This research explored design opportunities and new challenges with a paradigm shift toward participatory processes in neighbourhood regeneration. Further, it emphasized the significance of local businesses and their local knowledge to overcome the challenges faced by designers. Three types of local knowledge Handler was established based on the Literature Review: Possessor, Processor, and Implementer. Through content analysis on 30 practical cases, 18 types of Actors in the process of participatory neighbourhood regeneration were identified. Based on these findings, two ways of local businesses’ contributing to neighbourhood regeneration projects were proposed: as a knowledge reservoir, and as a neighbourhood guide. As future studies, the authors suggest 1) understanding the types and forms of local knowledge possessed by local businesses and how to motivate them to share their knowledge; and 2) devising new methods of participation for local businesses that can enhance designers’ capabilities in neighbourhood contexts.

Keywords: Participatory design, neighbourhood regeneration, local knowledge, local business

Introduction

Recently, public participation in urban planning has been highlighted to reflect people’s diverse and complex needs. These can be referred to as local knowledge (Sanoff, 2005; Berman, 2015; Mueller, Lu, Chirkin, Klein & Schmitt, 2018; Moore & Elliott, 2016; Al-Kodmany, 2001). Local knowledge is defined as the contextual intelligence that only locals possess (Fischer, 2000) and includes needs, perceptions, desires, or information on local contexts (Berman, 2015; Corburn, 2003).

This knowledge poses as key challenges in participatory neighbourhood regeneration which means endeavours to involve residents in revitalizing neighbourhoods with their voluntary activities (Tallon, 2013; Yamazaki, 2012). One challenge is that urban planners have trouble rendering local knowledge acquired from residents and incorporating it into planning processes (Mueller et al., 2018; Moore & Elliott, 2016; Berman, 2015). The other challenge is that urban planners have a lack of tools and methods to involve residents who hold local knowledge in participatory neighbourhood regeneration (Sanoff, 1990; Towers, 2003; Burke, 1979).

Both these challenges can be successfully dealt with design as demonstrated in the emerging cases. First, design can render such implicit knowledge into useful resources to solve urban issues. For example, Baibarac & Petrescu (2017) introduced a new co-design process for enabling diverse interest groups to solve urban development issues by sharing knowledge and mutual support. Second, design can develop tools and methods to involve residents and even moderate conflicts among diverse stakeholders. Dalsgaard (2012) conducted a
series of participatory design workshops involving citizens, architects, and others, in developing a public library in Denmark. Pahk, Self, & Baek (2018) developed a novel design method to moderate conflicts among multiple stakeholder groups dealing with neighbourhood problems. These examples show how design can address the aforementioned urban planners’ challenges caused by local knowledge. In this context, design can act as an effective means to involve people and mitigate complexity of handling local knowledge in participatory neighbourhood regeneration.

Nevertheless, scholars of design have reported existing difficulties in incorporating comprehensive local knowledge into participatory neighbourhood regeneration (Pahk et al., 2018; Lee, 2008). This is because the urban planning context is different from the typical design context, in which a particular product or service has a homogeneous target user group (Dalsgaard, 2012). Whereas, participatory neighbourhood regeneration projects include heterogeneous stakeholders such as residents, local businesses, technical experts, and government. As such, design has difficulties in mining local knowledge and mediating cooperation within a multidisciplinary team. In other words, the heterogeneity of stakeholders makes it difficult for designers to handle local knowledge in participatory neighbourhood regeneration.

To overcome these difficulties, it is necessary to discover the roles of participants and strategically design projects, but most of the researches focus on involving general residents (Toker, 2007). Local businesses, especially, can take critical roles in participatory neighbourhood regeneration for the following reasons. First, local business owners can play multiple roles in their neighbourhoods, including resident, producer, seller, and consumer. They can represent diverse stakeholder groups. Second, local business owners possess both of first- and second-hand experiences (Sánchez-Jankowski, 2008). They frequently socialize with other residents at their own shops, and making them well-informed of other residents’ experiences. Finally, local business owners are interested in and have a strong will to discover other residents’ needs, preferences, and opinions because such knowledge can influence their businesses (Chapple & Jacobus, 2009). To summarize, local businesses have the potential for providing abundant knowledge and moderating other locals. Therefore, local businesses may complement the designers’ challenges in handling local knowledge.

Despite their potentials, there is a lack of design research on the modes of local businesses’ participation in neighbourhood regeneration. This research accordingly attempts to explore how designers can involve and utilize local businesses to overcome the designers’ challenges.

Three research aims have been formulated:

1. To establish the significance of local businesses and its local knowledge in participatory neighbourhood regeneration and identify knowledge Handlers’ types;
2. To identify and characterize Actors within each Handler’s type and identify the Actors’ roles in participatory neighbourhood regeneration;
3. To propose the ways in which local businesses can contribute to participatory neighbourhood regeneration projects.

To achieve these aims, the research methodology includes 1) Literature Review in urban planning and participatory design to define key research concepts and construct an analytical framework and 2) content analysis with practical cases on participatory neighbourhood regeneration to identify the Actors and their roles in the journey of local knowledge.

Literature Review

This section reviews the current challenges of participatory design approach for neighbourhood regeneration. Furthermore, it emphasizes the role of local businesses in participatory neighbourhood regeneration. Based on the conclusions of the Literature Review, a conceptual framework including Handlers of local knowledge is built. The framework will be used to analyse practical cases during content analysis.

Design Opportunities and New Challenges in Participatory Neighbourhood Regeneration

Participatory neighbourhood regeneration refers to endeavours to revitalize neighbourhoods with residents’ voluntary activities (Tallon, 2013; Yamazaki, 2012). It is necessary to explain why the authors set the scope of participatory urban regeneration as a neighbourhood. A neighbourhood, the smallest local unit, is regarded as a more effective testbed for experimental projects that require residents’ participation than a mega-city.
Within a neighbourhood, residents naturally meet each other and share their experiences (i.e., local knowledge). Consequently, people can have shared goals and challenges associated with individual well-being that improve their neighbourhood environments (Manzo & Perkins, 2006). This enables residents to be more engaged in neighbourhood projects. Through participation in such projects, people become spontaneously tackling complex and wicked local problems, and it makes their neighbourhoods more sustainable and resilient (Watkins et al., 2018; Zautra, Hall, & Murray, 2008). Because of residents’ willingness for and immediate effect of experiments, many endeavours occur in neighbourhoods. Therefore, the authors selected neighbourhoods where the participatory design approaches to solve urban issue are frequently taking place for reviewing cases.

Scholars of urban planning have trouble handling local knowledge and involving locals in participatory neighbourhood regeneration (Mueller et al., 2018; Moore & Elliott, 2016; Berman, 2015; Sanoff, 1990; Towers, 2003; Burke, 1979) and design can be an effective tool for their challenges. A review of the previous research suggests four roles of design in this context. First, design can make people be engaged in participatory projects even if the topic is unfamiliar (e.g., backward region development) or seems difficult to them (e.g., local housing policies) by using visualization or storytelling techniques (Hanington & Martin, 2012; Kim, Woo, & Nam, 2018). Second, design can facilitate people’s expression by using toolkits such as visual aids, cards, or well-planned questions (Manzini & Rizzo, 2011; Baptista & Sampaio, 2015). Third, design can translate invisible and intangible ideas into communicable forms by using visualization and prototyping (Lee, 2008; Manzini & Rizzo, 2011). Finally, design can mediate conflicts among different interest groups and coordinate multidisciplinary cooperation (Mueller et al., 2018; Manzini & Rizzo, 2011) by translating both expert’s and non-expert’s language and creating a shared language (Mueller et al., 2018; Lee, 2008). With the recognition of these design specialities, many attempts have emerged to bring participatory design to urban planning projects with the purpose of making locals active players in the process of local problem-solving (Baibarac & Petrescu, 2017; Dalsgaard, 2012; Pakh et al., 2018).

Despite this potential of participatory design, neighbourhoods provide designers with new challenges caused by the following differences. The first difference is the heterogeneity of neighbourhood stakeholders. Typical design projects conducted in lab environments typically include homogeneous user group who could be clearly identified and have common goals (Dalsgaard, 2012; Schuler & Namioka, 1993). However, stakeholder groups are much more heterogeneous in neighbourhood regeneration (Dalsgaard, 2012). A participatory neighbourhood regeneration project generally includes residents, local businesses, architects, administrators, designers, and others. High levels of heterogeneity among stakeholders induce complicated and even conflicting relationships, which makes it difficult for designers to handle local knowledge. The second difference is that a designer is no longer the sole expert. In typical participatory design projects, designers have the authority to plan workshops, make or devise toolkits for workshops, recruit appropriate participants, moderate sessions, and analyse outcomes (Lee, 2008). In participatory neighbourhood regeneration, however, there are other technical experts, such as administrators, urban planners, architects, as well as designer (Al-Kodmany, 2001). Moreover, residents are not just research subjects, but local experts who have local knowledge. This fact makes it difficult for designers to mediate and coordinate communication among multidisciplinary teams.

To summarize, design can be a powerful tool in participatory neighbourhood regeneration and it provides research opportunities for the design community. However, due to heterogeneous participants with their own expertise, it is necessary for designers to deeply understand the context of participatory neighbourhood regeneration and develop the better way to handle local knowledge.

**Significance of Local Businesses in Participatory Neighbourhood Regeneration**

To complement the aforementioned designers’ challenges, it is worth noting that local businesses can affect neighbourhoods. From the perspective of local knowledge, local business owners have richer knowledge than other neighbourhood stakeholders. One reason is that their workplaces (i.e., local shops) are the places where residents naturally gather (Sánchez-Jankowski, 2008). Consequently, shop owners acquire local knowledge including perceptions, opinions, and grievances raised by residents, and hence, Sutton (2010) suggests that a local shop can be the key base for social interaction, inclusion, and social organization. The other reason is that local business owners are willing to acquire local knowledge because such knowledge can affect their businesses (e.g., residents’ food tastes, preferences, and dining culture can affect local restaurants) (Noble, Griffith, & Adjei, 2006). For these reasons, local businesses can play a crucial role in discovering local
knowledge, processing it into useful design resources, and incorporating it into participatory neighbourhood regeneration.

Despite their potentials, local business owners often cannot participate in most of neighbourhood projects. The reason is that existing participation channels are not suitable for their circumstances. The most popular channel in participatory neighbourhood regeneration is a workshop (Sanoff, 2000; Toker, 2007). A workshop is a typical participatory design format because it helps diverse stakeholders communicate and set shared goals, strategies, and outcomes through the introduction of novel procedure (Muller, 2003). A workshop invites people to spend hours doing activities in a dedicated place and it is a burden for local business owners to make time to attend workshops away from their workplaces. They need to be present at their workplaces during business hours.

To overcome the limitations of current participation channels for local businesses, Woo & Nam (2018) suggested that local business owners participate in neighbourhood regeneration by providing or sharing their business resources. For example, one supermarket set up a bench in front of the shop to increase revenue. It made pedestrians gather and stay there and triggered the public conversation on their neighbourhood issues. This case shows that local business owners can participate in neighbourhood regeneration even if they do not attend workshops.

The aforementioned case implies that there exist alternative modes of participation for local businesses in neighbourhood regeneration. However, existing participatory design research has little focused on the roles of local businesses in there. Participatory design methods for neighbourhood regeneration should be further developed so that local business owners can fully contribute to projects with their expertise and resources. Therefore, it aims to propose how designers strategically deploy local businesses in participatory neighbourhood regeneration by analysing the current practical cases which involved local businesses.

**Conceptual Framework: Handlers of Local Knowledge**

To achieve the aims, the authors established three *Handlers* of local knowledge in neighbourhood projects based on the Literature Review. Berman (2015) proposed five stages of participatory process in urban planning: determining project motives, planning the procedures, extracting local knowledge, processing local knowledge, and incorporating local knowledge into planning. From the perspective of local knowledge, this process can be classified into extracting hidden knowledge (tacit knowledge), processing it into explicit insights and workable concepts (refined knowledge), and implementing those concepts on the neighbourhood environment (realized knowledge). Accordingly, the authors redefined three stages of participatory neighbourhood regeneration, and labelled each stage as a role describing a way of handling local knowledge: 1) Possessor, 2) Processor and 3) Implementer (Figure 1). Hereafter, these are referred to as Handlers of local knowledge.

![Figure 1: Journey of local knowledge and its Handlers.](image)

First, **Possessor** holds local knowledge, ingredients of a participatory regeneration project. Local knowledge is usually embedded in locals, so it is also called a “local way of knowing” (Corburn, 2003). Accordingly, Possessor’s participation can provide not only latent needs of neighbourhood but also useful information on local context. Hence, Possessor can be sub-classified according to the types of local knowledge.

Second, **Processor** renders or enables other participants to render tacit local knowledge applicable. Local knowledge is usually too implicit, immature, and abstract to incorporate into the neighbourhood (Berman,
Thus, it should be extracted from Possessor and refined by Processor. Hence, Processor can be sub-classified according to the ways of processing knowledge.

Third, Implementer actualizes concepts from the refined knowledge. Usually, the proposed concepts in urban context require construction or permission from the government, because concepts for neighbourhood regeneration need the use of public facilities or public spaces. Implementer can be sub-classified according to the ways of implementing the proposed concepts.

This framework 1) provides overall stages of incorporating local knowledge in participatory neighbourhood regeneration at a holistic level and 2) can be utilized to identify the specific role of participants in neighbourhood regeneration projects.

**Methodology**

To specifically identify types of Actors, which is a sub-category of Handlers, content analysis on practical cases was conducted. The content analysis method aims to obtain a systematic understanding of new phenomena using an analytical framework established by existing knowledge (Elo & Kyngäs, 2008). As the analytical framework, three priori codes (e.g., Handlers) were established in the Literature Review, which are Possessor, Processor, and Implementer. Two experienced design researchers were participated in the whole analysis process.

**Case Collection**

Practical cases were collected in advance of the analysis, and case selection criteria were set as follows.

First, within each case, researchers or practitioners should take a participatory approach with the purpose of neighbourhood regeneration. A participatory neighbourhood regeneration project aims to empower people and deals with topics affecting neighbourhood physical environments (Toker, 2007). Hence, it should involve locals (e.g., resident, local business owner, student) in planning process, and its aim can be divided into three: 1) community building to enhance relationships between locals (e.g., social dining events) as a prerequisite for planning neighbourhood experiment (Sanoff, 2005; Mason, 2010); 2) community experiment to apply a novel participatory approach for urban problem solving (e.g., workshop for identifying neighbourhood problems); and 3) community business to take an entrepreneurial process (e.g., job creation or start-up support) by utilizing local knowledge to pursue community goals (Johnstone & Lionais, 2004). Therefore, cases were selected that met at least one of these purposes.

Second, each case should contain a detailed description of its participatory process, the stakeholders’ activities, and the outcome implemented in a neighbourhood. The researchers collected cases not only from academic papers, but from white papers, books, brochures, websites, and blogs. The search keyword includes ‘community-led regeneration’, ‘neighbourhood planning’, and ‘participatory urban planning’.

Lastly, each case should involve at least one local business as local knowledge’s holder (i.e., Possessor, Processor, and Implementer) in its process. As this research aims to highlight the role of local businesses in participatory neighbourhood regeneration, local businesses should be involved in each case. A local business is defined as a neighbourhood small-scale enterprise, and such enterprise is generally independently owned and operated (e.g., grocery stores, hardware stores, or restaurant) (Sutton, 2010). The researchers hence looked through each case report and excluded it if there was no depiction of local businesses’ participation.

The cases are not confined in the design field in order to impartially analyse the practical cases and characterize Actors handling local knowledge at holistically. Ultimately, 30 cases were collected as the sources of content analysis (see Table 1).
Table 1: Cases collected for content analysis.

<table>
<thead>
<tr>
<th>Case No.</th>
<th>Project/Aim</th>
<th>Brief Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>01</td>
<td>Community experiment</td>
<td>To promote an island by preserving the unique value of the neighbourhood without disturbing residents’ lives</td>
</tr>
<tr>
<td>02</td>
<td>Community experiment</td>
<td>To redesign a public road by involving diverse road users to suit their needs</td>
</tr>
<tr>
<td>03</td>
<td>Community experiment</td>
<td>To design specific solutions for improving liveability in the neighbourhood by involving local communities</td>
</tr>
<tr>
<td>04</td>
<td>Community business</td>
<td>To encourage the youth to settle down in a neighbourhood by discovering local specialties and growing local talents</td>
</tr>
<tr>
<td>05</td>
<td>Community business</td>
<td>To promote local industries by discovering local specialties and growing local craftsmen</td>
</tr>
<tr>
<td>06</td>
<td>Community building</td>
<td>To activate conversation among people in a depressed shopping district by sharing local business owners’ stories</td>
</tr>
<tr>
<td>07</td>
<td>Community building</td>
<td>To strengthen relationships between residents and local businesses by planning local festival together</td>
</tr>
<tr>
<td>08</td>
<td>Community business</td>
<td>To revitalize a neighbourhood by making residents encounter each other and investing local start-ups</td>
</tr>
<tr>
<td>09</td>
<td>Community experiment</td>
<td>To enable the youth to settle down in a neighbourhood by sharing residents’ lives and supporting their local experiments</td>
</tr>
<tr>
<td>10</td>
<td>Community building</td>
<td>To strengthen relationships between university students and local businesses by learning cooking skills from local chefs</td>
</tr>
<tr>
<td>11</td>
<td>Community building</td>
<td>To design programs for a public park by applying residents’ daily community activities</td>
</tr>
<tr>
<td>12</td>
<td>Community experiment</td>
<td>To design a playground by involving children in a planning process</td>
</tr>
<tr>
<td>13</td>
<td>Community experiment</td>
<td>To design educational programs at a playground by involving children in a planning process</td>
</tr>
<tr>
<td>14</td>
<td>Community experiment</td>
<td>To make proposals for the future neighbourhood planning by involving residents</td>
</tr>
<tr>
<td>15</td>
<td>Community experiment</td>
<td>To discover the values of a neighbourhood by publishing magazines containing residents’ daily lives</td>
</tr>
<tr>
<td>16</td>
<td>Community business</td>
<td>To promote local industry by discovering local specialties and branding</td>
</tr>
<tr>
<td>17</td>
<td>Community experiment</td>
<td>To make policy for local revitalization by involving residents in writing proposals</td>
</tr>
<tr>
<td>18</td>
<td>Community experiment</td>
<td>To make policy for local revitalization by involving children in interviews with local seniors</td>
</tr>
<tr>
<td>19</td>
<td>Community building</td>
<td>To moderate conflicts on dam construction between residents and government by designing a deliberative workshop</td>
</tr>
<tr>
<td>20</td>
<td>Community building</td>
<td>To build community for revitalizing public park</td>
</tr>
<tr>
<td>21</td>
<td>Community business</td>
<td>To support community activities by a shopping mall’s providing places for residents</td>
</tr>
<tr>
<td>22</td>
<td>Community experiment</td>
<td>To hold a local festival by involving residents in a planning process</td>
</tr>
<tr>
<td>23</td>
<td>Community experiment</td>
<td>To renovate a place with historical values by involving residents in a planning process</td>
</tr>
<tr>
<td>24</td>
<td>Community experiment</td>
<td>To discover latent problems in a neighbourhood by children’s participation</td>
</tr>
<tr>
<td>25</td>
<td>Community business</td>
<td>To revitalize a traditional market by utilizing local business owners’ stories</td>
</tr>
<tr>
<td>26</td>
<td>Community experiment</td>
<td>To promote a neighbourhood by discovering local specialties and branding local identity</td>
</tr>
<tr>
<td>27</td>
<td>Community experiment</td>
<td>To promote a neighbourhood by storytelling residents’ and places’ knowledge</td>
</tr>
<tr>
<td>28</td>
<td>Community experiment</td>
<td>To revitalize a neighbourhood by the elderly’ art activities</td>
</tr>
<tr>
<td>29</td>
<td>Community building</td>
<td>To promote traditional market by publishing a newspaper containing local business owners’ stories</td>
</tr>
<tr>
<td>30</td>
<td>Community experiment</td>
<td>To discover local problems by involving residents in process of community development</td>
</tr>
</tbody>
</table>
Content Analysis

The collected cases were analysed through priori coding and affinity diagramming (see Figure 2).

First, all corpus describing stakeholders and their activities were extracted. Then, each activity was categorized by the priori codes (i.e., Possessor, Processor, and Implementer) based on how each stakeholder handled local knowledge. For example, Cowley road project aims to redesign a public road by involving diverse road users (Symonds, 2005). In this case, a team of locals conducted interviews of pedestrians and encouraged them to drop by the exhibition site for collecting feedback. The team induced road users to express their implicit local knowledge, and thus they were coded with Processor. Another stakeholder group, road designers in the same case developed the final design based on pedestrians’ comments, so they were coded with Implementer. At the end of priori coding, 48 activities were coded as Possessor, 138 activities as Processor, and 104 activities as Implementer.

Subsequently, the coded activities were grouped with affinity diagramming (Beyer & Holtzblatt, 1999), and each group was labelled as a sub-code describing activities precisely. For example, ‘to conduct an interview’ and ‘to encourage people to join’ were coded with Processor. However, the priori code, Processor, cannot concretely describe the way of processing, hence the researchers sub-classified each priori code. Accordingly, each priori code (i.e., Handler) is further divided into sub-codes (i.e., Actor). The final codes characterize specific Actors within each knowledge Handler in participatory neighbourhood regeneration (see Figure 3). A total of 18 Actors were identified through content analysis.

![Figure 2: Content analysis process.](image)

After the content analysis, the authors classified the Actors within each Handler’s by typical design activities. This step aims to identify common or distinctive activity between two contexts, which are participatory design and participatory neighbourhood regeneration. With reference to books published in design field, the Actors within each Handler were grouped again using affinity diagram method and labelled as a design activity. As a result, seven categories were identified (see Figure 3).

Finally, the frequency of each stakeholder’s (e.g., designer, local business, and other stakeholders) performing each Actor’s role was counted from the collected cases, and its proportion was calculated (see Figure 4). Based on the results, the authors could propose new ways in which local businesses can contribute to neighbourhood regeneration projects.

Results and Findings

Figure 3 shows Actors within each Handler’s type and the Actors’ roles in participatory neighbourhood regeneration. There are three types of Handlers: Possessor, Processor, and Implementer. Within those categories, there are five Actors in Possessor, eight Actors in Processor, and five Actors in Implementer. Actors within each Handler are classified by design activity. Each Actors and design activity is described below.
Figure 3: Final codes.

Possessor

Five sub-codes were found under Possessor, one of the three priori codes. The sub-codes represent five Actors, labelled according to the way in which they express local knowledge:

- **Roamer** displays local lifestyle or local culture just by roaming around the neighbourhood;
- **Babbler** says personal thoughts, opinions, grievances, needs, and information out loud;
- **Maker** creates artefacts reflecting local feelings, dreams, fears, and aspirations;
- **Talent** shares his or her skills relevant to local context (e.g., craft, cooking);
- **Heritage Donor** donates his or her spaces of historical or cultural value.

As seen in the definitions above, Possessors hold local knowledge within their lives. To collect such knowledge and incorporate it into a planning process is the aim of participatory neighbourhood regeneration (Al-Kodmany, 2001; Berman, 2015). Accordingly, it is necessary for designers who lead participatory neighbourhood regeneration projects to understand what makes Possessors actively express local knowledge. There are two ways through which Possessors express local knowledge: revealing and inspiring.

First, Possessors reveal undetermined and flexible local knowledge as evidenced by the definitions of Roamer, Babbler, and Maker. For example, in Case 15 (see Table 1), residents’ daily lives, especially their use of public space, were captured by designers and revealed via a lifestyle magazine. This magazine triggered interaction between residents and promoted the neighbourhood. In this sense, the residents acted as Roamers. In Case 6, designers produced a series of posters containing short excerpts from local merchants’ interviews (e.g., their pride and joy, news, and stories) and displayed them in a stagnant shopping district to attract pedestrians. Here, local knowledge was revealed by merchants acting as Babblers. In Case 1, children drew pictures of the island where they were born and raised. Their drawings became unique local souvenirs by designers and artists. The children as Makers unintentionally and implicitly revealed their perceptions of, desires for, and information on their neighbourhood via creations.

Roamers’ knowledge is acquired via observation, Babblers’ knowledge is acquired via interview, and Makers’ knowledge is acquired via creation. These correspond with the ways in which designers can learn from users in participatory design, that is, through what users do, what users say and what users make (Sanders, 2003). This fact implies that this area, participatory neighbourhood regeneration, can utilize design methods to collect local knowledge. How, then, can designers facilitate these Actors to express their own knowledge? First, Possessors who reveal local knowledge express it through natural activities, and hence designers should help Possessors express knowledge in a guided way.
Possessors also inspire designers by voluntarily providing their own local knowledge, as evident in the definitions of Talent and Heritage Donor. These Actors are newly identified in the neighbourhood regeneration context. For example, in Case 10, restaurant owners acting as Talents taught university students who lived alone how to cook. While spending time together, the owners and students shared their stories naturally and developed emotional intimacy with each other. Here, the owners’ cooking skills were the trigger for these social dining events. In Case 23, one local business owner acting as a Heritage Donor donated his closed sawmill and asked designers to utilize the space for neighbourhood regeneration. The designer extracted the local knowledge (e.g., stories of residents, spatial narrative) embedded in the sawmill and transformed it into a workshop where residents could learn woodworking skills from local craftspeople and make furniture on their own.

In these cases, the skills of the Talents and the places belonging to the Heritage Donor triggered neighbourhood regeneration projects. Both cases show that the aim and outcome of the project are aligned with the given local knowledge. Talent and Heritage Donor provide their knowledge when the aim of a project aligns with community or business value they pursue. Accordingly, designers should plan projects in ways that persuade local businesses to participate, thereby encouraging these Possessors to provide their knowledge.

With Possessors expressing local knowledge, the Processors’ role begins in earnest.

Processor

Eight Actors were coded under Processor and labelled according to the way in which they process local knowledge:

- Extractor extracts local knowledge from possessors;
- Envisioner provides vision regarding neighbourhood development that is based on local knowledge;
- Conceptualizer creates workable concepts for neighbourhood development that are derived from Envisioners’ visions;
- Director leads and manages the processing of local knowledge;
- Facilitator encourages and facilitates the processing of local knowledge;
- Neutralizer mitigates conflicts among participants during the processing of local knowledge;
- Network Weaver builds human networks for processing local knowledge;
- Host stages events or provides spaces for the Possessors of local knowledge gather together.

Processing is not only the phase of participatory neighbourhood regeneration in which designers demonstrate traditional design skills but also the phase in which participation and cooperation begin. Based on the results, the authors identified three types of design activities that Processors perform: conceiving, collaborating, and setting-up.

First, Processors conceive possible solutions for neighbourhood development based on Possessors’ local knowledge. Extractor, Envisioner, and Conceptualizer are the Actors involved in this activity. Designers conceive the design matter, define non-existing problems, and plan solutions even in unfamiliar fields (Buchanan, 1992; Lawson & Dorst, 2013). In this way, designers involved in participatory neighbourhood regeneration produce workable concepts for neighbourhood development by conceptualizing Possessors’ local knowledge. For example, in Case 25, designers as Extractors and Envisioners discovered the uniqueness and competitiveness of the traditional market, unnoticed by locals, and established a branding strategy to revitalize the neighbourhood. In Case 17, a designer as Conceptualizer collected residents’ future visions for the neighbourhood and, based on those visions, made a proposal to persuade the local municipality.

However, in neighbourhood regeneration situations, locals often become active Processors with an increased emphasis on public participation. For example, in Case 18, children acting as Extractors discovered local issues by interviewing elderly residents, and the data was utilized for developing a neighbourhood regeneration policy. In Case 23, local university students acting as Envisioners generated concepts for renovating an old workshop.

As the roles of locals in conceiving solutions become more important, Processors’ roles are expanding to enable collaboration among participants. Director, Facilitator, and Neutralizer are under this activity. These Actors help encourage collaboration among participants and ensure the participatory nature of processes during projects. Here, participatory design is applied to enable users to easily and voluntarily participate in projects. For example, in Case 2 and Case 3, designers acting as Directors and Facilitators devised novel
participatory processes to increase residents' engagement in civic public interest and to enable multidisciplinary collaboration in urban development. In Cases 14, 17, and 18, designers planned and organized generative workshops where local stakeholders devised solutions for neighbourhood development.

During these projects, conflicts can be exacerbated due to political conflicts, which can lead to heightened emotions. In such situations, it becomes difficult to properly reflect people’s opinions. A new finding in this research was the observation of Neutralizer role in which residents ease unnecessary conflicts among people. For example, in Case 15, a vendor selling milk communicated with local elderly people while selling her products. The elderly gathered around the vendor to confide their stories. Case 19 was a participatory process to mediate a dispute over dam construction between residents and the municipality. University students heard both sides and expressed opinions based on their own judgement, and their activity neutralized the conflicts.

The last design activity under Processors is performed by Network Weaver and Host, who set up a project. The processes of setting up the environment and recruiting participants affect the results of the project and, therefore, these processes should be planned out such that they align with the project goals (Kuniavsky, 2003). Symonds (2005) reported that a local shop was a neutral space where many people felt more comfortable than at the municipal office. This suggests that spatial conditions can impact public participation. For example, in Case 22, a designer put together a team to plan a local festival and recruited artists relevant to the festival's theme. The designer in this case acted as Network Weaver who had the vision, energy, and social skills to connect with diverse individuals (Krebs & Holley, 2006). Harmonious team composition helps the effective processing and implementation of local knowledge. As such, designers should be skilled at understanding participants’ capabilities and capable of managing the team in such a way as to optimize team harmony while engaged in projects. However, designers who are non-locals usually have not developed the local human networks and do not have access to the local facilities needed to set up a project. In these circumstances, local businesses are powerful Actors when it comes to supporting project set-up. For example, in Case 28, a café was utilized as the place where the elderly learnt paper-based crafts and exhibited their craftworks. In Case 10, a diner was utilized as the place where youth learnt cooking from a chef. As such, local businesses can provide gathering places for people and indirectly support the processing of local knowledge.

Implementer

Five Actors were coded under Implementer and labelled according to the way in which they implement proposed concepts:

- Actualizer designs and realizes concepts proposed by Conceptualizer;
- Approver grants permission for the actualization of neighbourhood regeneration projects;
- Sponsor provides funds or places necessary for project implementation;
- Planter establishes organizations to maintain and safeguard implemented regeneration solutions;
- Megaphone promotes the implemented solutions.

After the roles of Possessors and Processors are carried out, local knowledge is implemented in the neighbourhood. The authors identified two types of design activities that Implementers perform: delivering and sustaining.

First, Actualizer, Approver, and Sponsor under Implementer deliver the final outcome of a project. 'Deliver' is the last phase of the Double Diamond model from the British Design council in which the resulting project is finalized, produced and launched. Designers take a leading role in the actualization phase. However, actualization in urban planning appears in various forms, such as products, services, architectures, organizations, businesses, or even relationship building (Sanoff, 2005), and most of these forms require public goods. Accordingly, Actualizer requires permission from Approver and funds from Sponsor. For example, in Case 2, urban designers acting as Actualizers designed and realized concepts that were proposed by residents at workshops. The city council acting as Approver and Sponsor then permitted the plan and provided subsidies. As seen in this case, implementation of neighbourhood planning requires cooperation from the government. The government or municipality has the authority to approve decision-making, and without their permission, it is difficult to implement ideas in the neighbourhood, meaning local knowledge cannot be manifested. Accordingly, designers acting as Conceptualizers and Actualizers must take into consideration the need to persuade the government to approve the project in order to carry out implementation.
Sustainability is one reason for emphasizing public participation in urban planning (Amado, Santos, Moura, & Silva, 2010; Manzini, & Rizzo, 2011). Thus, care must be taken to ensure this implemented solution is not a one-off event.

In this context, Planter and Megaphone under Implementer sustain the final outcome. Participatory neighbourhood regeneration is generally conducted as a pilot study. Designers as a project leader are typically non-locals and, thus, cannot monitor the implemented solution continuously. In the beginning, locals are more likely to actively participate due to curiosity or expectation, but it can be difficult to sustain their interests once the project has been implemented. Accordingly, some designers attempt to plant the system and culture of the implemented solutions. For example, in Case 4, the project team developed local specialities based on the neighbourhood’s agriculture and fishery using a participatory approach. They established organizations to grow local talents and preserve local specialities. In Case 14 and Case 26, the designer’s role was to help locals acclimate to the participatory process and help such culture settle down after the pilot project.

In addition to Planter, Megaphone contributes to sustaining the implemented solutions by promoting projects. For example, in Case 1, the project team held exhibitions and published brochures explaining their process, achievements, and value. In Case 9, a local municipality promoted the achievement of their project, and this promotion led to an increase in the number of participants as well as subsidies from the central government. Megaphone thus gives wider publicity to a project’s achievements in order to 1) give residents pride and motivation, 2) attract others to join in, and 3) showcase their potentials to investors.

**Discussion & Conclusion**

Figure 4 shows the proportion of local businesses, designers, and other stakeholders in each Actor’s role. The figure supports the argument that local businesses can mitigate the designers’ challenges discussed in the Introduction section. How then, can designers strategically deploy local businesses in participatory neighbourhood regeneration? Based on the findings of the research, two ways in which local businesses can contribute are proposed: 1) knowledge reservoir and 2) neighbourhood guide.

**Figure 4:** Two ways of local businesses’ contribution.
**Knowledge Reservoir**

The first contribution is local businesses as *reservoirs of local knowledge*, from which designers can acquire abundant and unique local knowledge. As found from the content analysis (see Figure 4), local businesses hold rich and diverse local knowledge including the history (Cases 6, 7, 9, 25, and 29), heritage, neighbourhood locales (Cases 23 and 27), and expertise (Cases 1, 10, and 21) relevant to their businesses, as well as the needs of the local economy (Case 3). Furthermore, they possess stories containing their views not only as merchants but also as residents. Therefore, designers should utilize local businesses as key *Possessors* of local knowledge in participatory neighbourhood regeneration. However, designers often find collecting local knowledge difficult, as previously discussed.

In order to address such a difficulty and strategically utilize local businesses' knowledge, designers should first understand what types of knowledge they have, in what form it is provided, and how to engage them in sharing their specific local knowledge. The research found that local businesses, particularly, the *Talent* and *Heritage Donor* (new and original role types identified through this research) types of merchants, were willing to voluntarily offer their knowledge such as their skills and spaces, if their vision aligned with the goal of the project. Further, Woo & Nam (2018) maintained that the alignment of businesses’ vision with the community vision is a potent driver for local businesses' participation in neighbourhood regeneration. As such, designers need to tap into local businesses’ vision in order to make effective use of their local knowledge.

**Neighbourhood Guide**

The second way in which local businesses can contribute is as *neighbourhood guides*, allowing designers to enhance their capabilities to mediate diverse local stakeholders. Collaboration among diverse stakeholders actively occurs during participatory neighbourhood regeneration projects, and thus a designer’s role as an expert in moderation and facilitation becomes all the more important. The Literature Review, however, showed that the complex heterogeneity of stakeholders makes it difficult for designers to handle local knowledge and projects. In this context, the authors suggest that local businesses could mitigate such challenges of designers in a way that they lead designers toward the neighbourhoods.

As found in the content analysis (see Figure 4), local merchants are usually ‘people-in-the-know’ who are well aware of local situations including local issues, culture, talents, and resources. For example, local businesses can envision possible solutions (Case 3) or articulate the future vision of neighbourhoods (Case 8) based on their understanding of the neighbourhood. They can also guide ‘the right man in the right place’ in their local context. For example, they can discover or persuade people to engage in projects by using their personal connections and social skills (Cases 5, 15, and 21), and provide natural gathering places for locals (Cases 27, 28, and 30). These examples unveil research opportunities for developing alternative modes of participation for local businesses beyond just the workshop format. Although designers have the potential to play more active roles in participatory neighbourhood regeneration, they are often unable to demonstrate their capabilities well due to a lack of infrastructure. By involving local businesses, however, designers can more efficiently and effectively engage in participatory neighbourhood regeneration.

**Conclusion**

This research explored design opportunities and new challenges in a context which the paradigm of neighbourhood regeneration has been shifted toward a participatory approach. Further, the research emphasized the significance of local businesses and their local knowledge to overcome the challenges faced by designers. This research established three types of local knowledge *Handler* within the framework of participatory neighbourhood regeneration based on the Literature Review: *Possessor, Processor, and Implementer*. Through content analysis on 30 practical cases, 18 types of *Actors* involved in the process of deploying local knowledge for neighbourhood regeneration were then identified. Based on these findings, two ways in which local businesses can contribute to participatory neighbourhood regeneration projects were identified: as *knowledge reservoirs*, and as a *neighbourhood guides*. The significance of this research is in that it provides evidence suggesting that local businesses can help address the challenges faced by designers. Furthermore, there may be new ways of local businesses’ participation for neighbourhood regeneration projects. There are two possible directions for future research to be suggested based on this research. First, it is necessary to understand the types and forms of local knowledge possessed by local businesses and how to motivate them to share their knowledge. Second, it is necessary to devise new methods of participation for local businesses that can enhance designers’ capabilities in neighbourhood contexts.
References


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