



The Direction for a Sustainable Residential Environment Plan based on Resident Testimonies about the Use of the 'Streets in the Sky' of the Park Hill Flats in the United Kingdom

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ABSTRACT

This study aims at proposing a sound and sustainable development direction of an residential environment by analyzing testimonies of residents who lived in Park Hill flats or their surround at Sheffield City in the United Kingdom. The results are obtained through the analysis on a residential environment of Park Hill flats, opinions of the residents on its refurbishment, and effects of the building on the residential environment.

The block of Park Hill flats was a community with a strong unity and solidarity, but that became increasingly a slum by the decline of the physical and social environment since the 1980s. In particular, it was identified that the deterioration of the social environment than that of the physical environment was a major cause of the decline. Nevertheless, it was found that "streets in the sky", the concept applied in Park Hill, played a key role in activating the community in the apartment complex. However, that street system in the complex has caused noise, poor security, and invasion of privacy. If such problems are solved, the streets in the sky will be a meaningful alternative for community activation and then ensuring sustainability in Korean residential environments that lost the function of the community.

KEYWORDS

Park Hill,
Sustainable residential environment,
Streets in the sky,
Testimonies of residents,
Community activation

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1. Introduction

1.1. Study background and purpose

So far Korea has gone through the constant urbanization along with its economic growth; the existing old residential neighborhood has been developed as high density neighborhood with high-rise for the development profits. However, due to the lack of the ground connection, the low-birth rate and aging, etc., one-person units were produced, which contributed to reduce the residents' social contacts in community, causing the social damages. Lately, as an architectural effort to resolve such situations, the social interest for 'the street in the sky' is increasing but

there are no rational standards established yet, either technological or institutional.

The study is intended to understand 'the street in the sky' applied in the Park Hill residential area in Sheffield city, the United Kingdom, in terms of its diverse functions and roles, application value, based on the residents' statement cases. The street in the sky in the Park Hill organically connects the buildings, thus resolving the issue of low frequency of the ground connection in high-rise buildings. However, many parts of Park Hill were demolished in early 1990s and the remodeling was done in 2010. Reviewing the growth and regeneration of Park Hill will be a good case study for practical realization of a sustainable residential environment. Thus, this study proposes a planning direction for developing the sound and

sustainable residential environment in Korean society, by analyzing realities about the use of "the street in the sky" on the basis of the statements of the residents that are currently living or once lived before at the Park Hill and its neighborhood.

1.2. Study method and contents

In this study, first we looked at the Park Hill flats's history and the application background and planning concept of the street in the sky, and collected, through the mass media, the testimonies stated by the residents who are currently living or once lived before at the Park Hill and its neighborhood. Using the collected data, we analyzed Park Hill's residential environment and the residents' opinions to its refurbishment, and inferred Park Hill's architectural effects. Based on such experiences at Park Hill, we discussed comprehensively the planning direction to achieve the sound and sustainable residential environment in the perspective of human ecology.¹⁾

2. Park Hill's summary

2.1. Park Hill's history

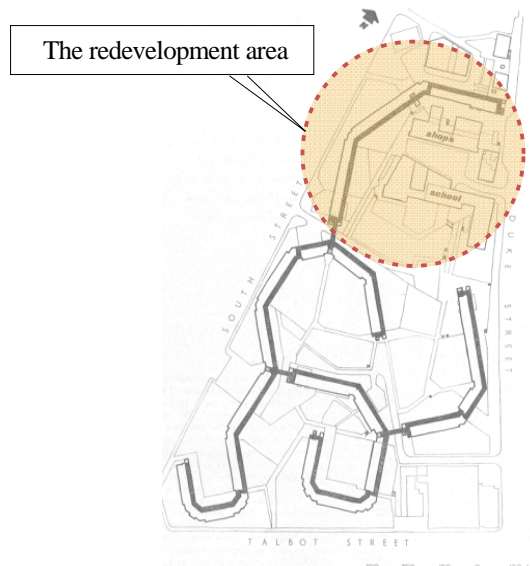
Planning permission for the first two of three phases to build Park Hill²⁾ was granted in the first half of 1956. 990 units were built in Part 1 until March, 1961. In the first stage of Part 2, 152 units were built in January, 1962. In the second stage of Part 2, 1,169 units were completed in July, 1965. The terrace sections were named as Hyde Park Walk and Hyde Park Terrace.

Open spaces between the blocks in Park Hill were designed to gradually broaden as the height of the buildings increases toward the north, in order to ensure the maximum amount of light and air.

At first, Park Hill was successful, but as the time went by, the shortcomings such as material weathering, poor soundproofing, the easy access provision for the thieves

1) Human ecology is a science that ecologically interprets the human developments by systemizing the socio-environmental system and understanding the relationship between human and the system [1]. In this respect, human beings interact with the environmental system within the buildings and their neighboring spatial environment, making the social phenomena.

2) Park Hill was designed by Jack Lynn and Ivor Smith, who was influenced greatly by British architect Alison Smithson, a pioneer of Brutalism influenced by Le Corbusier.



The above image was adapted by authors

Fig. 1. The layout of Park Hill (Source: [2], p. 404.)

Table 1. Brief history of Park Hill

Year	Milestones	Related image
1956	Planning permission granted for Park Hill (Part 1 and Part 2)	
1961	Sheffield council agrees Park Hill Part 2 to be called the Hyde Park Estate.	
1962	The first stage of Part 2 completed.	
1965	The second stage of Part 2 completed.	
1990	Demolition of Block B, Hyde Park	
1991	Refurbished Hyde Park blocks accommodate competitors participating in the World Student Games.	
1998	Park Hill listed as a Grade II building.	
2007	Park Hill refurbishment commences.	
2010	Colorful anodized aluminium infill panels were installed.	

through the decks, worsened its reputation.

The biggest part of the Hyde Park blocks was demolished in the early 1990s and the rest were refurbished as the dormitory for the competitors participating in the World Student Games hosted in Sheffield in 1991. In 1998, English Heritage listed Park Hill at Grade II for its architectural importance, its ground-breaking use of "street in the sky" and the impressive scale. In November, 2007, the initial work for the overall revision and repair for Park Hill began with the windows and brick infill panels removed and the structurally reinforced; in 2010 the anodized aluminum

infill panels were installed for replacing the brick infill panels with similar colors. [3].

2.2. Introducing the street in the sky

Park Hill's major design characteristics were inspired by Le Corbusier's Unité d'Habitation and Peter and Alison Smithson's various plans such as Golden Lane project in London (Fig. 2), introducing the concepts of “the streets in the sky” (Fig. 3). Broad decks were installed on every three floors and designed for sitting and chatting along with the play, allowing the approaches to each unit. Also, it was intended to induce social contacts in repetition on the decks.

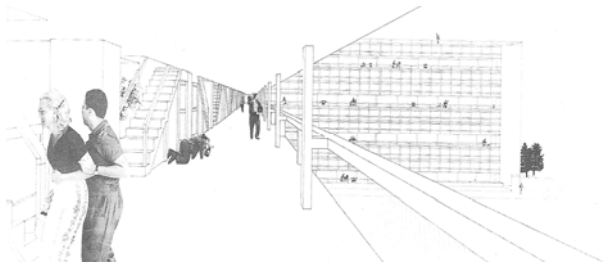


Fig. 2. “Street in the air” of the Smithsons’ Golden lane projects (1952) (Source:[4], p. 33)

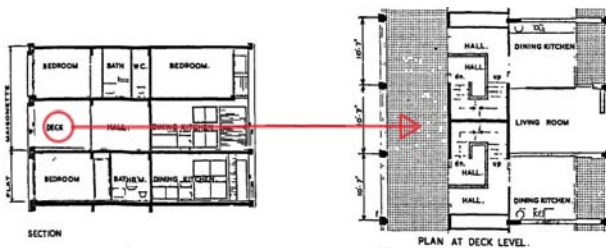


Fig. 3. The street deck of Park Hill (Source:[5], p. 112)

Except for the top decks, through each deck, one can directly access to the ground level [5].

3. Data collection and analysis method

3.1. Data collection

Sheffield and South Yorkshire branch of B.B.C. broadcasting station introduced the pictures and stories about experiences and memories of residents at the Park Hill and its neighborhood through operating the broadcasting station homepage[6] from December, 2007 till June, 2009, in order to provide the information regarding the regional people and places. In this study, from the residents' statements, we extracted 120 cases describing the residents' opinions regarding the residential environment of Park Hill and its refurbishment.

3.2. Analysis method

In this study, first the collected statement data were divided into the favorable statements and the negative statements about Park Hill. These stated cases were utilized as the important POE (Post Occupancy Evaluation) data to help understand the weaknesses and the strong points of Park Hill's residential environment, and the opinions about its refurbishment.

Also, from these testimonies, we analyzed the negative effects and the positive effects of Park Hill architecture (Fig. 4). Based on the analysis, we proposed the direction to reasonably plan the sustainable residential environment.

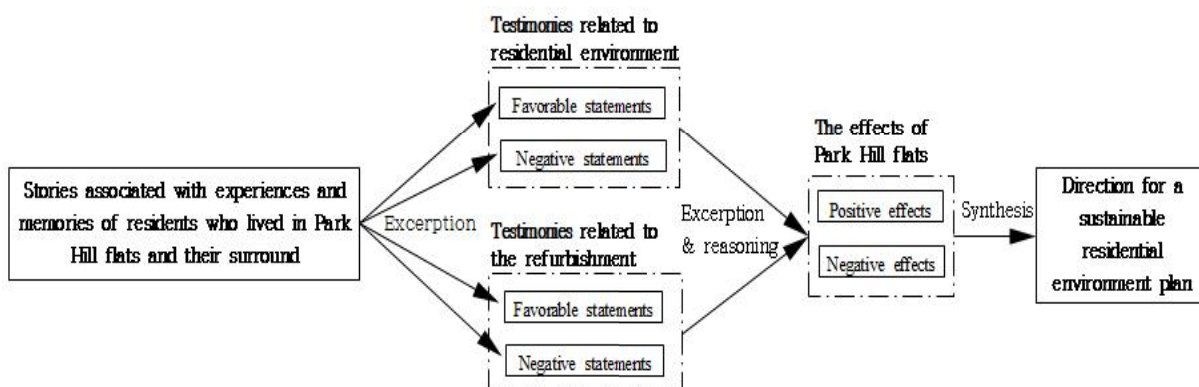


Fig. 4. Framework of this study

4. Categorization and analysis of the residents' statements

4.1. Statement contents and types

In the collected statement data, along with the personal episodes experienced in the past at Park Hill, there are the potential evaluation for the residential environment and the opinions on the redevelopment of Park Hill.

Especially, at Park Hill with 'the street in the sky', the residents' likes and/or dislikes regarding the residential environment are clearly differentiated as shown the residents' contradictory statement types categorized into the favorable statements and the negative statements of Park Hill in this study.

4.2. Residential environment related statement analysis

We were able to extract 72 cases regarding the residential environment among the residents' statements,

Table 2. Testimony examples related to residential environment

No	Favorable statements	No	Negative statements
FE-1	It was a community everyone knew each other.	NE-1	With all the services running through the concrete there was a constant whining hum.
FE-2	I have many fond memories of life on the Park hill flats.	NE-2	Kids ran amok.
FE-3	There were wonderful views across to the city centre.	NE-3	It remains the single, ugliest building in this country.
FE-4	I drank in the many pubs in the area.	NE-4	There were...(omitted)... rubbish, graffiti and a nasty smell about the area.
FE-5	The schools on the site gave me a quality education, and the teachers seemed genuinely interested in their work.	NE-5	I've seen park hill's slow decay.
		NE-6	The area has had many problems with crime, drugs and gangs for many years.
FE-6	I enjoyed my teens around the flats. And the coffee bar where we all met up, and the youth clubs...(omitted).	NE-7	I spent about a year living on Hyde park in the 80's and it was enough to make me want to throw myself off the balcony.
FE-7	We all lived in a clean environmental area.		
FE-8	They are a sign of Sheffield's progressive approach to housing ...(omitted).	NE-8	The decline of the flats followed the decline in Sheffield's industries, suddenly there was less money and more unemployed people living there.
FE-9	I used to play on the corridors on my roller skates. All the kids were happy.		
FE-10	It was a great place to live in the sixties and early seventies.	NE-9	The council have contributed to the flats decline by putting problem people on it instead of spreading round the council housing stock.

from which 41 cases were positively stated and 31 cases negatively. Most of the favorably stated cases were describing the community activation effects from the street in the sky at the Park Hill (19 cases including FE-1) and the memories and nostalgia from the Park Hill (11 cases including FE-2).

It was stated that the Park Hill community was so vitalized that the residents knew all the residents (FE-1). Aside from this, there were favorably stated cases regarding the views (3 cases including FE-3), neighboring environment (FE-4, FE-5, FE-6, FE-7), and the symbolism (FE-8).

There was also a favorably stated case (FE-9) stating the fun memory of roller skating on the street in the sky in the childhood years, but this behavior can cause noise to other residents, so the favorable statements categorized in this study don't necessarily mean the positive effects to the residential environment.

Park Hill was constructed in a slum district of Sheffield and provided a good living environment in the 1960s and 1970s (3 cases including FE-10), but slowly it deteriorated to become the slum area again.

Through the negatively stated cases from the Park Hill residents' statements regarding the Park Hill residential environment, It was found that in the environmental aspect, there were noise (NE-1, NE-2), ugly appearance (4 cases including NE-3), stenches (NE-4), etc.

Especially, we could gather from the negative stated cases that due to the ghettoizing (3 cases including NE-5) it was deteriorated to the place where there were various vandalism, violence, drug use (14 cases including NE-6) abundant. The stated case saying that in the 1980s one felt the suicidal urge (NE-7) shows the extremely dark situations at the time.

The fundamental reason for Park Hill's deterioration was from the social reality such as the economical hardships (2 cases including NE-8) and the wrong policies (2 cases including NE-9), rather than from the people living in the community.

4.3. Redevelopment related statement analysis

In this study, besides the critical statements regarding the past and present residential environment as investigated in

Section 4.2, we could extract the 48 stated cases that provide some future opinions on Park Hill related to the refurbishment at the time before conducting it. There were 22 cases that have stated favorable and optimistic views on the Park Hill's refurbishment, and 26 cases of negative and pessimistic aspects. Table 3 shows the representative cases.

Among the favorable statements regarding the refurbishment, there were the opinions, encouraging the project's success (4 cases including FR-2) through the possibility of the community activation and hoping the Park Hill's survival (FR-1). However, among the favorable statements, there were some concerns that the project could draw an unintended result due to wrong policies and errors by the Sheffield council and developers (2 cases including FR-3), the unfeasibility and inequality of the parcel pricing (FR-4 including 2 cases), and speculative purpose development (FR-5).

Also, for the community activation and security maintenance, there were concrete requests as follows: regional community establishment (2 cases including FR-6), police input (3 cases including FR-7), hobo's migration (2 cases including FR-8), rehabilitating education for the drug addicts and gangs (FR-9), residents' voluntary citizen patrol activities (FR-10), environmental improvement of the dark and danger lurking places such as the under the bridges (FR-11). However, among the favorable statements, there were requests (FR-12) for the induction of entertainment facilities such as clubs and gay bars that can be negatively taken in the residential environment.

We can clearly see, through the residential environment related stated cases previously described, that the sociality and the community spirit that existed in 1960s and 1970s deteriorated in the 1980s and on. Among the negative statements regarding such deteriorated Park Hill's redevelopment plan, there were 9 cases of statements wishing for the Park Hill teardown. Among these cases, there were statements emphasizing the teardown (4 cases including NR-1), using the extreme expressions, and the statements (2 cases including NR-2) proposing the useful replacing spaces with things such as green space after teardown. Also, there were negatively stated cases (2 cases including NR-3) considering Park Hill's major sceneries

formed by the street in the sky, as Sheffield's very ugly scenes, and cases with the concerns that it might fall in the hands of the developers' profit generating means (NR-4).

Such negative opinions can be extracted from the negative statements described above regarding the investigated residential environment. From these, it was found that the physical environmental factors to lead the negative opinions are the weathered and worn down look of the street in the sky and the noise generated from the building and the social environmental factors are the drug use and violence and the wrong policies and economic

Table 3. Testimony examples related to the refurbishment of Park Hill

No	Favorable statements	No	Negative statements
FR-1	Yes, I think park hill flats should stay.	NR-1	Blow them up!
FR-2	It will be lovely to see the new generation of people living as a close community in a fab building, that has so much potential.	NR-2	Don't waste the time and money, knock it down, and make it greenland.
FR-3	(Omitted)... let's not spoil it by going cheap on this project as I suspect the Sheffield council wants!	NR-3	Are they simply going to be living in the shadow of this giant once again?
FR-4	The No. 1 Priority in my opinion is affordable housing for local people.	NR-4	It's our city not some developer trying to make money.
FR-5	(Omitted)... rather than simply developing for pure profit and investment.	NR-5	If these will be such great places to live, make the architects, planners and developers live there in a standard average flat for 10 years.
FR-6	I think it is a good idea to refurbish the flats...(omitted)...I think there should be the setting up of local community groups.	NR-6	I believe the Park Hill designers/developers probably think the moon is made of cheese, that the world is flat and that Rex Harrison did actually talk to the animals!
FR-7	I would recommend a police presence in the area to protect the rights of everyone, old and new to the area.	NR-7	I think that it will be great place for the first 2 years then it will gradually morph back to what it was before – a place where crime, poverty, drugs and antisocial behaviour thrive.
FR-8	It will be fantastic. I just hope they move the tramps to a more suitable place.	NR-8	Unless you change the people the place will just become as it is now.
FR-9	As to gangs and druggies and car crime, oh come on please, every city has them. let's try and educate them instead of name calling.		
FR-10	Any re-furbished community will only prove to be good in the long-term if the people that eventually live within it both care for it and in some ways, self police it.		
FR-11	I really look forward to them regenerating South Street and the bit at the bottom near the tram bridge though as that bit is pretty dark and dingy.		
FR-12	A 'gay' bar/ small club would be a nice addition.		

downturn and the hostility drawn from that.

Especially, among the negative statements, there were statements (8 cases including NR-5, NR-6) pointing out that the city council, the designers, and the developers did not face or understand the social reality regarding the residents and the neighboring environment.

Among the negative statements, there were statement cases that expressed the concern that Park Hill might become the hotbed of crimes and poverty, even if redeveloped and remodeled (3 cases including NR-7). These cases prove the necessity of the fundamental social environment improvements before the physical environmental redevelopment.

This becomes clearer with the stated cases (3 cases including NR-8) saying that unless there are changes made in the people's minds for the social environmental improvement, Park Hill's redevelopment will be meaningless

5. Architectural effect analysis and plan direction proposal

In this chapter, among the previously investigated statements, the social circumstances such as economics and policies were excluded and the only architectural effects of Park Hill were extracted and analyzed.

5.1. Positive effects

Among the stated cases collected, the positive effects of Park Hill flats are extracted and summarized in Table 4. Among such positive effects, the important thing is that it greatly contributed to the residents' community vitalization (14 cases including PE-1~PE-8). Such effect was mainly achieved from the street in the sky made of wide deck installed in front of each unit, and confirmed through the residents' statements. Also, based on the positive effects of the views (4 cases including PE-10, PE-11, PE-12), we could gather that such street in the sky played a wonderful role to provide a view toward the Sheffield city.

One more thing to note is that the floor heating system drawn from the Korean traditional heating system, Ondol, was mentioned as very modernized facility compared with the previous other residential types (PE-13).

5.2. Negative effects

The negative effects of Park Hill were induced through the analysis of related statements including those shown in Table 5. Induced from such negative effects, we could see that the street in the sky and the facilities generated noise constantly. We can assume the noise was from such things as children rollerblading (NE-1) or running around (NE-2) on the broad decked street in the sky, whose noise being delivered to each unit, or from ducts of the facilities (NE-3).

Another negative effect is that due to the lack of the security, vandalism occurred in the premises (15 cases including NE-4, NE-5). This is due to the easy pedestrian access with the architectural devices such as the street in the sky and the structure mixed with the residential and the commercial facilities including the drinking bars and the stores with its functions allowed the easy access for the strangers.

However, some statements were stating that the residents were feeling secure, and that there were voluntary security organization formed and running for the

Table 4. The positive effects of Park hill flats

The inferred effects	No	Testimony examples
Activate community	PE-1	It was a community every one knew each other.
	PE-2	Every body seemed to get on with their neighbours and there was a strong bond between families.
	PE-3	We all stuck together and looked after each other...(omitted).
	PE-4	There was neighborliness and respect for each other.
	PE-5	It was a thriving community.
	PE-6	We all stuck together and looked after each other, and felt safe, we all lived in a clean environmental area...(omitted).
	PE-7	Everyone's really friendly, pleasant and helpful
	PE-8	It was a thriving community.
		※ 14 testimonies including the above statements.
Good view	PE-10	The view over the east end of the city was amazing.
	PE-11	I always found the sight of these flats set against the hill side (and the Kelvin and Hyde Park flats) amazing.
	PE-12	There were wonderful views across to the city centre.
		※ 4 testimonies including the above statements.
Modernized facilities	PE-13	Under floor central heating and "Garchey" waste disposal, it was very modern compared to where we lived before, in rooms with outside toilet and shared bathroom.

Table 5. The negative effects of Park hill flats

The inferred effects	No	Testimony examples
Noise	NE-1	I used to play on the corridors on my roller skates.
	NE-2	Kids ran amok.
	NE-3	With all the services running through the concrete there was a constant whining hum.
	※ 5 testimonies including the above statements.	
Lack of safety	NE-4	Vandalism was rife.
	NE-5	There were burnt out cars, rubbish, boarded up pubs and shops.
	※ 15 testimonies including the above statements.	
Ugly appearance	NE-6	It remains the single, ugliest building in this country. I feel sorry for the people who come to Sheffield as tourists, and that eyesore is the first they see.
	NE-7	They are just rebuilding the crime ridden, dirty eyesore that is already there!?
	※ 4 testimonies including the above statements.	

security keeping(FR-10). Only the residents living nearby outside of Park Hill seemed to think that Park Hill was not taken as a safe place to live in. That reason might be found in the deterioration³⁾ of economic circumstances in 1980s and the malfunctions thereof, in addition to the problems of the building itself.

Also, the concrete and brick constituting the street in the sky formed Park Hill's major exterior appearances. However, its effects were investigated as something very negative (NE-6, NE-7). This can be assumed to be due to the fact that the public tastes have changed, considering the fact that Park Hill was constructed in the late 1950s.; when it was opened, its design was modern and refreshing to the public taste but over time its appearance had been worn out due to its deterioration.

5.3. Future direction proposal

We could see from the analysis result that the biggest positive effect among the Park Hill's architectural influences are the community vitalization. In this aspect, the concept of 'the street in the sky' applied in Park Hill needs to be induced in the future residential forms, for the

3) Britain received IMF support, since the sharp decline of the British pound value in September, 1976, and escaped in September, 1977, from IMF support due to the continuing currency deflation and improving the financial system, etc. In November, 1979 as Thatcher was appointed as the prime minister (1979-1990) and pursued the Labor Union Reform, privatization of public enterprises, reducing the government functions, attracting/expanding the foreign investment, and the financial reforms, Britain received the unstable society-economic circumstances. [7]

purpose to restore the community function that was lost in the Korean high-rise apartment centered residential types. However, the basis preparation is urgently needed in order to solve the economic burden and technological problem as per the induction of the street in the sky and related basic facilities, and if we suggest the follow-up direction in the economic, technological, and policy making aspects, they are as follows:

In the economic aspect, the street in the sky's function can be transferred to the concept of the multi-function and fusion/ complex and the planning approach is need to use the space for the things other than pedestrian function, such as facilities, renewable energy production space such as solar power equipment, green space such as green house and the city farm. In the technological aspect, we need the design and construction technology development securing the noise barrier for the noise transferred from the street in the sky, fire safety and pedestrian safety, residents privacy protection, etc.

In the political aspect, so as to support the prescribed economic and technological aspects, it is needed to establish the related legal system for the continuous technology development and application of various incentive support, approval system simplification and rationalization. Especially, it is also needed to establish the government support system to develop and distribute the manual, etc. to secure the street in the sky's operation and maintenance/ management.

6. Conclusion

Korea had experienced the loss of the community function in the past as the existing living environment changes to the mass produced high-rise residential neighborhood as per the urbanization. We could see from the neighboring residents' statements that the Park Hill was an residential neighborhood with the harmony and solidarity but had deteriorated since 1980s. Such ghettoization implanted the negative opinions in the residents about Park Hill, with its deteriorated and outdated exterior appearance in the physical environment and its noise problem working as the major elements to give negative opinions toward the living environment. Especially, Park Hill's crime problem and the rundown

exterior appearance was the cause of the statements and opinions opposing the refurbishment.

The stated cases arguing that the national policy and economic circumstances deterioration affected it to become the hotbed of crimes imply that in addition to the residential architecture's physical environment, the socio-environmental elements are the major factors to determine the residential environment's sustainability. Notwithstanding, we could see through statement data analysis that the broad decked street in the sky, applied to Park Hill, induced the community activation and provided the residents good views. Thus, if for the negative effect of the street in the sky, such as noise, poor security, privacy intrusion, etc., problems solving means can be found, then it can provide an alternative idea to vitalize the community by inducing the residents' sociopetal behavior in the Korean residential environment that had lost the community function due to the lack of contacts and communication between the residents. The restoration of such communication function can be a plan to secure the soundness and sustainability of the residential environment in the future.

Especially, it was meaningful that the economic, technological and political directions drawn through investigation/analysis on the Park Hill's street in the sky proposed that new function and role need to be introduced in Korean residential environment that has been pursuing the high-rises and complexity, etc. Also, though this study limits its subject as the Park Hill, we can expect a new value as reference source for the future studies in that this study proposed the potential use of the street in the sky as the practice tool to realize the sustainable living space and broke the trite concept of it as the pedestrian space. In the follow-up studies, using the quantitative analysis tool such as Space Syntax[8] for the analysis of street and spatial system, we also need to develop the model for analyzing the existing street in the sky and obtaining the optimum design proposals for that.

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