UTOPIA ON TRIAL AGAIN: PERCEIVED RESIDENTIAL QUALITY AT SCHUBART PARK IN POST-APARTHEID SOUTH AFRICA

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ABSTRACT

Schubart Park is a modernist high-density public housing complex in central Pretoria. It was developed during the 1970s despite awareness of negative notions about this housing type. Initially, residents' perceptions of Schubart Park, however, appeared to be positive. Administrative changes and racial- and income integration took place during transition from apartheid to democracy while poor administration and social problems soon impacted on residential quality. Although residential satisfaction literature furthermore suggests wide-spread dissatisfaction with this housing type, this research nevertheless aimed to determine perceived residential quality following changes. A survey was conducted and a 'perceived residential quality index' was compiled. Residents had a slightly negative perception of *residential quality*, perceiving Schubart Park as poor in style and appearance, yet rational and useful. Contrary to negative notions, perceptions of the *housing type* as such were positive. The most significant predictor of perceptions was whether residents were resident pre- or post-integration, revealing that a significantly larger percentage of pre-integration residents had negative perceptions. Pre-integration residents arguably had negative perceptions because they were accustomed to better residential quality and because they were influenced by social problems. Possible implications are discussed for current post-apartheid policy to densify and socially integrate cities.

INTRODUCTION

Modernist high-density public housing based on Le Corbusier's super-block precedent has been a symbol of utopian architecture and planning. Implicit in the philosophy of utopian architecture and planning is that people would necessarily have positive perceptions of residential quality associated with this style. After all, 'utopia' means 'ideal place', or 'no place' in the sense that utopia represents an ideal world (Steÿn and Van der Westhuizen, 1995:34).

Schubart Park is such a housing complex in central Pretoria. It was developed by the former nationalist government during the early 1970s for White middle-income government employees despite awareness of negative notions and experiences of similar complexes abroad. Residents' initial perceptions of Schubart Park, however, appeared to be positive while administration and social conditions inside the complex were good. Administrative changes and racial- and income integration took place during transition from apartheid to democracy in 1994. However, poor administration and social problems soon impacted on residential quality, while the socio-demographic profile of residents became increasingly mixed. The objectives of this article are to (1) describe perceived residential quality at Schubart Park following these changes, (2) determine the most significant predictor of perceptions, and (3) identify group differences. Aravot (1996) states that research on different groups' perceptions of urban residential areas may indeed better inform urban revitalization considering that urbanization worldwide is increasing.

Research on this housing type had mostly been about residential satisfaction. Existing research often suggested that residents were generally dissatisfied (Weidemann *et al*., 1982; Amérigo & Aragonés, 1990; Kaitilla, 1993), and that dissatisfaction and anti-social behavior

were related to modernist architecture (Gans, 1966:546-547; Brolin, 1976; Rowe, 1993; Ritzer, 1996:608). However, research in the East, particularly in Singapore and Hong Kong, suggested the possibility of residential satisfaction (Chua, 1991; Quan Zhang, 2000:251-252; Forrest *et al*., 2002; Rooney, 2003). Nevertheless, past research resulted in the "defensible space" (Newman, 1973) and "design disadvantagement" (Coleman, 1985) theories which dealt with environment-behavior aspects. Newman's theory eventually became a basis for crime prevention through environmental design, whereas Coleman's book, "Utopia on Trial" (1985), metaphorically trialed this housing type for its perceived failure to satisfy residents and to counter anti-social behavior. Although perceived residential quality is an indicator of residential satisfaction (Bonaiuto *et al.*, 1999), research focusing on perceived residential quality specifically at this housing type is lacking.

For this research, a survey was conducted and a perceived residential quality index (PRQI) was compiled. Findings included that residents had a slightly negative perception of *residential quality*, perceiving Schubart Park as poor in style and appearance, yet rational and useful. Contrary to widespread negative notions about this housing type, perceptions of the *housing type* as such were positive. The most significant predictor of perceptions was whether residents were resident pre- or post-integration, revealing that a significantly larger percentage of pre-integration residents had negative perceptions. It is argued that pre-integration residents had negative perceptions because they were used to better residential quality before transition and because they were influenced by social problems that occurred after administrative changes and social integration.

These findings are particularly significant for local housing and urban spatial policies that aim to densify and socially integrate the fragmented apartheid city. An overview of 'compact

cities' literature suggests that densification and social integration policies are currently also important internationally (Jenks *et al.*, 1996; Jenks and Burgess, 2000; Williams *et al.*, 2000). Du Toit (2007), however, argues that local policy simply assumes that people will respond positively to densification and social integration, whereas local research about this is lacking. Some existing research in fact suggests that South Africans have strong preference for suburban or rural living and that the poor, whom often rely on subletting and subsistence agriculture, cannot afford the cost of higher-density living (Schoonraad, 2000). Yet, this research suggests that certain groups might be becoming more amenable to the benefits of higher-density housing, but cautions against ill-considered approaches to social integration.

DESCRIPTION AND HISTORY OF SCHUBART PARK

Schubart Park is located in a zone of transition in central Pretoria, the administrative capital of South Africa. It is probably the largest complex of its kind in South Africa, occupying almost an entire street block of 38 400 m². It has 813 apartments spread across four blocks known as Block "A", "B", "C" (all of them 21 levels high), and "D" (25 levels high). All the blocks are raised about three levels above ground and are connected to each other by a mezzanine level with two swimming pools and tennis courts. A precinct at ground level contains basic retail and community facilities and below this an underground garage provides adequate parking. Figures 1 – 7 furthermore depict Schubart Park with clear impressions of modernist architecture.

The former nationalist government commissioned the development of Schubart Park during the 1970s as part of an urban renewal project. Schubart Park was intended to house White middle-income government employees and to block the spread of a racially mixed low-income neighborhood. The former Department of Community Development (DCD), which

was responsible for developing Schubart Park, was not concerned about the fact that residents had negative perceptions of similar complexes abroad. They assumed that people abroad had negative perceptions as they had little choice but to live there (architect of Schubart Park, interview, 1 July 1999). Still, the DCD commissioned the South African Human Sciences Research Council (HSRC) to conduct research on residential satisfaction with high-density housing in central Pretoria prior to the development of Schubart Park. It was found that about 80% of people were "generally" satisfied with such housing (Groenewald, 1975:2). The development of Schubart Park thus continued and the first apartments were allocated in 1977.

The DCD initially allocated apartments to Whites only as apartheid legislation strictly ordained separate residential areas for Blacks and Whites. They applied a strict allocation policy, which set minimum income levels for different apartment sizes (Schutte, 1984:17). Officials manned a 24-hour control room at the complex and conducted regular inspections of apartments. The HSRC conducted post-occupancy evaluations at Schubart Park focusing on social interaction and place perspectives[1] and found that residents, although still exclusively White, had "associative" social interaction and place perspectives (Schutte, 1985). Residents therefore appeared to have positive perceptions of Schubart Park initially.

Following the transition from apartheid to democracy in 1994, the Gauteng housing department took over the administration of Schubart Park and racial- and income integration became policy. Although apartheid was officially over in 1994, Blacks, although only few, were actually allocated apartments in Schubart Park before then as the nationalist government already started abolishing certain apartheid legislation during the late 1980s. Yet, racial integration became policy only after transition. Furthermore, the former policy of allocating

on the basis of minimum income levels was changed to allocating on a needs basis to attempt income integration. Many single parent families, headed particularly by White women were actually also allocated apartments before then. Yet, rising unemployment in nearby low-income neighborhoods, many of which were in former White areas, suggested the need for further income integration. Therefore, apart from allocation to middle-income Blacks, White families with financial problems were also eventually allocated apartments (housing official, interview, 1 July 1999).

Declining funds and social integration policies shifted the emphasis from strict regulation to saving costs and changing the socio-demographic profile of residents (housing official, interview, 1 July 1999). Poor administration and social problems, however, soon impacted on residential quality. For example, an entire block would sometimes be without a single working elevator, which caused tremendous discomfort, danger and stress amongst residents. Crime increased sharply, which coincided with a sharp increase in national crime levels since the mid 1990s (Institute for Security Studies, 1997). Class conflict between low- and middle-income residents occurred regularly. Racial conflict occurred as well, although it tended to be isolated incidences. Vandalism and graffiti eventually marred the "undefended" spaces on the mezzanine level while smells of refuse and excrement often permeated elevators and staircase shafts (*Pretoria News*, 13 January 1997; *Beeld*, 24 February 2000).

By the late 1990s it was clear that the department had little control over the situation at Schubart Park and administration was eventually handed over to the local municipality. They in turn quickly handed it over to a private company. The company tried to administrate Schubart Park more effectively in order to improve conditions. However, by then many long-

standing residents had moved out leaving behind a very transient and unstable community with a poor payment record (company employee, interview, 1 April 2000).

To summarize, it is stated earlier that residents initially had positive perceptions of Schubart Park. But this was at a time when the community was relatively stable and administrative and social conditions were good. A decline in administration and racial and income integration soon worsened social conditions. Could these conditions have influenced residents' perceptions, what would have determined perceptions, and how would such perceptions have differed across a more heterogeneous community?

PROCEDURES

Research Design

Perceived residential quality research forms part of residential satisfaction research - an important field within environmental psychology (Bonaiuto *et al*, 2002:41). Research designs are typically of two types. One aims to determine significant predictors of residential satisfaction in order to better inform architecture and planning (see also Wiesenfeld, 1992). The other aims to predict behavior arising from residential satisfaction, such as residential-mobility or choice (Bonaiuto *et al*, 2002:42). This research was based on the former design, i.e., the research aimed to (1) describe perceived residential quality, (2) determine the most significant predictor of perceptions, and (3) identify group differences.

Data Collection

A questionnaire survey was conducted at Schubart Park as the primary method of data collection. A stratified random sample of 204 apartments was drawn from the total of 813 apartments by randomly sampling 51 apartments from each of the four blocks. The author

visited each of the 204 sampled apartments, explained the research to household heads, and asked all occupants older than 21 years to complete a standardized questionnaire. A final sample of 169 apartments (20.8% of 813 apartments[2]) and 254 completed questionnaires were obtained after refusals and vacant apartments were omitted. The completion rate was thus 82.8%, with refusal and vacant apartments making up 17.2%. Questionnaires captured data on residents' socio-demographic profile (see Table 1), perceptions of residential quality, and perceptions in general.

Data on perceived residential quality was captured in the PRQI (see Figures 1 – 7). This index was derived from Craig and Zube's method of perceived environmental quality indices (PEQIs) (1976; see also Carp and Carp, 1982). Hyman (1981) discussed the uses, validity and reliability of PEQIs and found that they are useful when assessing residential environments, but less so in cases of natural environments. The PRQI method was chosen because (1) it had been used in previous research, (2) it provided quantitative data that could denote positive or negative perceptions, and (3) it included semantic differentials which are popular for measuring environmental perceptions (Bechtel, 1987:112).

Seven distinctive components of Schubart Park were selected for the PRQI after reviewing distinctive design features of such complexes (Elon & Tzamir, 1971 as cited in Rapoport, 1977:75; Reynolds *et al*., 1974 as cited in Rapoport, 1977:78; Lang, 1992:16-19). The questionnaire included questions that asked respondents what their perception was of each component. Each question was followed by a photograph of the component, which helped to ensure ecological validity (Holahan, 1982:97-98). Each photograph was then followed by ten 7-point semantic differential scales with bi-polar adjectives denoting positive and negative sides (see Figures 1 – 7).[3] Adjectives were selected from Kasmar's "Environmental

Description Scale" (1970), which is a list of 66 bipolar adjectives that had been used successfully before. Adjectives were selected considering design features of components as well as the local language proficiency. Marans and Spreckelmeyer (1982) used a similar method of presentation to that depicted in Figures 1 – 7 in research on office environments.

Data Analysis

Mean scores and standard deviations were calculated for all scales. The PRQI thus consisted of 70 mean scores (10 scales from 7 components). Aggregate mean scores and standard deviations were calculated for each component (see bottom of Figures 1 – 7) and for the complex overall as well. The positions of mean scores and composite mean scores are shown with dots on the 7-point scales followed by their numerical values and accompanied standard deviations. The higher the mean score, the more negative the perception and vice versa. A mean score with a value of "4" thus indicates a neutral perception.

A Chi-squared Automatic Interaction Detection (CHAID) analysis was used to determine which socio-demographic variable[4] was the most significant predictor of whether residents had either a positive or negative perception of residential quality overall.[5] This refers to the socio-demographic characteristic of residents that yielded the most statistically significant prediction of whether perceptions would be positive or negative. The reason for determining this was that it provided an indication of how perceptions were primarily formed and what could be done from a design or administrative perspective to improve perceptions. Thus, socio-demographics constituted independent variables and perceptions the dependent variable. Table 1 lists the socio-demographic variables and corresponding categories used in the CHAID.

TABLE 1. Socio-demographic variables and categories

Variables	Categories
Sex	Female Male
Race	Black (including Colored and Indian) White
Age	21 – 35 Years old 36 – 50 Years old 51 – 65 Years old 66 And older
Marital status	Married Unmarried
Highest level of education completed	Higher education No higher education
Employment status	Employed Unemployed
Level of income	Low (less than R 2 001 p/m) Middle (more than R 2 000 p/m)
Size of apartment	Smaller apartments Bigger apartments
Children living in the apartment (16 years old or younger)	Yes No
Total number of occupants	One or two occupants More than two occupants
Period of residence	Pre-integration (resident before 1994.) Post-integration (resident since 1994 or after.)
Housing preference	Low-density Medium to high-density

Black, Colored, and Indian respondents were grouped together because of low numbers of Colored and Indian residents at the time of the research, and because no significant differences in perceptions were found between these groups. It is also customary in democratic South Africa to collectively refer to these groups as "Black".

FINDINGS

Profile of Residents

Most residents at the time of the research were White (66.1%), female (61.6%), 21 – 35 years old (48.5%), Afrikaans speaking (73.2%), and living with children 16 years old or younger (61.3%). Unemployment stood at 23.7%, which was slightly higher than the national rate of 23.3% during the same year (Statistics South Africa, 2001:45). The unemployment rate of

Black residents was 21.5% compared to 25.0% for White residents, whereas the national rate for Blacks was as high as 29.2%, compared to only 4.7% for Whites (Statistics South Africa, 2001:49). These findings support the description earlier that allocation of apartments to single parent families headed by White women, middle-income Blacks, and unemployed families from former White areas occurred over the same time period.

Perceptions of Residential Quality

[Place Figures 1 – 7 here]

Residents had a slightly negative perception of residential quality at Schubart Park as the aggregate mean score for the complex overall was 4.52 (SD = 0.97)[6]. Residents furthermore had negative perceptions of almost all components of the complex as six of the seven aggregate mean scores are above "4" (see Figures 1 – 7). The most negative perception was of the main pedestrian entrance, as it has the highest aggregate mean score (M = 5.12, SD = 1.37) (see Figure 2). The only positive perception, though just slightly, was of the layout (M = 3.87, SD = 1.56) (see Figure 1). Yet, Figure 1 also depicts the complex as a distinctive housing type in the inner city, which means that positive perceptions may be in relation to the *housing type* as such.

Fifty-one of the 70 mean scores across the index indicate negative perceptions. The main pedestrian entrance had the most negative perception described by the adjective 'public' as opposed to 'private'. This perception would arguably have been strongly influenced by feelings of insecurity caused by the sharp increase in crime inside the complex and in the country in general. Four other components were also perceived to be more public than

private (see Figures 1, 3, 5 and 6). Therefore, lack of privacy and sense of control or ownership appeared to be negative qualities associated with the complex overall. Other mean scores indicating negative perceptions had adjectives such as 'old-fashioned' (five scores), 'unstylish' (four scores), 'simple' (three scores), 'ordinary' (three scores), and 'plain' (three scores). Therefore, poor style and appearance also appeared to be negative qualities associated with the complex overall.

On the other hand, only 19 of the 70 mean scores indicate positive perceptions. The community hall had the most positive perception described by the adjective 'useful' as opposed to 'useless' (see Figure 4). Therefore, usefulness appeared to be a positive quality associated with the community hall. Other mean scores indicating positive perceptions had adjectives such as 'convenient' (five scores), 'appealing' (two scores), 'efficient' (two scores), 'functional' (two scores), 'useful' (two scores), 'well planned' (two scores), 'impressive' (one score), 'orderly' (one score), 'organized' (one score), and 'well balanced' (one score). Therefore, rationality and utility appeared to be positive qualities also associated with the complex overall. This is supported by another finding from the survey that 90.9% of residents used the amenities inside the complex.

Predictor of Perceptions

The most significant predictor of whether residents had either a positive or negative perception of residential quality overall was 'period of residence', $\chi^2(1, N = 251) = 7.88$, $p = .02$.[7] A significantly larger percentage of pre-integration residents (88.0%) had a negative perception as apposed to post-integration residents (71.6%). Cross tabulations with Chi-square tests furthermore revealed that significantly larger percentages of pre-integration residents were White $\chi^2(1, N = 234) = 42.79$, $p = .00$, of middle-income $\chi^2(1, N = 193) =$

11.58, $p = .00$, living in bigger apartments $\chi^2(1, N = 233) = 4.02$, $p = .03$, not living with children $\chi^2(1, N = 227) = 4.20$, $p = .03$, and living in an apartment with only one or two occupants $\chi^2(1, N = 224) = 5.71$, $p = .01$. Thus, negative perceptions were mostly dependent on whether residents were residing before integration, or whether they were White, of middle-income or from relatively small families. This seems strange if it is considered that residents who had been living there longer should have had positive perceptions otherwise they would have moved away when conditions worsened. Of course it could have been that some of these residents were not able to move away. Yet, it is argued instead that because pre-integration residents were used to better residential quality, they were more critical of current residential quality compared to other groups. Therefore, the negative impact on residential quality as a result of poor administration and social problems following a decline in funding and social integration polices is arguably the most important reason for negative perceptions.

Group Differences

Of all the variables listed in Table 1, 'housing preference' yielded the most significant difference in perceptions of residential quality of the complex overall[8]. As expected, those who preferred low-density housing were significantly more negative than those who preferred medium to high-density ($M = 4.77$, $SD = 0.95$ and $M = 4.50$, $SD = 0.92$ respectively), $t(241) = 2.23$, $p = .03$ (two-tailed), $d = .27$. The only other variable that yielded a significant difference was 'race'. Whites were significantly more negative than Blacks ($M = 4.68$, $SD = 0.96$ and $M = 4.42$, $SD = 0.82$ respectively), $t(246) = -2.11$, $p = .04$ (two-tailed), $d = .26$. Blacks were arguably used to poorer residential quality as many would have come from former Black townships and informal settlements where residential quality is generally very poor. Similarly, pre-integration Whites were significantly more negative than post-

integration Whites (M = 4.87, SD = 0.92 and M = 4.50, SD = 1.00 respectively), $t(154) = -2.42$, $p = .02$ (two-tailed), $d = .37$. Post-integration Whites were arguably also used to poorer residential quality as many would have come from low-income neighborhoods. Still, it should be kept in mind that Blacks and post-integration Whites had *negative* perceptions. Two possible extraneous factors were that; (1) pre-integration Whites simply expressed more negative perceptions because of social problems following integration, and (2) Blacks and post-integration Whites (both groups mostly of low-income) deliberately expressed less negative perceptions because of threats of the private company to evict non-payers at the time of the survey.

Perceptions in General

The questionnaire ended with an unstructured question that asked respondents what their perceptions of Schubart Park were in general, from which responses were coded as either positive or negative perceptions of a range of issues. The two issues that solicited the most responses included 'housing type' (N = 103) and 'social' (N = 124). 'Housing type' included 74 positive perceptions as apposed to only 29 negative perceptions. Although residents had a slightly negative perception of residential quality, there were clearly more positive than negative perceptions of the housing type. Many respondents indicated that they had special needs, such as elderly people, single parents, those without private transport, those with low-income, etc., whereas they benefited from the complex's amenities, convenient apartments and central location. This suggests the importance of distinguishing between perceptions of *residential quality* as apposed to housing *type*, which is supported by the earlier finding in relation to Figure 1. The inclusion of an unstructured question was therefore important as it provided the data to show this distinction. 'Social' included 117 negative perceptions as apposed to only seven positive perceptions. To what extent did negative perceptions of social

issues influence perceptions of residential quality? Indeed, those with negative perceptions of social issues had a significantly more negative perception of residential quality than those who did not (M = 4.69, SD = 0.97 and M = 4.37, SD = 0.94 respectively), $t(249) = 2.69$, p = .01 (two-tailed), d = .33.

The finding that most of the responses to the unstructured question included positive perceptions of the housing type and negative perceptions of social issues, suggests that Schubart Park has a noticeable effect on sense of place and community. In fact, earlier research, which involved in-depth phenomenological interviews with nine residents from diverse backgrounds, focused on experiences of sense of place and community (Du Toit, 1998). Almost all of the interviewees gave nostalgic accounts of times when Schubart Park was functioning well and seen as successful nationalist housing for Whites in a 'hostile' environment, while young White suburbanites actually aspired to live there because of its central location and close proximity to employment opportunities and inner city nightlife. However, the effects of the new housing department's policies of racial- and income integration over the last decade clearly influenced all of the interviewees' sense of community negatively. Yet, it appeared that the negative experience was more in relation to income integration rather than racial integration, as noted by the following interviewees: *"People don't appreciate the complex and the deterioration can't be attributed to Blacks moving in. It's simply a situation of too many different types of people being thrown together."* (White 48 year old female in Block A) *"It was a very pleasant complex before Whites with financial difficulties moved in over the last number of years. Ultimately, it is they who ravage the place."* (White 20 year old male in Block A) *"The White men were drunk and they shot a Black man when he tried to enter the elevator. Many heard about the*

incident and they started to sympathize with us, particularly White people." (Black 45 year old male in Block B)

CONCLUSIONS

Although residents initially had positive perceptions of Schubart Park, administration of the complex changed and racial- and income integration became policy, while poor administration and social problems impacted negatively on residential quality. The research therefore aimed to describe perceived residential quality following these changes. It was found that residents had a slightly negative perception of residential quality, although they had positive perceptions of the housing type. The most significant predictor of perceptions of residential quality was period of residence, revealing that more pre-integration residents had negative perceptions. It was argued that these residents were accustomed to better residential quality prior to integration and that social problems also influenced their perceptions. Therefore, in hindsight, if the new housing department had been more careful to relax administrative regulations and to implement social integration, residential and social conditions would have been better and perceptions of residential quality would have been less negative, or possibly even positive. This may also have resulted in fewer long-standing residents moving away to avoid further destabilization of the community. Hall (2002:260) similarly concluded that the eventual failure of Pruitt Igoe in St. Louis (US) had much to do with ill-considered changes in regulations to admit "problem families". Furthermore, the findings that residents (1) used to have positive perceptions of Schubart Park (Schutte, 1985), (2) currently had a *slightly* negative perception of residential quality only, and (3) had positive perceptions of the housing *type*, are very much contrary to widespread negative notions about this housing type in the West and in South Africa.

Looking forward, the South African national department of housing's current policy on settlements advocates more higher-density housing and greater income-integration (National Department of Housing, 2004). This is to address the enduring spatially and socially fragmented apartheid city, but also to respond to criticism against the government's development of sprawling low-cost housing projects on urban peripheries that have actually perpetuated the apartheid city (Dewar, 1998:369; Todes, 2003:111). Although South Africans have traditionally preferred suburban or rural living (Schoonraad, 2000:227-228), residents' positive perceptions of the *housing type* of Schubart Park suggest that certain groups might be becoming more amenable to the benefits of higher-density housing, which would support current policy (see also Oxman and Carmon, 1986 and Palmer *et al.*, 2004 about similar findings in Israel and Australia respectively). Three additional supporting arguments are that; (1) household sizes in South Africa are declining (South African Cities Network, 2004), (2) fear of crime is causing many people to consider more compact security complexes, and (3) increasing housing and fuel costs are causing many people to re-consider suburban living. The policy's reference to income integration, however, has been met with severe criticism in local media. In this research it was found that if social integration is ill-considered so that it leads to social problems, there will be a significant influence on residents' perceptions of residential quality and they will probably move away.

NOTES

[1] 'Place perspectives' refers to the notion that people's perception of places depend on how they interpret social experiences and meanings attached to such places. Positive social interaction in a given place therefore implies positive place perspectives (e.g., see Gerson and Gerson, 1976:196-197 as cited by Schutte, 1985:105).

[2] Some sources state that a population of N = 800 requires a sample of n = 260 (Leedy, 1997:211), whereas 169 apartments were sampled at Schubart Park. Still, the sample yielded a dataset of 254 questionnaires, which proved sufficient for the statistical techniques used in the research.

[3] Figures 1 – 7 depict all positive adjectives on the left headed as 'Positive adjectives' and all negative adjectives on the right headed as 'Negative adjectives'. This is to facilitate easy reading. However, in the questionnaire, adjectives were randomly shuffled between left and right in order to avoid leading of respondents. Adjectives on the left or right were therefore not headed as either positive or negative.

[4] These variables were considered to be important descriptors of the profile of residents at Schubart Park. They include basic socio-demographics and contextual factors at Schubart Park. Environmental psychology and residential satisfaction literature state the importance of including basic socio-demographics and contextual factors as independent variables whereas there is also considerable variation between variables (e.g., see Craik and Zube, 1976; Rent and Rent, 1978; Weidemann *et al.*, 1982:709-713; Ha, 1989; Wiesenfeld, 1992:214; Bruin, 1997; Lu, 1999; Amérigo, 2002).

[5] The aggregate mean score for the complex overall was categorized into a dichotomous categorical variable denoting either a positive or negative perception.

[6] This was calculated using all 70 scales in the index and is therefore not shown in Figures 1 - 7.

[7] An alpha level of .05 was used for this and all subsequent inferential statistical tests.

[8] See Note 5. Group differences were calculated using the aggregate mean score for the complex overall and as such it will be different to the result from the CHAID method.

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AUTOBIOGRAPHICAL SKETCH

Jacques L. du Toit was previously coordinator of a newly established urban research unit at the South African Human Sciences Research Council. He is currently a lecturer at the University of Pretoria where he lectures site- and settlement analyses, settlement design, and coordinates research courses. His research interests include social sustainability in the built environment, planning methods and techniques, and designs and methods for built environment research.

Positive adjectives	1 2 3 4 5 6 7	Negative adjectives
Appealing	(M = 3.12, SD = 2.15)	Unappealing
Well-balanced	(M = 3.68, SD = 1.69)	Poorly-balanced
Convenient	(M = 3.12, SD = 2.14)	Inconvenient
Stylish	(M = 4.13, SD = 2.23)	Unstylish
Organized	(M = 3.79, SD = 1.96)	Disorganized
Impressive	(M = 3.89, SD = 1.68)	Unimpressive
Well-planned	(M = 3.44, SD = 1.86)	Poorly-planned
Pleasant	(M = 4.08, SD = 2.18)	Unpleasant
Private	(M = 5.41, SD = 1.95)	Public
Distinctive	(M = 5.14, SD = 1.98)	Ordinary
(Composite)	(M = 3.87, SD = 1.56)	**(N = 244)**

FIGURE 1: The layout.

Positive adjectives	1 2 3 4 5 6 7	**Negative adjectives**
Attractive	(M = 5.02, SD = 2.31) ●	Unattractive
Complex	(M = 5.86, SD = 1.72) ●	Simple
Convenient	● (M = 3.51, SD = 2.31)	Inconvenient
Stylish	(M = 5.28, SD = 2.12) ●	Unstylish
Efficient	● (M = 3.67, SD = 2.35)	Inefficient
Modern	(M = 5.33, SD = 1.89) ●	Old-fashioned
Orderly	● (M = 4.40, SD = 2.41)	Chaotic
Warm	(M = 5.43, SD = 2.00) ●	Cold
Private	(M = 5.99, SD = 1.68) ●	Public
Ornate	(M = 5.49, SD = 1.92) ●	Plain
(Composite)	(M = 5.12, SD = 1.37) ●	**(N = 249)**

FIGURE 2: The main pedestrian entrance.

Positive adjectives	1 2 3 4 5 6 7	Negative adjectives
Appealing	(M = 3.88, SD = 2.33)	Unappealing
Complex	(M = 4.86, SD = 2.13)	Simple
Convenient	(M = 2.8, SD = 2.15)	Inconvenient
Tasteful	(M = 4.36, SD = 2.26)	Tasteless
Efficient	(M = 3.41, SD = 2.19)	Inefficient
Modern	(M = 4.58, SD = 2.25)	Old-fashioned
Uncluttered	(M = 4.14, SD = 2.24)	Cluttered
Pleasant	(M = 4.34, SD = 2.29)	Unpleasant
Private	(M = 5.71, SD = 1.86)	Public
Unusual	(M = 5.05, SD = 2.09)	Usual
(Composite)	(M = 4.3, SD = 1.40)	**(N = 247)**

FIGURE 3: The precinct and internal retail facilities.

Positive adjectives	1 2 3 4 5 6 7	Negative adjectives
Attractive	(M = 4.29, SD = 2.40)	Unattractive
Complex	(M = 5.59, SD = 1.87)	Simple
Useful	(M = 2.36, SD = 1.82)	Useless
Expensive	(M = 5.14, SD = 2.06)	Cheap
Functional	(M = 3.24, SD = 2.18)	Nonfunctional
Modern	(M = 5.21, SD = 1.93)	Old-fashioned
Orderly	(M = 3.44, SD = 2.31)	Chaotic
Warm	(M = 5.11, SD = 2.10)	Cold
Quiet	(M = 4.95, SD = 2.43)	Noisy
Ornate	(M = 5.44, SD = 1.93)	Plain
(Composite)	(M = 4.45, SD = 1.42)	**(N = 218)**

FIGURE 4: The community hall.

Positive adjectives	1 2 3 4 5 6 7	Negative adjectives
Beautiful	(M = 4.54, SD = 2.33)	Ugly
Well-balanced	(M = 4.20, SD = 1.71)	Poorly-balanced
Useful	(M = 3.57, SD = 2.37)	Useless
Stylish	(M = 4.87, SD = 2.17)	Unstylish
Organized	(M = 4.48, SD = 1.84)	Disorganized
Impressive	(M = 4.30, SD = 1.65)	Unimpressive
Well-planned	(M = 4.06, SD = 1.94)	Poorly-planned
Pleasant	(M = 4.96, SD = 2.10)	Unpleasant
Private	(M = 5.63, SD = 2.04)	Public
Ornate	(M = 5.45, SD = 1.90)	Plain
(Composite)	(M = 4.60, SD = 1.54)	**(N = 240)**

FIGURE 5. The mezzanine level.

Positive adjectives	1 2 3 4 5 6 7	**Negative adjectives**
Beautiful	(M = 5.05, SD = 2.20)	Ugly
Well-scaled	(M = 4.70, SD = 2.21)	Poorly-scaled
Convenient	(M = 3.94, SD = 2.36)	Inconvenient
Expensive	(M = 5.31, SD = 1.89)	Cheap
Functional	(M = 3.66, SD = 2.10)	Nonfunctional
Modern	(M = 4.98, SD = 1.93)	Old-fashioned
Orderly	(M = 4.31, SD = 2.30)	Chaotic
Warm	(M = 5.33, SD = 1.90)	Cold
Private	(M = 5.77, SD = 1.85)	Public
Distinctive	(M = 5.40, SD = 1.93)	Ordinary
(Composite)	**(M = 4.92, SD = 1.43)**	**(N = 241)**

FIGURE 6: The street facade.

Positive adjectives	1 2 3 4 5 6 7	Negative adjectives
Attractive	(M = 4.04, SD = 2.39)	Unattractive
Well-scaled	(M = 4.31, SD = 2.32)	Poorly-scaled
Convenient	(M = 3.43, SD = 2.46)	Inconvenient
Stylish	(M = 4.19, SD = 2.33)	Unstylish
Organized	(M = 4.42, SD = 1.97)	Disorganized
Modern	(M = 4.76, SD = 2.12)	Old-fashioned
Well-planned	(M = 3.85, SD = 1.98)	Poorly-planned
Cheerful	(M = 4.71, SD = 2.14)	Gloomy
Uncrowded	(M = 5.10, SD = 2.21)	Crowded
Distinctive	(M = 5.15, SD = 2.04)	Ordinary
(Composite)	(M = 4.33, SD = 1.58)	**(N = 248)**

FIGURE 7. The blocks.