

## Architectural Porosity: Reading the Change of Inhabitation in Urban Heritage Area

Diandra Saginatari<sup>1</sup> , Jonathan Hale<sup>2</sup> , Tim Collett<sup>3</sup> 

<sup>1</sup> PhD. Student, Department of Architecture and Built Environment, Faculty of Eng., University of Nottingham, UK.

<sup>2</sup> Prof. Dr., Department of Architecture and Built Environment, Faculty of Eng., University of Nottingham, UK.

<sup>3</sup> Assoc. Prof., Department of Architecture and Built Environment, Faculty of Eng., University of Nottingham, UK.

### Abstract

This paper explores the idea of architectural porosity, which intends to see the material and socio-spatial porosity of the built material as a conceptual framework of architectural inquiry that can be utilised to unfold architectural phenomena in different contexts. Therefore, this paper is exploratory, and the exploration intends to unfold architectural phenomena in the context of a revitalised urban heritage area. Urban heritage areas are prone to changes through regeneration or revitalisation projects. The changes result not only in physical change but within the social, economic, and cultural aspects. By addressing the dynamic, complex, and interrelated changes in the urban heritage context, the exploration in this paper is guided by an overarching question: What will architectural porosity unfold in terms of the change of inhabitation in a revitalised urban heritage area? This question will be explored by utilising the idea of assemblage thinking as a qualitative methodological approach to read an empirical case of Semarang Old Town, Indonesia, as a revitalised urban heritage area. The exploration shows that architectural porosity unfolds the relation and entanglement between material and socio-spatial porosities in the change of inhabitation in Semarang Old Town. Furthermore, architectural porosity, as architectural inquiry, could be one of the ways of approaching urban heritage context that unfolds the possibility of incorporating natural ecological cycles of plants, decay, and informal inhabitation, which are usually denied by the conventional revitalisation practice, as alternative voices in the discussion of urban heritage revitalisation.

**Keywords:** Architectural Porosity, Material Porosity, Socio-spatial Porosity, Urban Heritage, Wall.

**Corresponding Author:** [diandra.saginatari@nottingham.ac.uk](mailto:diandra.saginatari@nottingham.ac.uk)

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## Mimari Gözeneklilik: Kentsel Miras Alanındaki Yerleşim Değişiminin Okunması

Diandra Saginatarı<sup>1</sup> , Jonathan Hale<sup>2</sup> , Tim Collett<sup>3</sup> 

<sup>1</sup> Doktora Öğrencisi, Mimarlık ve Yapılı Çevre Bölümü, Mühendislik Fakültesi, Nottingham Üniversitesi, İngiltere.

<sup>2</sup> Prof. Dr., Mimarlık ve Yapılı Çevre Bölümü, Mühendislik Fakültesi, Nottingham Üniversitesi, İngiltere.

<sup>3</sup> Doç. Dr., Mimarlık ve Yapılı Çevre Bölümü, Mühendislik Fakültesi, Nottingham Üniversitesi, İngiltere.

### Özet

Bu makale, yapı malzemelerinin maddi ve sosyo-mekansal gözenekliliğini, mimari olayları farklı bağlamlarda açığa çıkarmak için kullanılabilir bir kavramsal çerçeve olarak ele alarak mimari gözeneklilik fikrini araştırmaktadır. Bu nedenle, makale keşifsel bir nitelik taşımakta ve araştırma canlandırılmış bir kentsel miras alanı bağlamında mimari olayları açığa çıkarmayı amaçlamaktadır. Kentsel miras alanları, yenilenme veya canlandırma projeleri aracılığıyla değişimlere açıktır. Bu değişiklikler, yalnızca fiziksel değişikliklerle sınırlı kalmayıp, sosyal, ekonomik ve kültürel boyutlarda da kendini göstermektedir. Kentsel miras bağlamında dinamik, karmaşık ve iç içe geçmiş değişiklikleri ele alarak, bu makaledeki keşif şu genel soru etrafında şekillenmektedir: Mimari gözeneklilik, canlandırılmış bir kentsel miras alanında yaşamın değişimi açısından neleri ortaya çıkaracak? Bu soru, niteliksel bir metodolojik yaklaşım olan montaj düşüncesi fikrinden yararlanılarak araştırılacaktır. Araştırma, Endonezya'nın Semarang Eski Kenti'ni, yeniden canlandırılmış bir kentsel miras alanı olarak ampirik bir örnek olarak ele alacaktır. Bu yöntem, Eski Kent'in sosyo-mekansal ve maddi özelliklerini detaylı bir şekilde incelemeyi sağlayacaktır. Keşifler, Semarang Eski Şehir'deki yaşamın değişiminde maddi ve sosyo-mekansal gözeneklilikler arasındaki ilişkiyi ve iç içe geçmiş ortamı koymaktadır. Ayrıca, mimari gözeneklilik, kentsel miras bağlamında yaklaşım yollarından biri olarak, genellikle geleneksel canlandırma uygulamaları tarafından dışlanan bitkilerin doğal ekolojik döngülerini, çürümeyi ve gayri resmi yerleşimi içeren, kentsel mirasın canlandırılması tartışmalarında alternatif sesler sunma potansiyelini taşımaktadır.

**Anahtar Kelimeler:** Duvar, Kentsel Miras, Malzeme Porozitesi, Mimari Gözeneklilik, Sosyo-mekânsal Gözenekliliği.

**Sorumlu Yazar:** [diandra.saginatari@nottingham.ac.uk](mailto:diandra.saginatari@nottingham.ac.uk)

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## INTRODUCTION

*"As porous as this stone is the architecture. Building and action interpenetrate in the courtyards, arcades, and stairways. In everything they preserve the scope to become a theatre of new unforeseen constellations"* (W. Benjamin & Lacis, 1979, p. 169).

Porosity is a familiar concept in architectural and urban discourse, and many of the discussions refer to the idea of porosity proposed by Walter Benjamin and Asja Lacis's essay *Naples* (originally published in 1925). Benjamin and Lacis began with this metaphorical sense of porosity that linked the quality of stone buildings to the city's atmospheric quality and livelihood. It shows porosity as a multi-scalar phenomenon which considers the micro material phenomenon, such as the porosity of the masonry wall, and the macro socio-spatial phenomenon, such as the everyday inhabitation of the people in the city. Benjamin and Lacis's porosity "extends the concept of porosity beyond the realms of the natural and the built environments and project it onto the social fabric of the city, as well as the character and psychology of the inhabitants" (Glynn, 2020, p. 67) as they mentioned the "indolence of the Southern artisan" alongside the physical structure of the city such as courtyards, arcades, and stairways as part of Naples's porosity (W. Benjamin & Lacis, 1979, p. 169).

This paper takes inspiration from this material and socio-spatial phenomena of porosity to propose and explore the idea of architectural porosity as a conceptual framework of architectural inquiry that can be utilised to unfold the architectural phenomena in different contexts. The nature of this paper is, therefore, exploratory, and the context chosen for this exploration is a revitalised urban heritage area. This paper views architectural phenomena as the ones that consist of the built material, the contexts (both environmental and social), and the practice of human inhabitation. The idea of architectural porosity intends to see the material and socio-spatial porosity of the built material as the starting point of the architectural inquiry. Material porosity refers to how materially porous the built material is, which will be observed based on the material condition and its ability to adsorb and contain traces of the environment, such as water stains and moss growth. Socio-spatial porosity refers to how the built material gives a perceivable space for human inhabitation, which will be observed based on the trace of inhabitation on and around the built material, such as typical local grocery store façade which becomes the extension space to display the produces, encroaching the pedestrian yet creating a buyer-seller encounter space. After indicating the material and socio-spatial porosity of the built material, architectural porosity will attempt to see the link and relation between the two porosities as part of the assemblage of the architectural phenomena.

As "a mixed of social/material collectives" (Harrison, 2013, p. 33), the context of heritage and heritage practice, in general, seem to be suitable as the context of this exploration as it shares the view that heritage is not just about material practice. The more particular context of this exploration is the urban heritage, which discourses revolve around the idea of heritage-led urban regeneration that addresses the different approaches in which the regeneration projects are conducted (Ashworth & Tunbridge, 2017; Fouseki & Nicolau, 2018; Pendlebury & Porfyriou, 2017) and how such project could lead to gentrification (Arkaraprasertkul, 2019; Hayes, 2020). The regeneration, revitalisation or rehabilitation of urban heritage areas results in tangible physical change. However, it has to be acknowledged that change is not only physical but also a change in socio-political, economic, and cultural aspects (Eckardt & AlSadaty, 2023).

By addressing the dynamic, complex, and interrelated changes in the urban heritage context, the exploration in this paper is guided by an overarching question: What will architectural porosity unfold in terms of the change of inhabitation in a revitalised urban heritage area? This question will be explored in an empirical case study of a revitalised urban heritage area of Semarang Old Town, Semarang, Indonesia. Semarang Old Town is a colonial urban heritage area that consists of mostly Dutch architecture-style buildings (Dewi et al., 2020, p. 2). The façade and walls of the buildings shape the streetscape of Semarang Old Town. Since 2016/2017, Semarang Old Town has been under a major revitalisation project. The streets of Semarang Old Town have been revitalised with newly paved pedestrians, vintage lampposts, benches, and an English phone booth, showing improvements in infrastructure and beautification. Some of the buildings in the area are also revitalised to become new 'hype' cafés and restaurants but some are abandoned and in a state of ruin. The revitalisation project evidently involves the removal of the previously existing informal structures and economy, indicating the changing socioeconomic situation toward gentrification. However, as part of the urban scene, informal practice persists, especially in the economy-generating touristy areas like Semarang Old Town.

The different practices of formal and informal inhabitation in Semarang Old Town will be the main thing to be unfolded through the architectural porosity. As previously mentioned, architectural porosity requires a built material as the object of the observation. In this exploration, the object of the observation is a heritage building façade or wall. The façade or wall of heritage buildings in Semarang Old Town are urban surfaces that have both material and socio-spatial exitance. Urban Surfaces "are fascinating because they are specific physical loci, yet afford readings and interpretations that expand far beyond their material existence" (Andron, 2018, p. 8). Therefore, the façade or walls of heritage buildings are suitable as the built material object for this exploration of architectural porosity.

This paper utilises the idea of assemblage thinking as a qualitative methodological approach to explore architectural porosity as an architectural inquiry to read urban heritage context. It refers to assemblage thinking as one that acknowledges the relation between social and material agencies in an urban setting (McFarlane, 2011, p. 206), is multi-scalar and is a valuable framework for understanding formal and informal relationships as assemblage consists of connections and flows (Dovey, 2012, p. 353). The idea of assemblage is also shared with the heritage discourse. Heritage is an assemblage, a result of "an active process of assembling a series of objects, places and practices" and the process of heritage involves agency, which is not considered as a singular entity but in relation to others in the form of assemblages that consists of both human and non-human entities, such as plants, animal, the environment and the material, which he referred to Bruno Latour's actor-network framework and Deleuze and Guattari's assemblage theory (Harrison, 2013, p. 4). Assemblage thinking is a beneficial approach for architectural porosity, which aims to unfold relations and assemblage of the material and socio-spatial aspects of the built material in context. The primary source of data is based on the fieldwork to Semarang Old Town in 2022, especially the visual documentation of the walls. However, to see the change of inhabitation due to the revitalisation, this exploration requires 'historical' visual documentation of the area, which is obtained from Google Street View (GSV) with different timestamps: before, during, and after. It begins by situating the wall examples as part of the urban fabric of Semarang Old Town. Then, based on visual observation, the walls will

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be narrated based on the material and socio-spatial porosity, aiming to see the assemblage of the change in inhabitation from different timestamps.

In the following two sections, this paper will briefly discuss the idea of a wall, an architectural element that becomes part of the urban fabric, as a porous ground for inhabitation as the object of exploration and the relation between heritage, informality, and porosity as the more specific context for the exploration. The following section is dedicated to the cases where the three wall examples will be narrated. Then, the next section is the discussion, where the wall narratives are discussed based on the architectural porosity that highlights the material and socio-spatial porosity. The last section is the conclusion and the takeaway from the exploration.

## **WALL AS POROUS GROUND**

Porosity is a familiar concept in architectural and urban discourse. Etymologically speaking, the term roots back to the Greek word *porós*, which refers to the river's shallow part where one can cross (Dona, 2018, p. 166), and it also refers to a passage or opening (Erben, 2018, p. 29). Porosity relates to pores, interstices, minute openings, and voids among solids. However, a pore is not just a given lacuna; it has a relational function to the environment that connects two contexts (Erben, 2018, p. 29). In urban discourse, as discussed previously, many discussions on porosity refers to the idea of porosity proposed by Walter Benjamin and Asja Lacis's essay *Naples* that was originally published in 1925 (W. Benjamin & Lacis, 1979), which suggested that porosity as a concept viewed as the material condition of masonry surface and as urban socio-spatial characteristics. The material and socio-spatial aspects of porosity in Naples are shaped by the urban fabric, which includes buildings and architectural elements. The discussion on porosity in urban discourse also involves terms such as interpenetration, ambiguous zone, in-between space, threshold and coexistence (Wolfrum, 2018, p. 16) and also discusses the idea of accessibility between public and private (Goodwin, 2011, p. 46).

This discussion of porosity in urban discourse is where the idea of architectural porosity begins. It lies in the view of an architectural phenomenon as an assemblage of the built material of the architecture, the context (socio and environmental) and the inhabitation. Architectural porosity aims to see the porosity of the built material in context, not only its material porosity but also its socio-spatial porosity, and later see if there are any relations between the two porosities. Achieving the aim of exploring architectural porosity requires a built material as the object of the exploration and for this paper it will be building walls that shape the urban heritage streetscape.

Situating wall as part of architectural porosity exploration came with two reasons. The first reason relates to the matter of scale. Even though this paper specifically takes off from Benjamin and Lacis's porosity, which is more within the urban scale, porosity is an interdisciplinary term used in some material-based scientific disciplines, such as material science or earth science, and observed in a microscopic material scale (for example is in the work of Sassoni & Franzoni (2014) and Ganzhorn et al (2019)). As architectural porosity intends to see the relation between material and socio-spatial scales, building walls as an architectural element is considered the appropriate scale for observation as it allows to observe both the material and the socio-spatial scale of inhabitation on and around the wall. Material porosity is observed through material condition and inhabitation, for example, moss growing on the wall next to a leaky pipe. Socio-spatial porosity is observed through any objects attached to or existing

around the wall, for example, some chairs and tables from a food seller on the pedestrian walk. In other words, the wall ties the two porosities together on a human scale.

The second reason relates to how a wall, as an architectural gesture for humans inhabiting the world, has both material and socio-spatial existence. As a material entity, the wall is considered the essential element of architecture that creates an envelope. In the case of a façade, it acts as a representation of identity and is political (Zaera-Polo, 2008, p. 195). A wall is a materialised boundary that excludes and includes at the same time and is bodily experienced, such as walking along or through the wall (Unwin, 2000, pp. 25, 27). In the urban context, the wall could also be considered a spatial element that creates social relations (Brighenti & Kärrholm, 2018, p. 2) which signifies its socio-spatial presence and even a site of urban biodiversity (Francis, 2011, p. 43).

This paper mainly looks at the walls of heritage buildings that shape the streetscape of the urban heritage area of Semarang Old Town, which includes the façade or side walls of a building. These walls exist as a vertical boundary to the pedestrian ways, with no fences between the pedestrian way and the walls. Therefore, these walls directly face the public urban environment. The idea of wall and wall space ownership might be challenged in this circumstance. Wall ownership is also challenged because a wall always consists of two different surfaces, in this case, the interior and exterior surfaces, which both have different effects (A. Benjamin, 2006, p. 5) as they face two different realms. As part of the building structure, these walls belong to the building, and the interior side of the wall shapes the interior space. However, as the exterior side of the wall faces the public realm of the urban environment and can be publicly accessed, such as when it can be touched, leaned to, and walked along in very close proximity to the body, it could be perceived as a vacant space. This perception reflects Gehl's concept of the 'edge effect' (Gehl, 2010, p. 137), where, for example, in an urban situation, depending on the condition and the location of the wall, the wall gives a space to pause or stop. It shows how the wall is more than just a vertical boundary; it becomes a perceivable space to be claimed within an urban setting.

In particular, a wall becomes part of the public street space and the pedestrian way, which could also be considered one of the urban commons (Susser & Tonnelat, 2013, p. 111) that the public can claim. Sometimes, the claim on the wall space, which covers the vertical surface and some space in front of it, is not all formal and legal. Urban graffiti, for example, views urban walls as a visible surface for inscription (Brighenti, 2009, p. 67), which is usually considered vandalism. Another example is the informal sidewalk settlements, which usually claim a blank wall and a sidewalk edge to build domestic space (Dovey & King, 2011, p. 16) or informal markets nestled against the thick wall of Aix-en-Provence wall as "thick wall can invite to dwell" (Sennett, 2019, p. 221). Furthermore, the wall space claim is not just by humans but by non-humans, too. The non-human claim refers to a rather material phenomenon, such as weathering, which subtracts the material in time (Mostafavi & Leatherbarrow, 1993, p. 6) and bio-colonisation, which relates to how the material can give space for living organisms (Cruz & Beckett, 2016, p. 52), which sometimes results with moss or even higher plants growing on urban walls.

Based on the previous discussion, urban walls can be viewed as porous ground. The 'ground' here is both literal for the case of bio-colonisation and metaphorical for the case of human inhabitation. However, in both ways, the wall as a porous ground encapsulates how the wall gives space for various types of inhabitation

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to exist and grow. Wall as porous ground means seeing it as Sennett's idea of a border, which, based on him, is an active zone of engagement and exchange (Sennett, 2017, p. 590), a porous space of engagement and exchange. Furthermore, since this paper specifically discusses building walls that shape the urban heritage fabric, the idea of a wall as a space of exchange does not only relate to the idea of inside and outside, which usually happens through literal pores of the wall, such as door and window. It also relates to the material and socio-spatial existence of the wall, such as the material condition of the wall, the heritage and revitalisation status of the wall, and what kind of inhabitation exists on and around the wall that might range from plants growing on the wall to informal settlement attaching its structure to the wall. The attachment to the wall arguably extends the thickness as well, from the wall with the literal material thickness to the one with the socio-spatial thickness (Saginatari et al., 2021, p. 349). To see the relation and assemblage between these existences and to see different thicknesses of the wall means to see the wall through the idea of architectural porosity.

### POROSITY, INFORMALITY AND HERITAGE

This paper takes an empirical example of an urban heritage site in Indonesia called Semarang Old Town (De Oude Stad) which dates back to the 17th century, around the beginning of the Dutch colonial era. It was a fortified city that century later after the fort was demolished due to demographic development, it became the centre of the government, military and business as well as the centre for trade and industry (Yuliati et al., 2020). This position of Semarang Old Town reflects on the buildings within the area that are dominated by administrative buildings, warehouses and offices. The livelihood of Semarang Old Town was closely related to the Dutch colonial position within the global situation. Since World War II, Semarang Old Town activities have declined until independence. After the independence, the Indonesian government took over many foreign companies and assets, especially the Dutch, which resulted in massive bankruptcy and abandonment of the area (Purwanto, 2005, p. 33), leaving Semarang Old Town a ruin.



**Figure 1.** Main Road of Semarang Old Town in 1915 (Paradeplein te Semarang, Circa 1915, KITLV 84094, Public Domain, Source Link: <http://hdl.handle.net/1887.1/item:908051>)

Ruin or vacant lots areas, especially in the city, are perceived as negative spaces with limited or no economic and social potential (Dawdy, 2010, p. 776). However, in some cases, ruins and vacant lots could offer spaces for urban activities, mostly informal, including social, economic and ecological, such as providing shelter for people experiencing homelessness, playgrounds for children, vandals, and skateboarders, as well as can be a garden for livestock rising (Dawdy, 2010,

p. 776). This situation happened to Semarang Old Town as well. Many informal inhabitations occurred for around 50 years as the area was mostly abandoned. This informal inhabitation includes informal practices such as trading, hawking, begging, and the informal construction of settlements (Dovey, 2012, p. 354), which usually infiltrates abandoned and leftover spaces in the city (Dovey & King, 2011, p. 13). In Semarang Old Town, this was shown by the existence of many informal shelters, whether dwellings or hawkers, attached to the side walls or even façade walls of buildings. Sometimes, informal inhabitation infiltrated the building and building plot if the building could be accessed. This abandonment and informal inhabitation also triggered inappropriate activities in the area, such as prostitution. Another type of 'informal' inhabitation in Semarang Old Town is how nature, a non-human organism such as plants, grows on the fabric of Semarang Old Town. Plants started inhabiting buildings, and some claimed some buildings and building plots.

Informal inhabitations, both by human and non-human organisms, are considered an 'out of place' phenomenon, which was introduced by Mary Douglas in 1966. Her discussion on "dirt as a matter of out of place" suggested that dirt is not necessarily only related to pathology or hygiene but is about ordered relation; dirt is a rejected element of the ordered system (Douglas, 2005, p. 44). The idea of dirt is not simply about things being dirty because sometimes they are not, but they are considered inappropriate or unwanted in some situations. This concept reflects the existence of informal inhabitation, particularly in the eyes of the city municipals and authorities. Informal inhabitation in the city, for example, street vendors, could be considered an 'out of place' phenomenon (Yatmo, 2008, p. 468). Even plants growing on building walls could be considered weeds, "plants out of place" (Gissen, 2009, p. 150). Both occurrences tend to be treated the same way; they should be removed or relocated to where the authorities consider the appropriate place. In the case of the urban heritage site of Semarang Old Town, this kind of removal is done through a revitalisation project of the area. This revitalisation project might be inevitable as Semarang Old Town has a significant historical value for the city and the nation. The revitalisation initiative began around the 1990s, but since 2016/2017, it has been very significant.

On the national level, Indonesia's heritage law is based on Law Number 11 of 2010 on Heritage and in 2022, the Indonesian government released Government Regulation Number 1 of 2022. They contain national regulations and definitions of heritage preservation and conservation actions that are meant to be the reference for the local government and municipal to make a regional regulation for their province or city. In the case of Semarang Old Town, the direct regulation applied is the Environmental Planning Plan in Semarang Local Government Regulation Number 2 of 2020. Revitalisation aims to reactivate the area through architectural conservation and inserting new functions to increase economic, social, tourism, and cultural activities based on this local regulation. In addition to this is the vision of the local government for Semarang Old Town to be a UNESCO World Heritage Site (WHS), which currently Semarang Old Town is on the tentative list. A UNESCO WHS project tends to apply strict demarcation and purification of space (Nakamura, 2014, p. 272) and diverts people away from everyday life (Tabunan, 2022, p. 13). It aims for a pristine historical object or environment that encapsulates a specific or chosen period of history, arguably not acknowledging the evolution of the object or environment through time and changes of context that include the environment, socio-culture, economy and politics.

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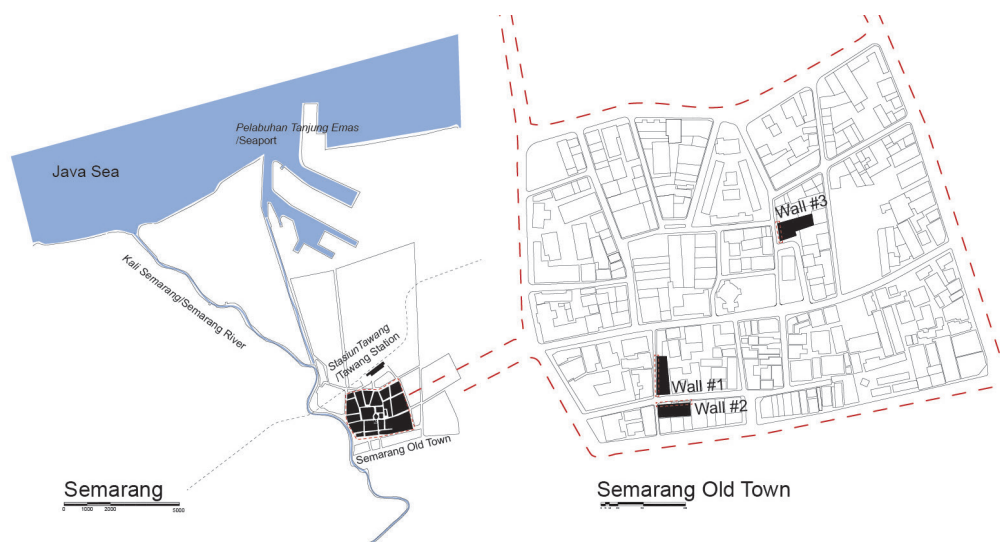
The aim and vision above are manifested in the revitalisation project since 2016/2017. The local government upgraded the area's infrastructure with the national government budget. The revitalisation includes paving the streets and pedestrians, making water retention ponds to prevent flooding, arranging the traffic flows in the area, and finding and encouraging the building owners to revitalise their heritage buildings. In Semarang Old Town's case, most buildings are owned by private individuals, companies, or state companies, but not the government. Therefore, the government cannot directly revitalise most buildings, leaving buildings in different states; some are revitalised, painted, and white, and some are still in ruins. However, the local government managed to 'clean up' most of the informal inhabitations that occupied the walls and the street of the area by removing all informal structures, relocating some of the economic activities to the nearest market and beautifying the streets and pedestrians with street furniture such as lamps, benches, bins, and charging stations.

Like weeds that will grow wherever the resources are available, informal inhabitation always finds a way to exist as part of the urban scene. The existence of informal inhabitation in the urban scene is due to the porosity of the urban fabric itself, which offers "the space of opportunities and improvisation" (Viganò, 2018, p. 50). Semarang Old Town, whose urban fabric is under revitalisation, still has some unrevitalised buildings whose walls offer spaces for informal inhabitation.

### **NARRATING WALL ASSEMBLAGE**

This paper utilises the idea of assemblage thinking as qualitative methodological approach to explore architectural porosity as architectural inquiry to read urban heritage context. The observation towards both material and socio-spatial porosities is conducted by looking at traces of informal inhabitation, which involves looking at organisms and objects on and around the wall. Therefore, to read the relation between material and socio-spatial porosities, this paper will narrate the wall assemblage. The idea is to view urban as a "narrative text" which tells stories through "its tangible and intangible features" such as historical traces, public space and buildings, colours, and characteristics, which makes "narrative texts an object (or a set of objects) that communicates one or more narrative contents" (Di Mascio, 2018, p. 1119).

This paper takes three walls from three different buildings in Semarang Old Town to be narrated (Figure.2). The wall assemblage narrative will be based on direct visual observation conducted in 2022 and visual documentation available in Google Street View (GSV). The GSV photos can supply historical images with time stamps. As GSV captures a natural moment of the built environment, it could be used as data to see the everyday situation and building condition (Campkin & Ross, 2012, p. 148). This paper will look at three different time stamps which are before revitalisation (the year 2015 and before, depending on the availability from GSV), during early revitalisation (around the year 2016-2019, depending on the availability from GSV), and during the later stage or after revitalisation (the year of 2020 and after, depending on the availability from GSV). The visual materials are visually analysed to see the conditions of informal inhabitation on and around the walls from different time stamps, highlighting objects, organisms and possible past events naturally captured by GSV. They will be narrated through the timeline of before, during, and after revitalisation. The three wall narratives are as follow.



**Figure 2.** Map of Semarang and Semarang Old Town, showing the case study walls' locations (Author, 2024)

### Wall #1: Rumah Akar

*Rumah Akar* is a side wall facing Roda II Street, Semarang Old Town. It belongs to a building that used to be an office for a warehouse, bank, customs, expedition, and delivery company (Yuliati et al., 2020, p.455). It is a masonry wall with several wooden windows and doors. The wall also has what used to be a window, but now they have covered it with bricks and plaster. During the observation in 2022, the building was abandoned, under ruination and decaying, as the building owner is unknown, resulting in the building plot and walls being taken over by plants. The weather erodes the material layers, exposing the bricks and inviting plants to grow on them. This condition is where this particular wall gets its name of *Rumah Akar* (literally means Root House when translated to English): a big tree, along with other small trees, grows on the wall and becomes a landmark (Figure.3). This wall could be considered literal ground as it is evident that plants already interweaved with the wall, creeping in and out of the building plot through and alongside the wall. This tree is the first informal inhabitation on the wall.



**Figure 3.** The wall of *Rumah Akar* (Author, 2022)

Before the revitalisation (GSV time stamp: 2015), this wall gave space for the chicken market (which also be the arena for the illegal cock fighting that began around the 70s) and food sellers (Figure.4). It was perceived as a vacant surface due to the wall's material condition and the building's abandonment. Objects like chicken coops were nestled against this wall—some tents of the food sellers were attached to it, too. Together with the trees, this inhabitation claimed the wall's space and thickened the wall's thickness. During the revitalisation period (GSV time stamp: 2017), it was evident that the chicken market and food seller were gone and then relocated to the closest local market. The revitalisation project cannot remove the trees. The Semarang Local Government does not have a right to do anything, even revitalising the building, as all rights and responsibility lie in the hands of the owner. The Semarang Local Government,

through the Semarang Old Town Management Board, was actively searching for building owners and encouraging them to revitalise their buildings to match the revitalisation in the area. Besides, the Semarang Local Government sees the big tree on the wall as a potential tourist spot, which sells the olden atmosphere of the old tree on the wall.



**Figure 4.** Diagram of changes around Rumah Akar before, during and after revitalisation (Author in reference to GSV looking toward Roda II Street (timestamps: 2015, 2016, 2022), 2024)

As a result of the revitalisation (GSV time stamp: 2022), Roda II Street turned into a pedestrian walkway inaccessible to vehicles. The Semarang Local Government added street furniture, such as benches, across the *Rumah Akar* so people could sit and look at it. The meaning of the wall shifted from available vertical spaces for informal inhabitation to a landmark, a sculptural object that people want to see, experience, and take a picture with. The Semarang Local Government also added wall lamps and bins in the area. This kind of gesture of furnishing the street creates some 'urban living room' which is a production of social space, one of which is by strategically adding domestic touches to public space (Merwood-Salisbury and Coxhead (2018) in Warakanyaka, 2021, p. 96). *Rumah Akar* has become one of the most visited spots in Semarang Old Town, where people can find seats to enjoy the view of the big trees, enjoy the breeze, and even sometimes take a nap (Figure.5).

### Wall #2: Soesman Kantor

Soesman Kantor is located on Kepodang Street, Semarang Old Town (just around the corner from *Rumah Akar*). The wall is the façade of the Soesman Kantor building, which used to function as offices for some export and import companies (Yuliati et al., 2020, p. 451). Its terrace has columns, narrow arches, and wooden windows and doors. During the observation in 2022, the building was owned by three owners. The condition of the part of the building depends on the owner's will and financial situation for revitalisation. It results in Soesman Kantor's consisting of a painted (revitalised part) and a decaying (unrevitalised part) façade (Figure.6).



**Figure 5.** Activities around *Rumah Akar* after revitalisation (Author's documentation, 2022)



**Figure 6.** The Façade of Soesman Kantor (Author, 2022)

Before the revitalisation (GSV time stamp: 2015), the façade of Soesman Kantor, just like *Rumah Akar*, was inhabited by the chicken market and food sellers. Tents, chicken coops, and additional structures made out of corrugated metal were attached to this façade and inhabited the thickness of the terrace. At that time, the building was abandoned and decaying. Some small plants were growing here and there on the façade. At some point, some part of the roof collapsed. During the revitalisation project (GSV time stamp 2017), this façade was cleaned from informal inhabitants as the chicken market was relocated. The previous food seller also moved away, leaving a sign on the wall with the information on the new location. However, the revitalisation of the building has not yet happened (Figure 7).

In 2018/2019, around two-thirds of the building was revitalised. It became a rentable multipurpose space for exhibitions or other community activities. As the area's revitalisation continued to Kepodang Street, the Semarang Local Government made space for pedestrians on Kepodang Street, narrowing the vehicle space. They put poles and chains as the pedestrian and street boundary. They also added lamps, benches, and bins along the street. During the observation in 2022, some of the revitalised parts of Soesman Kantor became a bubble tea café owned by a Taiwanese businessman who rented

the space to the owner. This side of the façade is painted white and decorated with writings, objects, and a promotional banner inviting people to come in. Here, the wall becomes a surface for identity and a communication medium for the inside space. They open the door and windows during operating hours for air circulation and give visual access to the inside. Revitalised parts of Soesman Kantor show a typical revitalisation situation where the building is revitalised and given a new programme. The building, which was abandoned, inaccessible and whose façade was previously inhabited by informal inhabitation, becomes a space accessible for people to buy some drinks and enjoy the time.



**Figure 7.** Diagram of changes around Soesman Kantor before, during and after revitalisation (Author in reference to GSV of Kepodang Street (timestamps: 2015, 2017, 2022), 2024)

As for the unrevitalised part of the building, since 2018, it has been inhabited by a relatively informal inhabitation in the form of *Angkringan*. *Angkringan* is derived from the Javanese word *nangkring*, which means sitting relaxed (Yudhistira et al., 2018). It is a small shop selling food and drinks, which in some cases are traditional foods and drinks, but sometimes it also sells instant drinks, snacks, and instant noodles. *Angkringan* is one of the common types of informal economy in Indonesian cities. It has its place in the Indonesian community as they sell food and drinks cheaply, and whoever visits usually stays for a long time to chat and enjoy the time (Yudhistira et al., 2018). It is usually mobile or temporarily inhabits the pedestrian area, and most appear at night; it becomes “a separate nightlife for the community, especially the middle-lower class” (Yudhistira et al., 2018, p. 39).

In Soesman Kantor's case, the *angkringan* owner is not the building's owner. He used to have a mobile *angkringan* with the cart, which he pushed around Semarang Old Town. However, then, he was given a job to guard the building; therefore, he was permitted by the owner of the building to open his *angkringan* there because the owner of the building was not yet able to revitalise the building. The *angkringan* inhabits the decaying building with spatial and material appropriation. It uses the wall and the window as product displays, and most

activity happens on the terrace. It also uses the wall to add a tarp tent to cover the terrace when it rains as the roof of the balcony above the terrace collapses, which makes water pass through the balcony floor to the terrace. At night, the *angkringan* sometimes lay out matt for the pedestrians across the street to have more space. The *angkringan* becomes a base camp for local workers, such as the local online motorcycle hire, forming a community that usually spends time together in their spare time.

### Wall #3: Semarang Contemporary Art Gallery

Semarang Contemporary Art Gallery is located on Taman Srigunting Street. The wall is a side wall of the building, facing Taman Srigunting Street toward Garuda Street. It has big wooden windows. The building used to belong to an insurance company. Before it was a gallery, the building was used for many functions, such as a warehouse, motorcycle dealer and office (Yuliati et al., 2020, p. 343). The building is one of the earliest to be revitalised in the area, as it was revitalised in 2008. The previously empty and decaying building, with some trees growing on its walls, is revitalised into a white-painted box, a typical white space of an art gallery (Figure.8). It was filled with cultural programmes, and it became one of the available interior spaces to visit within the area.

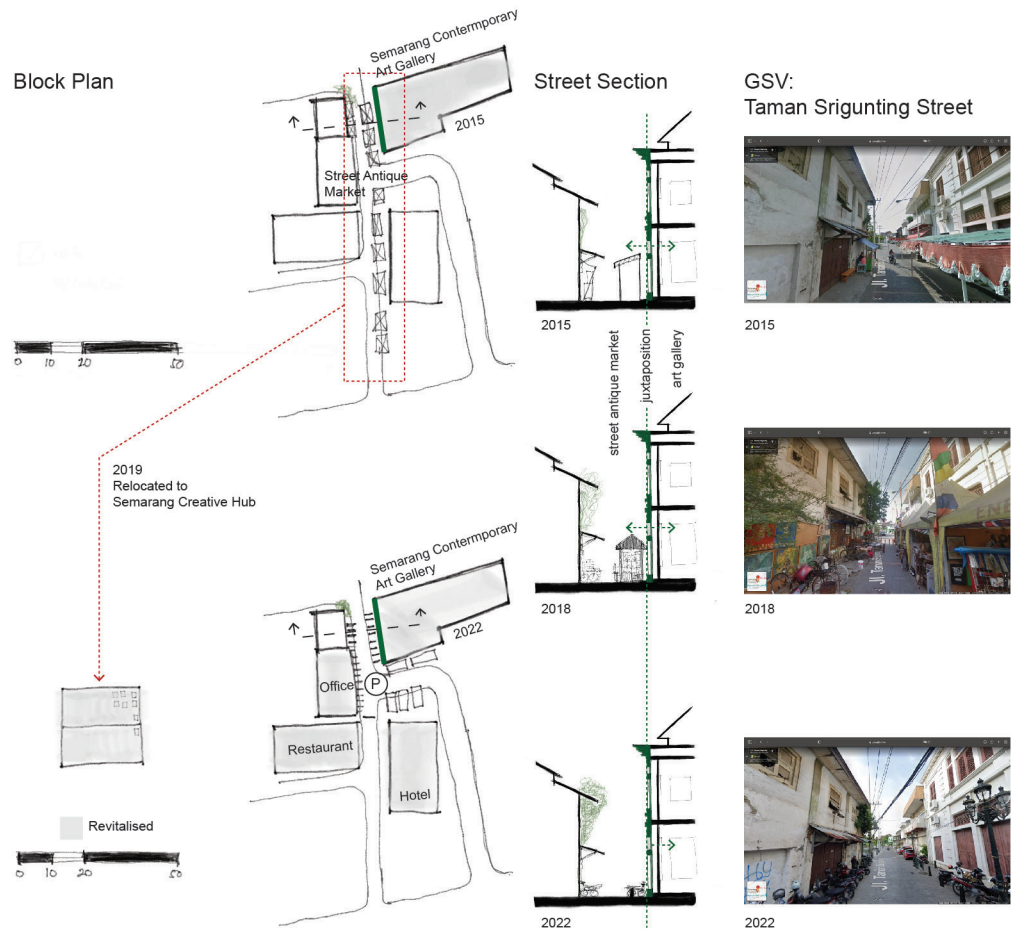


Figure 8. The side wall of Semarang Contemporary Art Gallery and its gallery interior

While the inside wall of the building was turned into white surfaces where local artists display their artworks before the revitalisation (GSV time stamp: 2015), the outside surface of the side wall of Semarang Contemporary Gallery, which faces Taman Srigunting Street, became the background of a street antique market, which called *Pasar Seni* or art market in translation by *Paguyuban Pedagang Barang Seni* or art seller community in Semarang. They sold antique, old stuff and art, from homewares, bikes, car parts, paintings, old coins, and many more, in tents on the side of the street. The tents, however, were the freestanding ones. They are not attached to the wall. Arguably, this is because Semarang Contemporary Art Gallery is revitalised and occupied, which means it is under protection and constant maintenance from the owner. In GSV before revitalisation, it was noticed that there was around half a meter of planting space right in front of the wall, making space between the tents of the market and the wall. Therefore, the side wall of Semarang Contemporary Art Gallery remained sterile, unlike the vacant, unrevitalised wall across it where the seller could hang some objects.

*Pasar Seni* is one of the most visited touristy streets in Semarang Old Town. They were still there even during the revitalisation (GSV time stamp: 2018). However, it was only a short time until they were relocated in 2019 to one of the revitalised buildings in the area managed by the Semarang Local Government called Semarang Creative Hub. During the direct observation in 2022, the street antique market was relocated, and in front of the side wall of Semarang Contemporary

Art Gallery, which faces Taman Srigunting Street, was furnished by streetlamps, and there is a gate toward Garuda Street. The planting space was gone, and the sides of Taman Srigunting Street have now become a parking space, primarily for motorcycles but sometimes for cars too, and no longer a visited street in the area (Figure.9).



**Figure 9.** Diagram of changes around Semarang Contemporary Art Gallery before, during and after revitalisation (Author in reference to GSV of Kepodang Street (timestamps: 2015, 2018, 2022), 2024)

## DISCUSSION: BACK TO ARCHITECTURAL POROSITY

The three wall assemblage narratives attempt to tell the story of the wall by looking at both material existence, which is represented through the story of the material condition such as decaying or painted, that relates to the revitalisation status, and the socio-spatial existence of the wall, which represented through the story of any inhabitation taken place on and around the wall. Now the narratives will be discussed from the point of view of architectural porosity, which seeks to see the relation between material porosity and socio-spatial porosity, and what change of inhabitations, particularly in the frame of formal/informal inhabitation, occur due to revitalisation.

### On natural inhabitation

In the case of Wall #1, *Rumah Akar*, the big tree on the wall is a result of, first, the material porosity of the wall, which is shown through the deteriorating and decaying material condition of the wall that turns the wall to become a growing medium for plants. Second, the continued existence of the big tree is due to the lost ownership and abandoned status of the wall. This tree's existence shows how humans play a role in the fate of a building; where when humans abandon the building, meaning that the building is open to absorb time and environment,

and when humans restore it, it might be functional for humans again (Lisci et al., 2003, p. 2). As the building of *Rumah Akar* is abandoned, the plants take over the plot, and the big tree grows and weaves itself in and out of the wall, seeping in and out the window. The big tree cracks open the wall and is part of the wall itself.

Due to this lost ownership and abandoned status of the building, the Semarang Local Government cannot do anything about it other than try to maintain and ensure the wall's stability and appreciate it as one of the visited tourist spots for Semarang Old Town. As previously mentioned, the Semarang Local Government revitalised the street with new pavements and furnished it with benches, lamps, and bins to create a place for people to stay and enjoy the ambience that the big tree and the wall give. This situation reflects the idea of socio-spatial porosity, where the status of the wall gives the space in front of it value and potential and is taken advantage of by Semarang Local Government for the community. Both the material porosity and the socio-spatial porosity extend the thickness of the wall, the literal material thickness, which is now thicker due to the thickness of the tree, as well as the socio-spatial thickness which radiates to the street and becomes part of the one of the 'urban living room' in Semarang Old Town (see Street Section in Figure.4).

The discussion on plants growing on heritage walls is always a challenge; one is the dilemma of choosing to protect the heritage fabric or the biodiversity (Celesti-Grapow & Ricotta, 2021, p. 1201). In the case of *Rumah Akar*, the existing building could be considered one of the less iconic heritage buildings in the area; it has a historical value as part of the area but is not particularly iconic. The big tree growing on one of its walls arguably adds a more iconic value to the wall. This situation shows the potential of acknowledging heritage fabric as part of and as a potential for urban biodiversity as a place-making practice in an urban heritage context.

### On paint and decay

In the case of Wall #2, Soesman Kantor, the façade showcases two different practices of inhabitation, a café and an *angkringan*. The café side of Soesman Kantor is properly revitalised; it is evident through the material condition of that side of Soesman Kantor, which is painted white. Some parts seem to be purposely exposed brick, which seems to be an attempt to show the old material of the building. The *angkringan* side of Soesman Kantor is unrevitalised and decaying. The paint is peeled off, which accidentally shows the building's different layers of old material, watermarks everywhere, moss and small plants growing on the wall. Arguably, the *angkringan* side seems to have the material porosity, as other organisms inhabit the wall. It is not that the café side does not have material porosity because a painted masonry wall is porous by nature. However, as a material existence, it is under the owner's control and constantly under maintenance to keep the building as envisioned as the result of revitalisation. The differentiation of material porosity here is undoubtedly related to the building state itself, revitalised/unrevitalised.

As shown in Figure,10, the café side of the building is revitalised and the interior space becomes accessible. The doors and windows are open at the opening time of the café. The façade becomes the communication medium to invite people to the inside. The wall is socio-spatially porous because of this; the building is functioning, so people can access the building through the literal pore on the wall, doors for going inside or outside, and windows for looking inside and outside. It is a different socio-spatial porosity on the *angkringan* side. On the *angkringan* side, because the building is unrevitalised and evidently in

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bad condition, the activity of the *angkringan* is mainly attached to and remains outside the façade, on the terrace or even pedestrian way sometimes. They use the inside wall of the façade as a small kitchen where they prepare food and drinks. They display their products on the window, and the other window does not fully function. The door does function as access, but not for everybody. They also nailed a tarp tent to cover the terrace part when it rains to the façade. They rely on the façade as a literal structure and space to attach to. The façade is not just a physical boundary that separates inside and outside but the inhabited space of the *angkringan* itself.



**Figure 10.** Different material and spatial practices in Soesman Kantoor. Left photo is showing the *angkringan* and the right photo is showing the café (Author's documentation, 2022)

While the café seems to showcase the typical revitalisation project, where it removes all the unwanted things, restores the material condition, and inserts a new programme, the *angkringan* side shows the idea of *counterpreservation*, a 'revitalisation' that celebrates utilises decay as a form of activism and resistance towards the typical preservation project which usually leads to the socioeconomic changes such as gentrification (Sandler, 2016, p. 24). Even though the case of *angkringan* in Soesman Kantoor is not a form of activism, it still shows possible inhabitation, which arguably is utilising and activating the previously abandoned building that is more grass root and accessible until the middle-lower economy community.

### On juxtaposition

The case of Wall #3, Semarang Contemporary Art Gallery, also shows a typical revitalisation project. However, the building was revitalised before the selected GSV timestamp, so even before the revitalisation of the area, the building was already revitalised. Based on the observation in 2022, the material is relatively in good condition and well maintained even though some small plants are growing in some corners of the wall and some water stains near some pipes. These signs of weathering could imply material porosity of the wall, but it will never show more material porosity as the owner will constantly maintain it.

The side wall of Semarang Contemporary Art Gallery, which consists of big wooden windows, is a materialised boundary that separates the interior space from the outside. Due to its function as a gallery, which needs a white space to display artwork, there is a white panel on the inside side of the wall. Therefore, the windows are not visible from the inside, making them non-functional as they cannot be opened and do not provide any connection, such as a visual connection, with the street. The only connection is through the ventilation above

the windows, which allows air to flow in. The wall does not show socio-spatial porosity in this way. However, before the revitalisation, the existence of *Pasar Seni*, even though they did not literally touch the building, suggested that the wall is socio-spatially porous as it becomes the background of the market and allows them to exist in close distance with the wall for some years.



**Figure 11.** Left photo is showing the new location of Pasar Seni (Author's documentation, 2022); Right photos are showing the location of Pasar Seni before relocation (GSV 2018) and the condition after the relocation where the space becomes parking spot (Author's documentation, 2022)

At one point, such as in 2018, when *Pasar Seni* was still in front of the side wall of Semarang Contemporary Art Gallery, there was a juxtaposition between formal and informal inhabitation there (see Street Section in Figure.9). *Pasar Seni* involved a relatively informal activity. They displayed antiques and arts in their tents, and they flood the street up to the decaying wall across. Arguably, it was like a gallery of objects as well. It juxtaposes with the Semarang Contemporary Art Gallery as a proper art gallery. Two of them show different practices, materiality, and social status. The side wall of Semarang Contemporary Art Gallery seems to represent a more institutionalised interior space of the building, overlooking and untouched by *Pasar Seni* that is occupying the edge of the street with its tents and utilises the decaying, available and claimable wall across to display their objects. This juxtaposition shows the diversity of practice in the area, and both offer different visiting experiences. However, since the street antique market was relocated to a newly revitalised indoor space, even though it was not literally a white space gallery, the experience is an indoor experience once more (Figure.11). And now, the space that once was a rather vibrant street market become a parking space claimed by the office located close to the gallery as well as to cater the visitor.

## CONCLUSION

Through the relationship and entanglement of material and socio-spatial porosities, architectural porosity reveals the change of inhabitation in Semarang Old Town. As a formal gesture from the authorities, revitalisation usually results in formal inhabitation, which means having official permission to use it for a specific function. Material-wise, revitalised buildings will have restored materials, usually involving white paint, and will be under constant maintenance. Arguably, this

material condition has less material porosity because even though the material itself is porous by nature, the building owner will not allow the material to be more porous to absorb time, weathering, and other organisms. Socio-spatial-wise, revitalised buildings have a revitalised interior space that, after revitalisation, is available to access. The building walls, especially the façade, become an identity, a medium for communication, promotion, and an invitation to visit the interior. The wall is a vertical boundary with controlled access and exchange between inside and outside; some prevent this exchange.

The unrevitalised building, in contrast, seems to invite a relatively informal inhabitation, which refers to an unplanned inhabitation, which not all are authorised by the authorities but manages to exist, such as when trees grow on buildings and when an informal activity is attached to the wall. Material-wise, unrevitalised buildings will have decaying and deteriorating materials, such as peeled paint exposing the bricks, and some of the material might already collapse. Arguably, this material condition has more material porosity, especially when it allows other organisms to grow on the wall material. Socio-spatial-wise, an unrevitalised building has no accessible interior to visit and inhabit, and the wall or the façade does not necessarily have an opening for access to the inside of the building. However, the wall itself is sometimes available for inhabitation, for a tree to grow and for informal activity to attach. Both these material and socio-spatial porosities extend the thickness of the wall from material thickness to socio-spatial thickness. Based on the different material and socio-spatial porosities of the walls before and after revitalisation, there seems to be an eradication of the previous quality of porosity of unrevitalised walls that tends to invite informal inhabitation.

Furthermore, by looking at the material and socio-spatial porosity of the wall, architectural porosity could unfold the different scenarios of inhabitations and their relation to the revitalisation practice. For example, the existence of trees on walls is the entanglement between material and socio-spatial porosities of the wall, and such existence could be a potential for a place-making practice in urban heritage settings. Another example is the *angkringan*, a form of everyday inhabitation of the local community, which could be something to be encouraged to exist as part of Semarang Old Town. The diversity of indoor and outdoor inhabitation in urban heritage settings, like in the gallery and *Pasar Seni* case, should also be considered. Therefore, revitalisation is not conducted in only one way. Heritage could be viewed as a "chain of connectivity" which involves no distinction or prioritising one more than the other between nature/culture or human/non-human to keep the past for the future (Harrison, 2013, p. 5). Architectural porosity, as architectural inquiry, could be one of the ways of approaching urban heritage context that unfolds the possibility of incorporating natural ecological cycles of plants, decay, and informal inhabitation, which are usually denied by the conventional revitalisation practice, as alternative voices in the discussion of urban heritage revitalisation.

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No conflict of interest was declared by the authors.

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The authors contributed equally to the study.

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### Ethics Committee Approval

As part of PhD study of Diandra Saginatari in University of Nottingham, the study has the Faculty of Engineering Ethics Committee approval.

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## BIOGRAPHY OF AUTHORS

**Diandra Saginatari** is currently a PhD Student in Architectural Design (Social Science) at the Department of Architecture and Built Environment, University of Nottingham. She completed her Bachelor of Architecture at Universitas Indonesia in 2011 and MA in Art, Space and Nature at The University of Edinburgh in 2014. Her research revolves around the connection between architecture and the broader ecologies, exploring spatial practice driven by materiality. Her current PhD project explores the notion of porosity as an architectural condition that can unravel such a connection, especially between materiality and spatiality in architecture.

**Prof. Jonathan Hale** is an architect and Professor of Architectural Theory at the University of Nottingham. He holds a PhD from Nottingham and an MSc in the History of Architectural Theory from the University of Pennsylvania. His research interests include: phenomenology, embodiment, and the philosophy of technology. Publications include: *Merleau-Ponty for Architects* (Routledge 2017) plus the co-edited volumes *Housing and the City* (Routledge 2022), *The Future of Museum and Gallery Design* (Routledge 2018), and *Rethinking Technology*, (Routledge 2007). He is Head of the Architecture, Culture and Tectonics (ACT) Research Group at Nottingham and was founding Chair of the international subject network: Architectural Humanities Research Association.

**Tim Collett** has been Course Director of MArch Architecture (ARB/RIBA Part 2) since September 2019. Prior to this he spent 22 years as a practitioner working on a variety of RIBA award-winning projects at two leading architecture practices, 6a architects for three years and Caruso St John Architects for 14 years. Tim was responsible for the Newport Street Gallery which won the RIBA Stirling Prize 2016. Tim has a long association with Nottingham, having taught design on the MArch Part 2 course since 2012 and prior to that worked on Nottingham Contemporary, completed 2010, while at Caruso St John Architects. Tim received his MArch (distinction) degree from Dalhousie University in Halifax, Canada (1996). Prior to studying architecture Tim was a geotechnical engineer, building earth dams for the mining industry in British Columbia, and holds a BSc degree from the University of British Columbia in Vancouver (1986).