park is its strong constituency of neighborhood and community groups. These groups worked in concert with city, state, and federal agencies in obtaining funds for developing Warren Park in the 1970s, and more recently fought to retain all of its lands as a park when the Chicago Board of Education proposed building a school in the middle of it (Drell, 1994). Finally, the park has a well-established advisory council of local residents who work with the park administrators to solve problems in the park before they get out of hand. This relationship is paralleled at the community level with the city's community policing program, of which Rogers Park/West Ridge was one of the most successful trial areas when the program was first implemented in 1994 (Chicago Community Policing Evaluation Consortium, 1995).

Along with these external factors are various internal factors – those operating within the park itself – that may explain Warren Park's success. One set of internal factors relates to the physical design of the park. Many of the park's high-use facilities – the field house, trails, playlots – are located along the perimeter of the park, visible and easily accessible from adjacent neighborhoods. According to Jacobs (1961), focusing activity along the edges like this can be a successful strategy for large urban parks because it provides a more effective ''seam'' to knit the park together with neighborhoods than does an interior park development strategy. The physical design also provides a full range of facilities throughout the park. Again, in Jacobs' words, such a strategy gives a park an ''intricacy'' that can help to avoid problems associated with massive, single land uses. A second set of internal factors relates to the management of the park. In addition to its facilities, Warren Park managers provide a range of programs – classes, leagues, and the like – that draw tots, teens, adults, and seniors of diverse racial and ethnic backgrounds throughout the year. Add to this good physical management of the site and supervision of its users, and park management can play a key role in making a park successful in serving diverse users. Together, these internal factors suggest that parks can be designed and managed to be *active* agents in counteracting boundary effects, rather than the passive agents that Solecki and Welch assume them to be.

More research is needed to understand how such internal and external factors operate in making urban parks valued components of their neighborhoods. In neighborhoods where diverse racial and ethnic groups border a park, this research would also need to focus on the interactions that take place between these groups. For Warren Park, this research would include studies of park users' and neighborhood residents' perceptions and experiences of barriers or the lack thereof, including reports of incidents of past discrimination, feelings of comfort, and types and frequencies of interactions with individuals of a different race or ethnicity. From such investigations, ideas about how the park functions successfully could be tested and applied to other urban parks.

Urban residents in many areas of the US continue to be segregated by race and class in many aspects of their daily lives. A study by the Chicago Community Trust Task Force on Human Relations found that segregation in Chicago neighborhoods and schools was pervasive, and was largely responsible for the persistence of tensions between racial and ethnic groups (Chicago Community Trust Human Relations Task Force, 1989). Among the task force's recommendations for improving relations was to facilitate more opportunities for contact between diverse groups, especially among children and young adults. In this light, urban ''boundary parks'' offer an ideal setting for such contact to take place. The voluntary

nature of leisure participation may remove some of the negative sentiment associated with structured programs for integration like school busing and scattered site public housing development, and leisure activities allow for contact and interaction to take place on a variety of levels. By creating a safe environment with attractive opportunities, it may be possible for boundary parks to play an active role as catalysts in improving interracial and ethnic relations. If so, findings from the Warren Park case study certainly point in this direction.

Such ideas are not new, but were central to the philosophy of Jane Addams and other Progressive Reformers who promoted the Neighborhood Parks Movement nearly a century ago (Cranz, 1982; McArthur, 1989). By studying past problems and current successes, we may be able to make more boundary parks function as green magnets instead of green walls.

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