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Chapter

Symmetrical Aspects of Urban Regeneration in Seoul

Mi-Sun Park, Seunghee Lee and Uk Kim

Abstract

Korea has developed very rapidly since 1980s highlighted with Seoul olympic, and urbanization necessarily incurred. Population grew with increasing housing demands, but old towns could not provide enough land. The old town was already congested, and living conditions fell off. Therefore, new towns outside the old town were planned and built through three sequential phases. This suburbanization brought about heavy load on commuter transportation and air pollution. At the same time, improper infrastructure and amenities turned new towns into bedtowns. To escape from bedtowns, people returned to the old town, and urban remodeling was needed to accommodate adequate living conditions. In doing so, local characteristics were lost. Urban regeneration aroused as a countermeasure to this mishap. In this study, urban regeneration reinforced with smart technologies is suggested to revive lost placeness, communal connectivity, and urban orientation. Gentrification is another important issue to be resolved for the sustainable urbanization. This study focused on symmetrical aspects of the successful urban regeneration.

Keywords: urban regeneration, symmetrical aspects, placeness, connectivity, urban orientation, ecologically integrated community

1. Introduction

Urbanization has proceeded rapidly since the industrial revolution, and explosive expansion of the city brought about suburbanization to avoid high population density, traffic congestion, and contaminated environment. New towns were constructed outside the cities of industrially advanced countries. In Korea, there were three phases of constructing new towns since 1980s, and shortcomings of fast growth have been exposed.

Because new towns functioned as bed towns, they had comprehensible problems. Therefore, people began to return to old towns, and urban remodeling was needed to improve out-of-dated infrastructure and weary environmental conditions. In doing so, local characteristics were lost, and uniform scenery became common. Urban regeneration aroused as a countermeasure to this mishap.

In this study, urban regeneration reinforced with smart technologies is suggested to revive lost placeness, communal connectivity, and urban orientation. Gentrification is another important issue to be resolved for the sustainable urbanization in old towns. Symmetrical aspects were main topics to be dealt with for the successful urban regeneration.

2. Need for urban regeneration

2.1 New towns

In order to meet the needs of modern urban functions which had begun with the industrial revolution, the concept of new town should have resolved the exposed problems therewith. It started as building of "new regional community" in England and executed the recovery projects worldwide after World War 2. In Korea, the new town projects were initiated in 1960s to attain both the goals of national and regional development and resolutions of urban problems in mega cities. The construction of new towns aims at stabilizing the housing market in metropolitan area and also solving dwelling problems.

By 1980s, inside Seoul, there is no more land for housing projects, and so outside the green belts, new towns were built. Five new towns under comprehensive plans accommodate offices, housings, commercial buildings, municipal boroughs, sports facilities, and parks. By 1990s, the dissemination of new housing helps stabilizing housing costs, and the extension of roads and subways improves transportation system. However, vicinity towns of smaller sizes were developed with poor plan and consequently caused serious problems due to insufficient infrastructure and coarse conditions. Besides, local employment did not match the migrating population to new towns. Thus, new towns became bed towns for metropolitan.

Twelve new towns were planned after second millennium to stabilize land supply for comfortable housing and to establish foothold for economic self-reliance. They were expected to loosen the stress of overcrowded metropolitan life and to facilitate secured dwelling. Unlike the new town projects of 1980s, these new towns faced the unpopularity for sale. It is due to the supply overflows in vicinities, insufficient financial investment for housing, and poor infrastructure conditions.

Most recent attempt for new towns targeted the area between Seoul metropolitan area and first-phase new towns (**Figure 1**). Korean government boosted housing projects for the economic growth, but the market responded in a different way only to raise existing housing prices. The number of empty housing units increased, and in return, social problems have been occurring in recent new towns. New town projects also have led to the speculation in real estate and raised land prices. The emphasis on housing policy without consideration of urban structure brought about social inefficiency and lost urban characteristics (placeness, connectivity, and orientation).

New towns around Seoul expand in every direction with more than 40 km radius. They are not differentiated in their functional divergence, but just bed
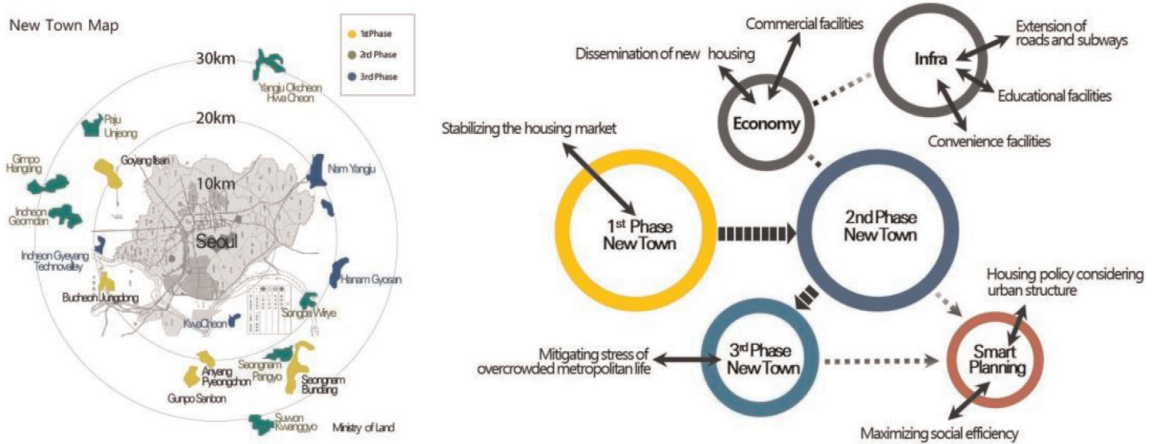

Figure 1.
New town map and planning policy.

towns, so to speak, and more new town plans are in discussion. Spatially, dispersed new towns have serious problems in public transition and traffic congestion. Present megalopolis traffic networks cannot handle explosive increase of commuters between new towns and the city.

The present process of traffic network building after site development will weaken the traffic control system and ease the transportation for commuters. With the repetition of current processes without understanding the relationship between the spatial structure and traffic networks, it is almost impossible to realize the smooth and effective traffic networking. Comprehensive planning and execution of traffic networks in megalopolis regions are required to improve traffic conditions fundamentally.

2.2 Urban remodeling vs. urban regeneration

In the last 50 years, Korean government's urban development plan has centered on the expansion of new towns and new neighborhoods because of rapid industrialization and urbanization. The result is the gravitation of population in major cities and disorganized ordination in vicinities. Therefore, the urban remodeling projects were introduced for the remedy. Unexpectedly, it dropped life conditions and lost historical and cultural identity.

On the other hand, suburbanization of modern cities raised the land price of suburbs with popularity, while in the old town center, the population reduced and the physical conditions antiquated. Worn out buildings were torn down, and the old town was remodeled. This method with policy caused various urban problems from environmental dilapidation and ecological incongruity.

About 10 years ago, the development of new towns advocating smart city surfaced as the nucleus of urban growth. But this trend of urban growth deepened the extremity of old and new town's circumstances. In the process of separate development of new towns, city identity is very likely to be diminished and eventually lost. Against this deformity of urban growth introduced is the urban regeneration scheme and plan.

In result, the reduced population growth, change of industrial structures, unplanned urban expansion, and aging residential environments caused urban fall-off incrementally. Urban regeneration attempts to rejuvenate degenerating cities by enforcing regional competency, inducing new functions, and utilizing local resources economically, socially, and environmentally. Contralto urban maintenance, urban regeneration takes higher priority in reserving sustainable community integrating housing policy with socioeconomic perspectives.

3. Shortcomings of urban regeneration

3.1 Placelessness

Since 1970s of new urbanism era, the connection between space and people and its concept has received growing interest. According to Relph [1], place consists of physical condition, functional behavior, and meaning, and placeness arises from the interactions between them. Schulz [2] stated place was the collection of existential objectives more than space in location, and it is due to the interactions between people and their settings. In 1981, Steele [3] announced that placeness meant individuals' specific experience upon specific environment, which was human reaction to stimulus from environmental settings. It is the interactive concept, which

includes feelings, consciousness, behaviors, and their interactions inside its existence.

Place gives people the sense of belonging or connecting to that place. However, regional civic authorities in Korea for recent urban readjustment plans have ignored the unique character of neighborhood community and the continuity of time. The emphasis is mainly laid on solving functional problems due to the high population density and worsening environmental conditions since the rapid industrialization from 1970s. Therefore, urban scenery appears uniform in most urban sectors missing diversity and identities. It was named placelessness by Relph.

3.2 Disconnectedness

Urban spaces consist of both artificial elements such as buildings and bridges and natural elements such as woods and rivers not to mention people living in there. These elements have certain disposition and pattern by bilateral interactions so that they impose urban characteristics and consistent schemes. Together, they integrate urban spaces resulting in enhanced functional efficiency, environmental balance, bestowed placeness, and elevated spatial potentiality.

Undoubtedly, urban connectivity implies organic connection of these elements which covers not only the physical link between them but also the concoction of consisting elements of urban spaces. The flow path of pedestrians and cars, mixed use development, density and shape of facilities, energy efficiency, landscape, landmark and significant viewpoints, and block/section division are all critical components of the urban connectivity.

Spatial interactions instigating connectivity occur at the boundaries by which spaces are divided by the different land uses, and they include contact areas and their surroundings. Natural parks will immediately appear as direct interactions between urban spaces and represent visual connectivity. The mental connectivity of accumulated time with respective spaces is required in existing cities, especially in urban regeneration.

3.3 Disruption of social community

Human activities and their domains are fundamental aspects of urban life to maintain the sustainability of cities. In precedence of environmental issue, the connectivity of neighbors is the core of urban function. Human relationship and communication compose the connectivity of diverse classes of citizens. It is an urban community where these actions are barreled.

In Korea, autogenous local community had not been formed until the rebirth of local autonomy governance, since the urbanization occurred in short period of rapid industrialization. Japanese occupation and Korean War led to the disconnection of historical tradition to urban culture, and urban community did not take root in sudden social transition. Community was formed by the authoritative government and was functioned as the mass mobilization for public intentions.

Urban community is meant to be a city itself or a number of communities that are scattered over the city. Until recent period, urban policy seems to have been governed by the market throughout the world. The counteractive issue of community building is raised quite recently. The community building starts with the protection of placeness.

In Korea, rapid urbanization dismantled rural communities, and urban communities have not been completed up to appropriate level. Lagging and

underdeveloped urban areas do not get satisfactory effects by the government support or market-led approaches. Most regional cities just tried to resemble Seoul, the capital city of administration, economy, and culture, in which they have lost locational characteristics and uniqueness of place. Identical urban scenery and culture are brought out.

Now civil movements are trying to rebuild communities to resolve housing problems and to improve environmental conditions such as green housing collaboration, urban village alliance, and livelihood joint union. These communities acknowledge that it is not possible for government or market alone to resolve the conflicts in transit, housing, environment, energy, education, security, and well-being. Government does not cope with the versatile lifestyles and living demands, and the market only deals citizens as consumers and not as dwellers. Urban regeneration is getting spotlight from the perspective of organizing local communities, vitalizing local economy, and preserving historical valuables.

3.4 Gentrification

Gentrification refers to the phenomenon that residents or leaseholders being kicked out when the property value goes up according to the change of land use. In the course of re-urbanization, cities may confront gentrification situation. Urban development or maintenance projects reform physical space of the corresponding areas, and at the same, they change the context and placeness therewith. Reformation and reorganization revitalize the area with new functions and attractions and eventually lift real estate value of that area. It then invites developers and rich people to invest in the area, and famous stores and franchise business move in. Once underdeveloped, neighborhood with destitute artists, unrestrained bohemians, and small manual businesses turns into vital and glittering spot with visitors and shoppers. But original residents and leaseholders have to move out because of soaring rental fees, and the changed neighborhood loses its original charms and identity.

There are three types of gentrification in Seoul. (1) Commercial leading type: redevelopment of commercial area replaces small businesses with franchise business (**Figure 2**). The fact that franchise business routes out small business raises negative social issue. (2) Cultural initiative type: lagging neighborhood in old town of Seoul had potential for cultural delivery since artists moved for studios with inexpensive rent (**Figure 3**). Ubiquitous demand for modern cultural consumption commercialized the area. (3) Cultural tourism type: commercial area with attractive touring places draws large amounts of visitors (**Figure 4**). The same issue arouses as type 1.

Figure 2.
Commercial leading type 1 (photos, Korea Tourism Organization).

Figure 3.
Cultural initiative type (photos, Korea Tourism Organization).

Figure 4.
Cultural initiative type (photos, Korea Tourism Organization).

3.5 Smart city schemes

How does a city become smart? Smart city is not just a platform for computer users, but an integrated system merged into everyday life. Cities have thrived with the progress of industrialization, so functions and convenience are aptly emphasized. Ongoing development of smart systems looks for eminent security, comfortable service, and technological advance. It shapes cities and changes the society.

A number of international groups and adjoining cities have experimented smart city projects. They focused on the solutions for realistic and functional problems of contemporary cities. Traffic scheduling/control, intelligent CCTV's, energy efficiency, and environmental improvement are among them, and recently, smarter solutions are being sought by use of big data, IoT, AI, and block chain technologies. A smart city is the platform of the fourth industrial revolution, which claims to change our life paradigm (**Tables 1** and **2**).
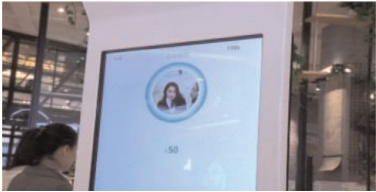
Now, the focus of smart city projects moves on into the human network and the connection between various classes. Three components are the key value-driven targets for future smart cities: people, environment, and technology. People's happiness is the ultimate goal of the smart city research and development in which urban space should be environmentally safe and socially connected with help of advanced technologies. To make the old town smart is a tough challenge because the infrastructure is old and urban structure is irregular. To overcome this challenge, symmetrical aspects of urban regeneration should be examined and key solutions should be developed.

Amsterdam, Netherlands	Kalasatama, Helsinki, Finland	Columbus, USA	London, UK
• 5G, Sensor, Camera, Open access data, Platform • Organization 3.0, (Neighbor collaboration) • "Cross-silo" collaboration • Digital connectivity • Network city	• "Sohjoa" autonomous electric car • "MaaS", Mobility as a Service • Whim service • Smart Grid • Agile Piloting	• "Virtual Singapore" platform: safety system • Smart City Challenge • Traffic, logistics • Medical, Travel smart app • Mobility and connected • Autonomous driving	• API traffic information • Rent public bicycle • Location Information • City Data Analytics Program • Borough Data Partnership • Economic Fairness—utilize metrics
On-offline platform, public-private cooperation	Government, developer, neighbor, civic group, scholar co-create system (Innovator's club)	Data integration with other cities	Data integration

Table 1.
Examples of application of smart technology (Europe).

Hángzhōu, China	Singapore	Sejong, South Korea
• Paperless • IOT and Digital wallet, Block-chain, Intelligence information technology, smart-payment (Ali-pay), Mobile payment system • Tao café: face recognition, QRcode, scanning unattended payment system.	• Living Lab • Virtual-reality city platform, • Digital twin, Block-chain • Intelligent platform	• Mobility: Smart Street, • Smart Light • Health care • Education • Energy and Environment: smart road lighting system, Smart Park, Kiosk, Smart-poll service (emergency safe bell)
Intelligence information technology	Intelligent platform	Data integration

Table 2.
Examples of application of smart technology (Asia).

4. Symmetrical aspects of urban regeneration

In this paper, symmetry indicates the complete status of intended urban regeneration, and symmetrical aspects point the composing factors for the outcome. There are three categories in those aspects, (1) the harmony of people, environment and technology, (2) the revival of placeness, connectivity and urban orientation, and (3) the integration of social community and economic community.

City is the test bed for embodying human life and smart technologies. Intelligent information management by big data and AI technologies would integrate traffic control system, crime surveillance system, energy management system, and water service system with the purpose of convenient and safe urban living. In accordance with several European cities, Korea initiated smart living lab projects that are open and cooperative to an innovative model.

It is difficult to apply smart city scheme to old town regeneration because the old infrastructure is not often compatible with smart technology. Nevertheless, smart parking system, smart garbage collection system, self-supporting energy system, and secure footpath system have been undergone as fourth industrial revolution technology applications. Undoubtedly, these attempts will increase the value index of urban life. However, the harmonious progress of people, environment, and technology can never be overemphasized in smart city projects.

Three keywords are derived for urban regeneration: living (placeness), social ecology (connectivity), and sharing economy (urban orientation).

4.1 The revival of placeness

Sircus [4] said successful place made people focus on the purpose of place and provide them with well-composed story for emotional experience. Good place is filled with vitality and vigor, and thus, Jacobs [5] suggested streets to be given back to citizens. The project for public space [6] reported essential factors for the successful place should be equipped with comfort, visual friendliness, accessibility, connectivity, utility, and intimacy. Montgomery [7] elucidated the success of public spaces entirely depends on establishing the basis for the exchange of diverse classes of people and culture. That will enable space to become meaningful and attractive place.

Seoul is pretty old city and owns significant amount of time trace marks all over the city. However, urban remodeling and reconstruction erased them not to mention the damage from Korean War. Therefore, smart technology could be the answer to restore the memory. History telling by smart devices with virtual reality can be a meaningful experience on specific places. Every city has topological peculiarity, and it used be a natural and rational route to navigate the city. Disappeared nodes, edges, and boundaries [8] are revived as familiar and attractive places virtually (**Figure 5**).

4.2 The revival of connectivity

Natural resources like lakes and rivers are well accepted as connecting places for residents and visitors. Smart technologies will not only improve their environmental conditions but also enable people with diverse interests to participate in more activities simultaneously. People could gather easily and safely and meet others with intentions. The extent of connectivity will increase significantly.

In addition, recent trends of sharing housing and transportation are also encouraging the meeting of people. This is made possible in the first place by the
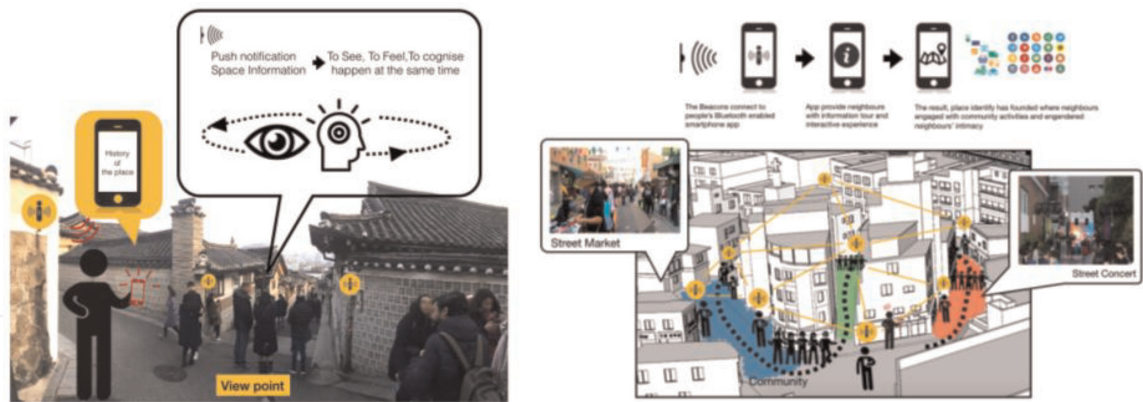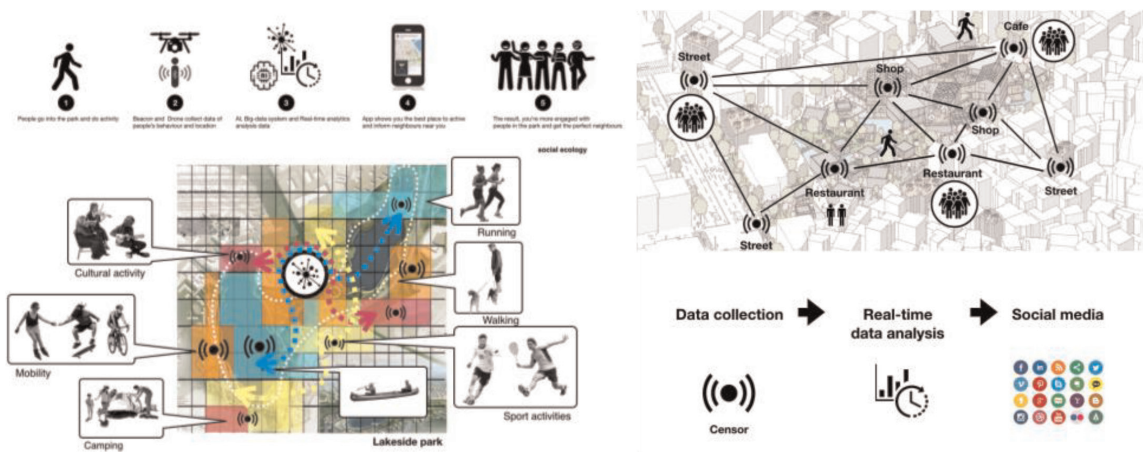
Figure 5.
The revival of placeness.

Figure 6.
The revival of connectivity.

development of social network for individuals using IT and communication services. Sharing public data is another factor to encourage people to organize groups of similar social interests. Collecting big data and analyzing them could intrigue people and organize special interest groups and locate them online urban hotspots (**Figure 6**).

4.3 The revival of urban orientation

Ancient cities had been developed along the axial line of palaces and temples. Pre modern cities were not much different from ancient cities except in more orderly manner with social classes. Grid system was adopted for efficient logistics for modern cities after the industrial revolution. Natural objects often interfered the grid, but the orientation of cities was kept with political and social hierarchies. As modernization advances, financial district became major point in the city. Cities have been shaped with landmarks, boundaries, nodes, and edges.

In old towns, urban remodeling broke the previous order and changed the urban orientation. Accumulated traces of the past are erased, and strange new blocks appeared in a brief time. Individual stores were replaced by large shopping malls. Residence areas became condominium sites. Besides, returning population to the old town led to gentrification. Familiar sceneries of small shops and alleys with neighbors were hardly seen. Urban regeneration should achieve the restoration of neighborhood and urban orientation (**Figure 7**).
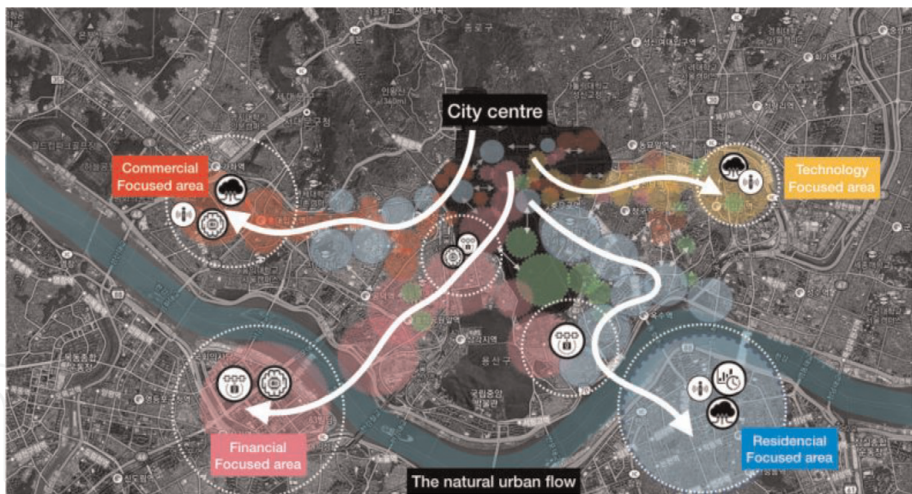
Figure 7.
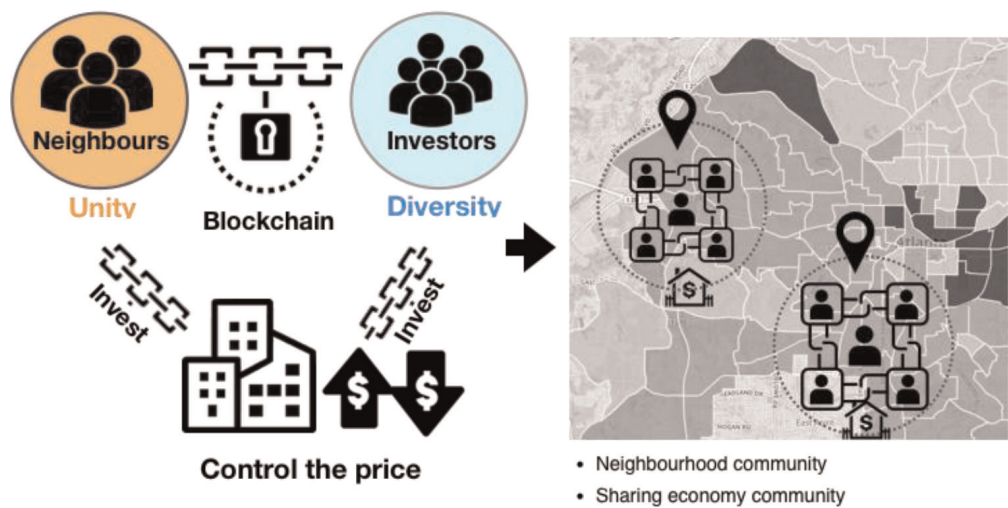*The revival of urban orientation.*

Figure 8.
Ecologically integrated community.

Final mission of urban regeneration is to avoid gentrification problems because it reorients artificially the natural urban flow. Residents and small business owners live in the same neighborhood may be able to keep unity as one half of symmetrical aspects. Using block-chain technology, anonymous investors can join the neighborhood, and they will provide diverse ingredients as the other half of symmetrical aspects (**Figure 8**).

5. Conclusions

Defining symmetrical aspects of urban regeneration in this study suggested the experimental smart service for the revival of placeness, connectivity, and urban orientation. The service measures neighborhood alleys and small piazzas in scale, density, absorption, and deterioration with digital devices and analyzes collected data for familiarity and network tension with big data and AI technologies. Autonomous protection and control of back alleys and unplanned street corners would provide residents safety and comfort. Finding viewpoint among the area would give an idea where to place a new piazza and to induce sustainable urban orientation.

The ecologically integrated community will help eliminate gentrification phenomenon and sustain urban layout and social order. Ecological integration requires the fusion of dissimilar communities, which are defined by geographical proximity and by sharing economy. Together, they will contribute to keep the community sustainable.

Acknowledgements

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