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THE FLOATING MASS LIFE ABOVE A LIQUID LANDSCAPE

Master of Architecture, 2016

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Abstract

With the rise of sea-levels, rapid urban development and a lack of basic infrastructure, Jakarta, Indonesia, is one of the many Southeast Asian cities suffering the global issue of flooding. The government has begun a project to minimize flooding by dredging and channelizing 15 waterways in the city, resulting in the eviction of tens of thousands of informal settlements.

This thesis calls for a more appropriate solution for residents in order to continue their lives safely in the kampung, free from the harmful effects of flooding. The Bamboo Bridge is proposed as a family of bridges extending across the floodplain of the Ciliwung River. It connects kampungs to create access and mobility, and protect residents from the limitations of urban flooding. As flooding increases, Jakarta faces the potential of pockets of low-lying urban areas permanently flooded. The city must prepare for possible life in water.

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For the communities living in Kampung along the Ciliwung River.

List of Figures

Cover Image: Dustin Sauder

Figure 0.1 *Living Above the Water*

Source: Ashley Adams

Chapter 1:

Inside Chapter Page

Source: Ashley Adams

Figure 1.1 *Batavia Besieged in 1629*

Source: <http://www.atlasofmutualheritage.nl/en/Birds-eye-view-map-siege-Batavia-1629.7985>

Figure 1.2 *Independence Propaganda 1945-9*

Source: <https://www.pinterest.com/pin/444519425692034598/>

Figure 1.3 *Mar. 10, 1958 TIME Magazine Cover*

Source: <http://content.time.com/time/covers>

Figure 1.4 *July 15, 1966 TIME Magazine Cover*

Source: <http://content.time.com/time/covers>

Figure 1.5 *Population and Land Use Changes in Jakarta from 1970-2000*

Source: http://www.wds.worldbank.org/external/default/WDSCContentServer/WDSP/IB/2011/10/19/000356161_20111019004946/Rendered/PDF/650180WP0Box360ange0Jakarta0English.pdf

Figure 1.6 *Indonesia Sweatshop*

Source: <http://fordhamram.com/2013/02/14/usas-alongside-former-adidas-workers-condemn-sweatshop-malpractices/>

Figure 1.7 *Street Food Vendor*

Source: <http://cheryl.purnama.de/2012/10/street-food-vendors-in-jakarta.html>

Figure 1.8 *1998 Riots Targeting Indonesia's Ethnic Chinese Community*

Source: <http://www.bbc.com/news/world-asia-27991754>

Figure 1.9 *K2Park Superblock by Andre 3D Studio*

Source: <http://www.andre3dstudio.com/PP-HRB.html>

Figure 1.10 *Grand Kamala Lagoon Towers*

Source: <http://rumahdijual.com/bekasi/371916-grand-kamala-lagoon-superblock-east-jakarta-neighborhood.html>

Figure 1.11 *NCIDC*

Source: <http://rdcrotterdam.com/projects/national-capital-integrated-coastal-development/>

Chapter 2:

Inside Chapter Page

Source: Ashley Adams

Figure 2.1 *Development of Built Up Areas in Ciliwung Basin*

Source: <http://irgsc.org/pubs/wp/IRGSCWP002jakartaflood.pdf>

Figure 2.2 *Major Floods in Jakarta*

Source: <http://irgsc.org/pubs/wp/IRGSCWP002jakartaflood.pdf>

Figure 2.3 *Global sea level rise and average land subsidence for several coastal cities.*

Source: <https://www.deltares.nl/app/uploads/2015/09/Sinking-cities.pdf>

Figure 2.4 *Land elevations in Jakarta in 2010*

Source: http://www-wds.worldbank.org/external/default/WDSCContentServer/WDSP/IB/2011/10/19/000356161_20111019004946/Rendered/PDF/650180WP0Box360ange0Jakarta0English.pdf

Figure 2.5 *Land Subsidence in Jakarta*

Source: <https://www.dropbox.com/s/d9zxf0znebjflzv/4%20Peta%20Penurunan%20Muka%20Tanah.pdf?dl=0>

Figure 2.6 *Illustration showing the tipping point when Jakarta lies completely below the sea level.*

Source: http://www-wds.worldbank.org/external/default/WDSCContentServer/WDSP/IB/2011/10/19/000356161_20111019004946/Rendered/PDF/650180WP0Box360ange0Jakarta0English.pdf

Figure 2.7 *Jakarta's sinking seawall*

Source: Frank Sedlar

Figure 2.8 *Walking on the sinking seawall*

Source: Frank Sedlar

Figure 2.9 *Floating toilets on the Ciliwung River ensure they don't become flooded with heavy rainfall, but instead rise and fall with the river.*

Source: Ashley Brooke Biren

Figure 2.10 *Average Rainfall in Jakarta*

Source: <http://www.worldweatheronline.com/jakarta-weather/jakarta-raya/id.aspx>

Figure 2.11 *Rainfall During 2002, 2007 Major Floods*

Source: http://www-wds.worldbank.org/external/default/WDSCContentServer/WDSP/IB/2011/10/19/000356161_20111019004946/Rendered/PDF/650180WP0Box360ange0Jakarta0English.pdf

Chapter 3

Inside Chapter Page

Source: Ashley Adams

Figure 3.1 *Concrete sheet piles of Normalization already crumbling along the Ciliwung River.*

Source: Ryan Lee

Figure 3.2 *The 19km extent of Normalization along the Ciliwung River.*

Source: Ryan Lee

Figure 3.3 *Normalization underway along the Ciliwung River.*

Source: Ryan Lee

Figure 3.4 *Various methods of Normalization along the Ciliwung River.*

Source: Ryan Lee

Figure 3.5 *Areas of Proposed Eviction along the 19km extent of Normalization*

Source: Google Earth; Edited by Ashley Adams

Figure 3.6 *The Impact Of River Channelization*

Source: <http://www.jstor.org/stable/633280>

Figures 3.7 *Resilient green river strategies were used in the transformation of the Sanlithe River in China.*

Source: <http://www.turenscape.com/english/projects/project.php?id=4558>

Figures 3.8 *Natural river restoration strategies are considered to create an architectural solution that will work in harmony with the river.*

Source: Ashley Adams

Figures 3.9 *Kampung Evictions at Bukit Duri (2015)*

Source: <http://www.cnnindonesia.com/nasional/20150820135228-22-73354/akhirnya-bentrok-di-kampung-pulo/4>

Figures 3.10 *'City beautification' as envisioned by Jakarta Ministry of Public Works*

Source: Profile 2012. (2012). Ministry of Public Works and Public Housing. The Directorate General of Water Resources. Retrieved from Inundation 3 Studio, Ryerson University.

Figure 3.11 *'City beautification' as envisioned by Jakarta Ministry of Public Works*

Source: Profile 2012. (2012). Ministry of Public Works and Public Housing. The Directorate General of Water Resources. Retrieved from Inundation 3 Studio, Ryerson University.

Figure 3.12 *The Cyclic Nature of Forced Evictions*

Source: Ashley Adams

Figure 3.13 *Eviction Outcomes*

Source: <http://www.cnnindonesia.com/nasional/20150820135228-22-73354/akhirnya-bentrok-di-kampung-pulo/4>

Figure 3.14 *From Horizontal to Vertical*

Source: Rejuvenation Slum In The Watershed Development Through Flat Ciliwung General Lease (Rusun Ciliwung). (December 2011). Ministry of Housing, Ministry of Public Works, Jakarta Capital Region. Retrieved from Inundation 3 Studio, Ryerson University.

Figures 3.15 *Proposed Housing for Evicted Kampung Residents*

Source: Rejuvenation Slum In The Watershed Development Through Flat Ciliwung General Lease (Rusun Ciliwung). (December 2011). Ministry of Housing, Ministry of Public Works, Jakarta Capital Region. Retrieved from Inundation 3 Studio, Ryerson University.

Figure 3.16 *The Impossible task of calculating the number of networks and people affected by Normalization.*

Source: Ashley Adams

Chapter 4:

Inside Chapter Page

Source: Ashley Adams

Figures 4.1 *The people and the streets of the Kampung.*

Source: Inundation 3 Studio, Ryerson University

Figure 4.2 *Administrative Divisions of Jakarta*

Source: Ashley Adams

Figure 4.3 *Distribution Networks to the Greater Jakarta Area of Informal Economies from Bukit Duri and Kampung Pulo*

Source: Inundation 3 Studio, Ryerson University

Figure 4.4 *Local supply networks of 12 independent businesses in Bukit Duri and Kampung Pulo*

Source: Inundation 3 Studio, Ryerson University

Figure 4.5 *Local distribution networks of 12 independent businesses in Bukit Duri and Kampung Pulo*

Source: Inundation 3 Studio, Ryerson University

Figure 4.6 *Examples of businesses in the informal economy*

Source: Inundation 3 Studio, Ryerson University

Figure 4.7 *Sanggar Ciliwung Merdeka*

Source: Ashley Adams

Figures 4.8 *The River and the House*

Source: Inundation 3 Studio, Ryerson University

Figures 4.9 *Measuring Flood Levels*

Source: Inundation 3 Studio, Ryerson University

Figure 4.10 *Low State Flooding*

Source: https://pitoyosusanto.wordpress.com/2014/01/20/coping-with-jakarta-flood-_09/

Figure 4.11 *High Level of Flooding*

Source: https://pitoyosusanto.wordpress.com/2014/01/20/coping-with-jakarta-flood-_5/

Figure 4.12 *Mid State*

Source: https://pitoyosusanto.wordpress.com/2014/01/20/coping-with-jakarta-flood-_10/

Chapter 5:

Inside Chapter Page

Source: Ashley Adams

Figure 5.1 *Density in the Kampung allows only for space above the houses and river, and between houses in the streets and alleys.*

Source: Ashley Adams

Figure 5.2 *Considering a condition where flooding will exist for most of the year.*

Source: Ashley Adams

Figure 5.3 *Conceptual Rendering of the Bamboo Bridge at Bukit Duri*

Source: Ashley Adams

Figures 5.4 *Nine existing vehicular bridges along the 19km length of the Ciliwung River experiencing Normalization.*

Source: Google Earth

Figures 5.5 *The existing vehicular bridge at Bukit Duri currently being used as a sale space for furniture refurbishing.*

Source: Ashley Adams and Frank Sedlar

Figure 5.6 *Bukit Duri in relation to Jakarta.*

Source: Google Earth; Edited by Ashley Adams

Figure 5.7 *Major Flood Conditions at the bend of the river across from Bukit Duri.*

Source: <http://en.tempo.co/read/news/2014/01/13/057544358/Flood-Hits-Jakarta-5000-People-Evacuated>

Figure 5.8 *Major Flood Conditions at the bend of the river across from Bukit Duri.*

Source: <http://www.gettyimages.ae/detail/news-photo/people-walk-through-the-flooded-streets-at-kampung-pulo-on-news-photo/463479365>

Figure 5.9 *Locating Bukit Duri and Kampung Pulo*

Source: Sanggar Ciliwung Merdeka; Edited by Ashley Adams

Figure 5.10 *Proposed Community bridge across the existing vehicular bridge at Bukit Duri*

Source: Ashley Adams

Figure 5.11 *Site Plan of Bamboo Bridge at Bukit Duri.*

Source: Ashley Adams

Poster

Source: Ashley Adams

Figure 5.12 *Existing condition of kampung*

Source: Ashley Adams

Figure 5.13 *Vertical Chicken Coop*

Source: LeeAnn Pallett

Figure 5.14 *Red string used to guide residents through the roads during flooding*

Source: <http://membacaruang.com/traces/>

Figure 5.15 *Footpaths placed during flooding for mobility*

Source: http://www.poorworld.net/Bilder_Indonesien/Bilder_Jakarta_19.htm

Figure 5.16 *Beginning stages of development of Bamboo Bridge*

Source: Ashley Adams

Figure 5.17 *Bukit Duri Prototype of Bamboo Bridge*

Source: Ashley Adams

Figure 5.18 *Possible final stages of Bamboo Bridge*

Source: Ashley Adams

Figure 5.19 *Possible scenarios of housing development alongside The Bamboo Bridge*

Source: Ashley Adams

Figures 5.20 *Incremental Housing Strategy empowering residents in Pune, India*

Source: <http://www.dezeen.com/2009/05/05/incremental-housing-strategy-by-filipe-balestra-and-sara-goransson/>

Figure 5.21 *Section of Bamboo Bridge over Bukit Duri heading towards Jatinegara Market*

Source: Ashley Adams

Figure 5.22 *Pedestrian Bridge Components*

Source: Ashley Adams

Figure 5.23 *Key Plan*

Source: Ashley Adams

Figure 5.24 *Crossing Cilinung River*

Source: Ashley Adams

Figure 5.25 *Connection to Jatinegara Market*

Source: Ashley Adams

Figure 5.26 *Key Plan*

Source: Ashley Adams

Figures 5.27 *Pedestrian Bridge crossing Jalan Jatinegara Barat towards Jatinegara Market*

Source: Ashley Adams

Figure 5.28 *Key Plan*

Source: Ashley Adams

Figure 5.29 *Pedestrian Bridge crossing Jalan Jatinegara Barat towards Jatinegara Market*

Source: Ashley Adams

Figure 5.30 *Possible termination of Pedestrian Bridge with column component.*

Source: Ashley Adams

Figure 5.31 *Possible termination of Pedestrian Bridge with stair component.*

Source: Ashley Adams

Figure 5.32 *Key Plan*
Source: Ashley Adams

Figure 5.33 *Pedestrian Bridge crossing Ciliwung River towards Kampung Pulo.*
Source: Ashley Adams

Figures 5.34 *Davao Bridge designed by Andrea Fitrianto.*
Source: <https://www.flickr.com/photos/fitrianto/albums/72157634702967130>

Figure 5.35 *A community center made out of bamboo built above drainage situated in Kampung Pakuncen, Yogyakarta, Indonesia.*
Source: <https://www.flickr.com/photos/fitrianto/albums/72157634424988494>

Figure 5.36 *Bamboo Roof by Simon Valez.*
Source: DeBoer, D., Groth, M. (2010). *Bamboo Building Essentials: The eleven basic principles.*

Figure 5.37 *Community Bridge components*
Source: Ashley Adams

Figure 5.38 *Transition to Pedestrian Bridge.*
Source: Ashley Adams

Figure 5.39 *Underside of Community Bridge sitting atop existing vehicular bridge.*
Source: Ashley Adams

Figure 5.40 *Community Bridge in use as market above existing vehicular bridge.*
Source: Ashley Adams

Figure 5.41 *Perspectives of community bridge above existing vehicular bridge.*
Source: Ashley Adams

Figure 5.42 *Longitudinal section of Community Bridge with vertical access at each end.*
Source: Ashley Adams

Figure 5.43 *Floor plan of Bamboo Bridge Prototype at Bukit Duri*
Source: Ashley Adams
Figure 5.44 *Key Plan*
Source: Ashley Adams

Figure 5.45 *The Transition in Elevation with Community Bridge in Behind*
Source: Ashley Adams

Figure 5.46 *Section of Community Bridge Above Existing Vehicular Bridge*
Source: Ashley Adams

Figure 5.47 *Key Plan*
Source: Ashley Adams

Figure 5.48 *The Transition Between Community Bridge and Pedestrian Bridge*
Source: Ashley Adams

Figure 5.49 *Looking towards Bukit Duri with Bamboo Bridge Proposal*
Source: Ashley Adams

Figure 5.50 *The Bamboo Bridge Extended Along the 19km of the Ciliwung River.*
Source: Ashley Adams

Inside Chapter Page
Source: Ashley Adams

List of Appendix

Appendix A

The Evolution of the Bamboo Bridge

Flow and Overflow

Bridging the River

Making Connections Across the Floodplain

Determining a Form

The Intent of the Pedestrian Bridge

Recreation of the Vehicular Bridge

Slow Violence:
violence that occurs gradually and out of sight (Rob Nixon)

Contentious Landscapes and the Urban Poor

Contentious landscapes represent the discarded, neglected, and controversial. These landscapes have felt the effects of social, economic, environmental, and political violence—whether abruptly or over time.

The communities that often inhabit contentious landscapes are socially vulnerable. With some of their buildings in ruins, a catalyst is needed to help revitalize these communities and their infrastructure. Beyond its beautiful intent, architecture can respond to and transform such contentious landscapes. Architecture is public, embedded in the urban environment. It creates memories and experiences, and is inextricably linked to socio-political influences. Architecture must accept the challenge to locate itself socially and politically and act as an agent of change.

In architecture, the built form is never experienced in totality, but rather it is seen as partial views and experiences. Each space is given meaning from its relation to what is around it. The meaning transforms over time as physical, social and political changes occur. German philosopher Martin Heidegger believes that humans understand things in relation to other things; we do not perceive objects as separate and self-contained.¹ Similarly, the city is a collage of memories and experience, with layers upon layers of historical documentation. Architecture frames the activity, while human action forms the experience that becomes our collective memory. With both the physical and political landscape of a community evolving, architecture needs to be similarly adaptable.

Laban yang menjadi bahan perdebatan ini merupakan representasi dari mereka yang terpinggirkan, diabaikan, dan kontroversial. Laban ini telah merasakan efek dari kekerasan sosial, ekonomi, dan politis—di mana ini terjadi banyak sekali.

Komunitas yang tinggal di lahan rawan penggusuran ini kerap kali menjadikan lahan mereka sebagai tempat tinggal. Dengan beberapa bangunan yang reyot, diperlukan sarana yang membantu mereka untuk merevitalisasi komunitas mereka dan infrastrukturnya. Di balik nama indah nya, arsitektur dapat menanggapi dan mengubah lahan yang menjadi bahan perdebatan ini. Arsitektur bersifat publik, tertanam dalam lingkungan urban. Ia menciptakan ingatan dan pengalaman, dan secara kompleks terhubung dengan pengaruh sosio-politis. Arsitektur harus menerima tantangan untuk menempatkannya secara sosial dan politis dan bertindak sebagai agen perubahan.

Dalam arsitektur, bentuk yang telah terbangun tak pernah dialami sebagai suatu totalitas, melainkan dilibat sebagai pandangan dan pengalaman yang parsial. Setiap ruang diberi makna dari hubungannya dengan apa yang ada di sekitarnya. Makna dapat memberi perubahan sementara sementara perubahan fisik, sosial, dan politis terjadi. Filsuf Jerman bernama Martin Heidegger percaya bahwa manusia memahami sesuatu dalam kaitannya dengan hal lain; kita tidak memahami objek sebagai suatu hal yang terpisah dan ada pada dirinya sendiri.¹ Serupa dengan itu, kota merupakan kolase ingatan dan pengalaman dengan dihiasi lapisan demi lapisan dokumentasi historis. Arsitektur membingkai segala kegiatan, sementara tindakan manusia membentuk pengalaman yang menjadi ingatan kolektif. Dengan matra komunitas yang muncul secara fisik dan politis, arsitektur harus

Fig. 0.1 Living Above the Water

Nevertheless, the urban environment is evidence of time passed, and there is value in saving our historical layers, and associated memories—so it is crucial to find value in the urban fabric, and design elements that enhance, compliment or strengthen those existing structures and values.

Informal urban settlements are an example of human inhabitation on contentious landscapes that have resulted from various economic, environmental and political changes. They house layers of meaning, memories, and time. Their layers symbolize the self-will, resilience, and adaptiveness of the people that has formed parallel to government neglect, ecological violence, and socioeconomic injustice.

These informal settlements are the leftover spaces—abandoned, between, over, on the edge, and under. Their forms develop from the availability of resources and their human capacity. There is a sense of accomplishment, willpower, and independence that accumulate, as informal settlements are formed and are expressed in built form. Yet, there is also evidence of slow violence. Rob Nixon, in *Slow Violence and the Environmentalism of the Poor*, defines this as, “violence that occurs gradually and out of sight, a violence of delayed destruction that is dispersed across time and space, an attritional violence that is typically not viewed as violence at all.”² The accumulated history of these contentious landscapes reveals such struggle. Their informal layers of history should not be overlooked. Typical responses to informal settlements are to evict and relocate; but these settlements represent the other side of gentrification and urban development in the 21st century. They are not a phase and will not disappear. As long as there is socio-political instability, there will be displacement. Architecture has the ability to acknowledge informal settlements—and the political, socioeconomic, and environmental layers that affect them—to truly create change. The informal can be the tool to define the future of the built environment; a way of reconfiguring. They should no longer exist as the unknown, but as a catalyst for a contrived future.

Beyond the socio-political problems plaguing contentious landscapes, hydrological disasters are growing in frequency and magnitude, resulting in greater numbers of environmental refugees worldwide. Architecture can play

dapat diadaptasi. Akan tetapi, lingkungan urban juga adalah bukti dari berjalannya sang waktu, dan ada nilai yang terkandung dari tindakan kita menyelamatkan lapisan historis dan ingatan kita bersama—maka, menemukan nilai dari pabrik kota dan elemen desain yang meningkatkan, menghargai atau menguatkan struktur dan nilai yang sudah ada adalah sangat krusial.

Pemukiman kota yang informal adalah contoh dari pemukiman manusia di lahan sengketa yang telah muncul sebagai akibat dari perubahan ekonomi, politis, dan lingkungan. Mereka tinggal di lapisan-lapisan makna, ingatan, dan waktu. Lapisan-lapisan itu menyimbolkan karsa, kelenturan, dan adaptasi yang telah terbentuk, sejajar dengan pengabaian dari pemerintah, kekerasan ekologis, dan ketidakadilan sosial ekonomi.

*Pemukiman informal ini adalah ruang yang tertinggal—terbengkalai di antara segala sudut. Mereka hidup dan berkembang dari ketersediaan sumber daya dan kemampuan mereka. Ada rasa untuk menuntaskan, ada kekuatan untuk berkebhendak, dan kemerdekaan yang terkristalkan ketika pemukiman informal dibentuk dan diekspresikan dalam bentuk yang sudah terbangun. Akan tetapi, ternyata ada pula bukti adanya kekerasan yang halus. Rob Nixon, dalam bukunya *Slow Violence and Environmentalism of the Poor*, menyatakan kekerasan halus sebagai berikut, “Kekerasan yang terjadi secara bertahap dan tak kasat mata, kekerasan yang muncul dari kerusakan yang tertunda yang tersebar sepanjang ruang dan waktu, sebuah kekerasan laten yang sama sekali tidak dilihat sebagai kekerasan.”² Kumpulan sejarah dari tanah sengketa ini menyingkapkan perjuangan. Lapisan sejarah mereka yang informal janganlah diremehkan.*

Respons tipikal dan yang jamak terjadi terhadap pemukiman informal adalah pengusuran dan relokasi, tetapi pemukiman ini merepresentasikan sisi lain dari renovasi dan perkembangan kota di abad ke-21. Ini bukanlah suatu fase, dan ini tidak akan hilang. Selama masih ada ketidakstabilan sosial politik, peminggiran akan selalu ada. Arsitektur memiliki kemampuan untuk mengenali dan mengakui pemukiman informal—dan lapisan politik, sosial ekonomi, dan lingkungan yang berpengaruh bagi mereka—dan pada gilirannya membuat perubahan. Yang informal dapat menjadi alat untuk memaknai masa depan lingkungan; sebuah jalan untuk mengenali kembali. Mereka tidak lagi harus hidup sebagai orang asing, melainkan sebagai pemicu bagi masa depan yang diarahkan.

Di luar masalah sosio-politis yang melanda tanah sengketa ini, bencana hidrologis semakin bertumbuh dari segi frekuensi dan besarnya, mengakibatkan semakin banyaknya

a proactive role to mitigate the severity of physical, social, and economic destruction caused by hydrological disasters. With rising sea levels, rapid urban development, and insufficient basic infrastructure, Jakarta, Indonesia, is one of the many Southeast Asian cities suffering major annual flooding. Jakarta's flooding is not a recent development. It has existed since the 16th century, but only now has its intensity and frequency resulted in unavoidable consequences. So too, has the urban poor of Jakarta experienced the slow violence of political, social, and environmental injustice since Colonialism. In attempts to reduce damage, the government has proposed plans to minimize flooding by dredging and channelizing 15 waterways in the city—yet this results in the eviction and relocation of tens of thousands of residents into subsidized housing, far from their communities and generations of collective memory.

An alternative solution is required to provide flood adaptive social and economic solutions to the informal communities living along Jakarta's 119km long Ciliwung River, that will allow residents to safely remain alongside concurrent natural river restorations. Architecture can be the medium used to transform Jakarta to reconnect city and river. It can act in the service of political and social change, to be the agent that encourages civic engagement, political action, and human rights.

pengungsi di dunia karena masalah lingkungan hidup ini. Arsitektur dapat berperan aktif dalam melakukan mitigasi terhadap kerasnya kerusakan fisik, sosial, dan ekonomi yang disebabkan oleh bencana hidrologis. Dengan meningkatnya ketinggian air laut, pembangunan kota yang pesat, dan infrastruktur yang tidak mencukupi, Jakarta, Indonesia adalah satu dari banyak kota di Asia Tenggara yang dilanda banjir. Banjir Jakarta bukan merupakan masalah yang muncul karena program pembangunan. Persoalan ini telah ada sejak abad ke-16, hanya saja sekarang ini menjadi semakin intens dan memunculkan akibat yang tak terhindarkan. Begitu pula dengan masyarakat miskin kota di Jakarta, mereka telah mengalami kekerasan halus atas penindasan politis, sosial, dan lingkungan sejak zaman kolonial. Dalam usaha untuk menawarkan bantuan, pemerintah telah mengusulkan rencana untuk menanggulangi banjir dengan jalan pelebaran dan kanalisasi jalur air di kota—akan tetapi ini berakibat pada pengusuran dan relokasi puluhan ribu warga ke rumah subsidi yang jauh dari komunitas dan ingatan kolektif mereka.

Solusi alternatif dibutuhkan untuk mengatasi persoalan ini, terutama bagi warga bantaran Kali Ciliwung sehingga mereka tetap dapat tinggal di sana dengan aman. Arsitektur dapat menjadi medium untuk mengubah Jakarta dalam menghubungkan kota dengan sungai. Arsitektur dapat bertindak sebagai agen perubahan sosial dan politik yang mendorong keterlibatan sipil, tindakan politis, dan hak asasi manusia.

Notes

¹ Shields, J. (2014). *Collage and Architecture*. New York: Routledge.

² Nixon, R. (2011). *Slow Violence and the Environmentalism of the Poor*. Massachusetts: Harvard University Press.

THE CREATION OF THE KAMPUNG

THE CREATION OF THE KAMPUNG

A Brief History of Jakarta

A thorough in-depth look at political history as it relates to urban development in Jakarta presents the unfortunate evolution of social and environmental injustice. From the beginning of colonialism, the city has felt victim to racial and class segregation, paralleled with environmental degradation. The following chapter will discuss Jakarta's urban development with a focus on the specific political movements that have contributed to the creation of the kampung and the urban poor.

The city of Jakarta has constantly displaced the urban poor; a history of eviction dating back to the beginning of Colonialism. Jakarta, then known as Jayakarta, had already become a major trading port before the attack of the Dutch in 1619.¹ Settlement at the mouth of the Ciliwung River had taken place since the 4th century by the native Javanese people. Spurred by a 21-year monopoly, The Dutch East India Company (VOC), were granted the ability to begin trade activities in Asia. After waiting for the perfect moment of Javanese vulnerability, the Dutch besieged the port and laid the ground work for the development of their international company. The town was then renamed to Batavia. After the Javanese attempted to reclaim their land, the Dutch created a stronger defence system to avoid retaliation. A walled-city was built around the Dutch, which allowed only the Chinese and descendants of freed slaves to inhabit within the walls.

Melihat sejarah politik di Jakarta dalam hubungannya dengan perkembangan masyarakat kota, didapatkan suatu fenomena evolusi sosial dan ketidakadilan lingkungan yang tidak menggembirakan. Sejak awal masa kolonialisme, Jakarta telah menjadi korban segregasi rasial dan kelas yang sejajar pula dengan degradasi lingkungan. Bab ini akan membahas tentang perkembangan masyarakat kota Jakarta dengan fokus pembahasan pada pergerakan politik yang secara spesifik telah memberi kontribusi terhadap terciptanya kampung dan masyarakat miskin kota.

Kota Jakarta secara konstan telah membuat masyarakat miskin kota terpinggirkan; sejarah mencatat bahwa kondisi ini telah terjadi sejak zaman kolonialisme. Jakarta, yang dulunya dikenal dengan nama Jayakarta, telah menjadi pelabuhan perdagangan yang besar sebelum serangan Belanda pada 1619.¹ Penghunian di tepi Kali Ciliwung telah berlangsung sejak abad ke-4 oleh orang Jawa. Setelah berkuasa dalam monopoli selama 21 tahun, perusahaan dagang Hindia Belanda (VOC) mendapatkan cukup kemampuan untuk memulai perdagangan di Asia. Setelah menunggu momen yang tepat dengan melihat kelemahan orang-orang Jawa, orang-orang Belanda tersebut langsung membentengi pelabuhan itu dan memberi lahan kerja bagi orang-orang Jawa untuk mengembangkan perusahaan internasional mereka. Kota ini kemudian dinamai Batavia. Setelah orang-orang Jawa berusaha mengklaim kembali tanah mereka, Belanda membuat sistem pertahanan yang kuat untuk menghindari serangan balasan dari orang Jawa. Kota yang dikelilingi tembok pertahanan dibangun di sekitar tempat tinggal orang Belanda, dan yang diizinkan untuk tinggal di sana hanyalah orang-orang Cina dan keturunan budak yang sudah bebas.

Fig. 1.1 Batavia Besieged in 1629. Kampung shown in the distance outside of the walls of the walled-city.

The Javanese and all other ethnicities were forced to live outside the town walls. Regardless of the inclusion of the Chinese, they were still considered foreigners, despite providing a contribution three times the amount of any other group to the development of Batavia's city hall.² This would symbolize the beginning of long-term inequality for the Chinese. For a short period of time after the Dutch had assumed rule, development outside of the city walls was unregulated and scattered. In fear of revolt, the Dutch enforced complete segregation, instructing each ethnic group to live in their own village.

The VOC had only ever intended for Batavia to be a temporary location, and took measures to ensure the people would not develop a real town, while at the same time provided minimal support to prevent revolt – another pattern that would form over time during Jakarta's history.³ Over time, Batavia grew and became more attractive to the international community. The growing economy attracted predominately Chinese and Indonesians. The Dutch was unable to bear the burden of migration, as they had never properly governed or controlled Batavia, but had treated it as a housing place for corporate operations.⁴ The Dutch ruled authority over the colony through local alliances and only partially managed the city.⁵ The lack of authority bestowed by the Dutch would result in unequal treatment of space dependent on ethnic background.

In an attempt to limit the unprecedented growth of Batavia, the Dutch enacted deportation towards the Chinese in 1740. The Chinese confronted the Dutch with the plan, but received only violence. The Europeans and Indonesians attacked and burned 6000-7000 Chinese homes and massacred 10,000.⁶ The survivors were transported outside of the city walls. This system of shock therapy would be seen again in the 20th century under Suharto's rule, used to control and keep the city in fear.

Aside from social issues that formed during the Colonial era, extreme environmental degradation was documented as early as 1684 when the Chinese began cultivating sugarcane, alcohol (Tuak), and coffee.⁷ Forests were cleared for colonial plantations, causing destruction to the environment. The Dutch-built canal also needed extensive maintenance and often required dredging in attempt to manage the floods. Malaria became a major problem, as the recurrent

Orang-orang Jawa dan etnis lainnya dipaksa untuk tinggal di luar tembok kota. Orang-orang Cina, meskipun telah berintegrasi dengan masyarakat sekitar, tetap dianggap sebagai orang asing, lepas dari kontribusi yang telah mereka berikan sebanyak tiga kali lipat untuk pembangunan tembok kota.² Ini akan menandai asal mula ketidaksetaraan yang telah lama dialami orang-orang Cina. Setelah Belanda mengundang aturan mengenai pembangunan, sempat terjadi suatu masa di mana pembangunan di luar tembok kota sangatlah tidak teratur dan tersebar. Karena takut akan terjadinya pemberontakan, pihak Belanda memerintahkan suatu segregasi yang mutlak, di mana setiap etnis harus tinggal di kampungnya sendiri.

VOC sejak awal hanya menginginkan Batavia sebagai lokasi sementara, dan meyakinkan masyarakat bahwa mereka tidak akan membangun kota, sementara di saat yang sama juga tidak begitu memberi perhatian penuh terhadap ancaman pemberontakan. Ini adalah pola lain yang membentuk sejarah Jakarta.³ Seiring berjalannya waktu, Batavia menjadi daya tarik bagi komunitas internasional. Peningkatan ekonomi menarik perhatian orang-orang Cina dan seantero Nusantara. Belanda kemudian tak mampu lagi menahan gelombang migrasi yang besar karena mereka tak pernah memerintah atau memegang kontrol atas Batavia, tapi lebih memanfaatkan kota ini sebagai tempat tinggal bagi operasi perusahaan.⁴ Belanda memegang otoritas terhadap koloni melalui pengelompokan lokal dan mengelola kota hanya secara parsial.⁵ Kurangnya otoritas yang dilimpahkan oleh Belanda berakibat pada perlakuan yang tidak setara terhadap berbagai etnis.

Dalam usahanya untuk membatasi perkembangan Batavia, Belanda mengundang deportasi terhadap orang-orang Cina pada 1740. Orang-orang Cina tersebut melawan Belanda dengan menggunakan rencana dan argumentasi, akan tetapi mereka malah mendapatkan kekerasan. Orang-orang Eropa dan Indonesia kemudian menyerang dan membakar 6000-7000 rumah orang Cina dan membunuh 10.000 jiwa.⁶ Para penyintas kemudian dipindahkan keluar dari gedung kota. Sistem "shock therapy" ini kemudian akan terjadi kembali pada abad ke-20 pada era pemerintahan Soeharto yang digunakan untuk mengontrol sekaligus memelihara ketakutan di kota.

Di samping isu sosial yang terbentuk selama masa kolonial, penurunan/kerusakan lingkungan yang ekstrim juga terjadi dan tercatat pada tahun 1684 ketika orang-orang Cina mulai mengelola tebu, alcohol (tuak/arak), dan kopi.⁷ Hutan-hutan ditebangi untuk ditanami tanaman yang dikehendaki kolonial, dan itu menyebabkan kerusakan pada

floods and marshy land created the perfect breeding grounds for mosquitoes. The Dutch rule continued until 1808 when the French army invaded and destroyed the walled-city and the VOC fort. A new city center was created 10km south to Weltevreden where it was drier and healthier. Batavia was left abandoned, but the existing villages of the Orientals outside of the city walls remained, unable to leave the wet, diseased area. The rubble of the old city walls was used to build a new center of power at Weltevreden.⁸ New Batavia was home to a European community that embraced the new 19th century colonial era. Land occupation mirrored racial inequality with 9% of the population of European descent but occupied 50% of residential land; 20% of the population was of Chinese descent, and occupied 30% of residential land; and 71% of the population from Native descent and occupied 20% of residential land.⁹ Monumental government structures would symbolize a new public architecture, representing power and wealth. Batavia was no longer a town run by a company but acted as an extension of the colonial state and the town continued to develop.

The Law of Decentralization in 1903 established the city as a municipality and allowed Batavia the ability to self-govern. The Dutch wanted to decrease Batavia's financial dependence on the Netherlands, which transferred the responsibility of revenue generation to the local government.¹⁰ The new functions of the local government included maintenance of roads, parks, markets, transport, housing, water and waste. ¹¹ The intent was that civic participation in urban politics would strengthen as the role of the state minimized. With the best intentions, the Law of Decentralization was still not able to overturn European privilege. From the 1920s onwards, European elite made up the municipal council, controlled from within the state-dominated municipality. As a result, new Batavia still operated as a colonial city and Indonesians received minimal benefits in comparison to Europeans. From 1900-1930 the European created areas in Batavia separate from the native community. The Local Water Supply Enterprise of Batavia in 1918 was formed to manage a piped distribution system that brought water from the south of the city.¹² While nominal *kampungs did receive water, the Europeans received four times the amount.

The Dutch did develop widespread concern for the social improvement of

lingkungan. Orang Belanda juga membangun kanal yang membutuhkan penanganan khusus dan kerap kali harus menggali tanah untuk mengatur banjir. Malaria kemudian menjadi masalah besar karena banjir yang rutin datang serta tanah yang lembek telah menciptakan sarang yang sempurna untuk nyamuk.

Peraturan Belanda terus berjalan sampai serdadu Perancis datang menginvasi dan menghancurkan kota bertembok itu dan pelabuhan VOC pada 1808. Pusat kota yang baru kemudian didirikan 10 km ke selatan menuju Weltevreden di mana tempat tersebut lebih kering dan lebih sehat. Batavia kemudian ditinggalkan, tapi kampung masyarakat Tionghoa di luar tembok kota masih menjadi area berwabah penyakit karena kondisinya yang tetap basah dan lembab. Sisa-sisa reruntuhan kota lama kemudian dipakai untuk membangun pusat kekuatan baru di Weltevreden.⁸ Batavia Baru menjadi rumah baru bagi orang-orang Eropa yang menghidupi era kolonial yang baru pada abad ke-19. Penguasaan tanah ini mencerminkan ketidaksetaraan dengan data 9% populasi keturunan Eropa yang menduduki 50% lahan hunian, 20% populasi keturunan Tionghoa yang menduduki 30% lahan hunian, dan 71% populasi orang pribumi yang menduduki hanya 20% lahan hunian.⁹ Struktur pemerintahan yang monumental akan menyimbolkan arsitektur publik yang baru di mana struktur tersebut mencerminkan kekuatan dan kekayaan. Batavia kemudian bukan lagi kota yang diperintah oleh suatu perusahaan, melainkan lebih merupakan perluasan atas negara kolonial.

Hukum tentang Desentralisasi yang diundangkan pada 1903 menjadikan kota ini sebagai kota besar dan memungkinkan Batavia untuk diperintah oleh pemerintah kolonial. Orang-orang Belanda ingin mengurangi ketergantungan mereka terhadap Kerajaan Netherland yang pada gilirannya akan memindahkan tanggung jawab pemasukan kepada pemerintah lokal.¹⁰ Fungsi yang baru untuk pemerintah lokal mencakup perawatan jalan, kota, pasar, transportasi, perumahan, air, dan pengaturan sampah.¹¹ Tujuannya adalah supaya partisipasi warga dalam politik perkotaan dapat diperkuat ketika peran negara diperkecil. Dengan intensi seperti itu, Hukum tentang Desentralisasi ternyata masih tidak mampu mengalihkan privilese orang-orang Eropa. Sejak tahun 1920an ke tahun berikutnya, para elit Eropa membuat perwalian kota yang mengontrol pemerintahan yang didominasi negara dari dalam. Sebagai akibatnya, Batavia Baru masih beroperasi sebagai kota milik kolonial dan orang-orang pribumi masih menerima keuntungan yang kecil dibanding orang-orang Indonesia. Dari tahun 1900-1930, orang-orang Eropa membangun area di Batavia yang terpisah dari komunitas orang pribumi. Pada 1918, Badan Usaha Pemasok Air Batavia

**kampung*: a small village or community of houses

indigenous kampungs. However, the primary motive was to reduce the negative social-political effects on the European community.¹³ The primary interest of the municipality was the welfare of the European community and did not adopt the level of civic engagement the state had intended.

In 1930, the increasing number and size of kampung housing areas prompted the Dutch to develop alternative strategies in controlling or evading urban issues. One strategy proposed involved moving to Bandung to avoid the problems of Batavia.¹⁴ Racial classification continued through to 1945 when Indonesia declared dependence from the Netherlands. The Article of Indonesian

kemudian dibuat untuk mengatur sistem distribusi air pipa yang membawa air dari selatan menuju ke kota.¹² Sementara beberapa kampung mendapat air, orang-orang Eropa mendapat air empat kali lipat banyaknya. Orang Belanda memang mengembangkan perhatian yang luas terhadap kemajuan sosial dari kampung asli. Akan tetapi, motif utamanya adalah untuk mengurangi efek sosial politis yang negatif terhadap komunitas orang-orang Eropa.¹³ Kepentingan utama pemerintah adalah untuk kesejahteraan komunitas orang-orang Eropa dan mereka tidak menerapkan keterlibatan warga sebagaimana telah diharapkan oleh negara. Pada 1930, peningkatan jumlah dan ukuran area pemukiman kampung telah mendorong orang Belanda untuk mengembangkan strategi alternatif untuk mengontrol isu perkotaan. Salah satu strateginya adalah pindah ke Bandung untuk menghindari masalah

Fig. 1.2 Independence Propaganda 1945-9

Fig. 1.3 (left) Mar. 10, 1958 TIME Magazine Cover
 Fig. 1.4 (right) July 15, 1966 TIME Magazine Cover

Constitution was written following Japanese control after World War II.¹⁵ The dual system between Batavia and the Chinese remained, as well as the existence of two separate commercial systems – the Europeans and the Chinese. The segregation prevented the business community from forming alliances to civic improvement. The Constitution made Jakarta once again, the national capital. With the absence of Dutch rule, a massive migration occurred from rural to urban communities — as it was believed Jakarta would now be the place for social and economic opportunities. The migration caused kampungs in Jakarta to rapidly grow.

Sukarno & Suharto

With Independence, the first president in Indonesia was appointed: Sukarno. He remained in office from 1945 to 1967. Trained as an engineer, Sukarno lead the city through Indonesia's nationalist movement. His vision was to move Jakarta into urban modernization as the center of Indonesia. Sukarno took steps to remove any obstacles to modernization and focused his efforts on urban initiatives that showcased capital projects. Unfortunately, this left a deficit in addressing the basic needs and services of the city.¹⁶

Throughout his term, Sukarno gained power by balancing the forces of the Indonesian Communist Party (PKI) and the army. By 1965 PKI influences could be seen at all levels of the government. A coup d'état was organized by the Indonesian National Armed Forces and on September 30, 1965 members assassinated six Indonesian Army generals and captured President Sukarno.¹⁷ The coup d'état attempt failed, but was quickly blamed on the PKI, while Major General Suharto took control. Anti-PKI demonstrations and mass killings ensued throughout the country, and anyone who was suspect of having ties to the PKI was killed. Across Indonesia, it was reported that more than 500,000 people were killed between 1965-1966. The mass killings lead to the removal of the Indonesian Communist Party as the leading force, and the downfall of President Sukarno. When General Suharto came to power Indonesia was still considered an agrarian society and most people lived in villages. Suharto's main achievement during his 31 years in office is economic growth for the country of Indonesia. Urban centers rapidly expanded, a middle class was formed, and

Batavia.¹⁴ Klasifikasi rasial masih terus berlanjut sampai tahun 1945 ketika Indonesia menyatakan kemerdekaannya dari Belanda. Konstitusi negara Indonesia kemudian ditulis di bawah perintah Jepang pasca Perang Dunia II.¹⁵ Sistem ganda Batavia dan Cina tetap berjalan, sebagaimana keberadaan dua sistem komersial yang terpisah—Eropa dan Cina. Pemisahan ini menghalangi para pebisnis untuk membentuk kerja sama dalam memajukan warga. Konstitusi sekali lagi menjadikan Jakarta sebagai ibukota negara. Dengan hilangnya peraturan Belanda, terjadilah urbanisasi besar-besaran dari desa menuju ke kota—sebagaimana diyakini bahwa Jakarta adalah tempat dengan kesempatan sosial dan ekonomi yang luas. Migrasi kemudian membuat kampung-kampung di Jakarta menjadi berkembang semakin besar.

Ketika proklamasi kemerdekaan, Soekarno ditunjuk menjadi presiden Indonesia. Masa baktinya berlangsung dari tahun 1945-1967. Dengan bekal pendidikan insinyur, Soekarno memimpin kota Jakarta melalui pergerakan nasionalis Indonesia. Visinya adalah untuk menjadikan Jakarta sebagai pusat modernisasi urban Indonesia. Soekarno mengambil langkah untuk membuang hambatan modernisasi dan memusatkan perhatiannya pada inisiatif warga kota menjadi penampakan proyek kapital. Sayangnya, usahanya menimbulkan defisit kebutuhan dasar dan pelayanan terhadap kota (Planning the Mega City).

Sepanjang masa pemerintahannya, Soekarno memperoleh kekuatan dengan cara memelihara keseimbangan kekuatan PKI dan ABRI. Pada 1965, pengaruh PKI dapat dilihat setara dengan pemerintah. Kudeta kemudian dilakukan oleh ABRI dan pada 30 September 1965, anggota ABRI membunuh 6 jenderal ABRI dan menangkap Presiden Soekarno.¹⁷ Usaha kudeta tersebut gagal, tapi ABRI—yang ketika itu dipimpin oleh Soeharto—segera menuduh PKI sebagai pelaku. Demonstrasi anti-PKI dan pembunuhan massal dikumandangkan di seluruh penjuru Indonesia, dan setiap orang yang dicurigai memiliki hubungan dengan PKI dibunuh. Dilaporkan bahwa dalam rentang waktu 1965-1966, sebanyak lebih dari 500.000 orang dibunuh di seluruh Indonesia. Pembunuhan massal ini membuat PKI menjadi kehilangan pengaruhnya dan sekaligus menjadi momen jatuhnya kekuasaan Soekarno sebagai presiden. Ketika Soeharto naik menjadi presiden, Indonesia masih dianggap sebagai negeri agrarian dan kebanyakan rakyatnya tinggal di pedesaan. Pencapaian utama Soeharto selama 31 tahun masa pemerintahannya adalah pertumbuhan ekonomi bagi Indonesia. Pusat kota berkembang pesat, masyarakat kelas menengah mulai

a manufacturing sector created, but all at the cost of basic human rights.¹⁸

The Basic Agrarian Law of 1960 attempted to formalize the regulation of land ownership through what is called today the National Land Agency (Badan Pertanahan Nasional BPN). The system was inherited from the colonial understanding of land tenure.¹⁹ The colonial state had not been equipped to govern the problem of low-income housing and had allowed the people to create their own housing. This had removed the state's obligation and administrative duty to provide for the people. Local systems developed and in Jakarta land tenure was controlled by the *kelurahan* – local level municipal administrative office. *Kelurahan* offices recognized an individual's ownership of informally registered land, called a land right claim. With the introduction of BPN in 1960 and throughout Suharto's rule both systems existed and land was registered by either the BPN or the *kelurahan*, creating a legal dualism. The two systems began to represent formal and informal registered land. The government recognized the need for low-cost labour and allowed the workforce to occupy informal land to assist in the development of the city. Land registered under the BPN was required to follow costly building standards and regulation, providing an advantage to those remained under the system of *kelurahan*. As of the mid 1990s, 70% of Jakarta's land remains unregistered and unrecognized by the BPN regardless if land is registered through *kelurahan*.

The early years of the 1980s in Jakarta experienced rapid changes in land development that began when the state liberalized the Indonesian economy. Cities were encouraged to privatize urban development. The city was in a rapid state of development and property developers had enormous political power. Large plots of land were converted to private real-estate, which Rio Tambunan, head of the City Administration Office from 1971 to 1975, suggests contributed to the increase in flooding in the city.²⁰

Government authorities played a part in the violation of land use regulation and the privatization of land that added to environmental degradation. The primary concern of the government was to accumulate monetary wealth, regardless of the environmental and social injustice that incurred. Property developers were allowed to write their own laws and violate city bylaws to build high-end

*terbentuk, dan sektor manufaktur telah terbangun, akan tetapi hak asasi manusia menjadi bayarannya.*¹⁸

Hukum Agraria tahun 1960 berusaha memformalisasi aturan tentang kepemilikan lahan melalui apa yang sekarang dikenal sebagai Badan Pertanahan Nasional (BPN). Sistem yang diterapkan merupakan warisan dari pemerintah kolonial tentang penguasaan tanah.¹⁹ Pemerintah kolonial belum dilengkapi aturan tentang bagaimana mengatur masalah rumah yang berpenghasilan rendah dan mereka juga masih mengizinkan warga untuk membangun rumah/pemukiman. Kondisi ini melepaskan kewajiban dan tugas administratif pemerintah terhadap penyelenggaraan masyarakat. Sistem lokal kemudian berkembang dan penguasaan tanah dikontrol oleh kelurahan—pemerintahan administratif tingkat lokal. Petugas kelurahan mengurus kepemilikan individual atas tanah yang tercatat secara informal, yang disebut juga klaim hak atas tanah. Dengan adanya BPN pada tahun 1960 dan kebijakan bahwa tanah harus terdaftar di kelurahan, terjadilah dualisme legal pada masa Soeharto karena dua sistem ini berjalan di saat yang sama. Dua sistem ini mulai mewakili kebijakan tentang lahan yang terdaftar baik secara formal maupun informal. Pemerintah menyadari kebutuhan para buruh yang berpenghasilan rendah dan mereka memberi izin bagi warga untuk menggunakan lahan informal sebagai lapangan pekerjaan untuk membantu perkembangan ekonomi kota. Tanah yang terdaftar di bawah BPN disyaratkan untuk mengikuti standard an aturan tentang biaya bangunan, dan ini memberi keuntungan bagi mereka yang tinggal di bawah sistem kelurahan. Pada pertengahan tahun 1990, 70% lahan Jakarta tidak terdaftar di BPN meskipun tanah tersebut terdaftar di kelurahan.

Pada awal tahun 1980, Jakarta mengalami perubahan yang pesat dalam hal perkembangan lahan yang dimulai setelah negara meliberalisasi perekonomian Indonesia. Kota-kota didorong untuk memprivatisasi perkembangan warganya. Jakarta berada dalam fase perkembangan yang pesat, sementara para pengembang usaha properti memiliki kekuatan politik yang kuat. Lahan-lahan berplot besar diubah menjadi kompleks perumahan di mana Rio Tambunan, kepala Kantor Administrasi Kota tahun 1971-1975, menganjurkan untuk meneruskan usaha kompleks perumahan tersebut.²⁰

Pemerintah juga berperan dalam pelanggaran peraturan tentang penggunaan lahan dan privatisasi lahan yang menambah kerusakan lingkungan. Perhatian utama pemerintah kala itu adalah untuk menambah kesejahteraan moneter tanpa memperhatikan ketidakadilan sosial dan lingkungan yang terjadi. Para pengembang properti diizinkan untuk menetapkan

Wetland
Open Space/Farmland
Developed Area

2010: 9.5 million
2014: 10.2 million

	DKIJakarta	Metropolitan Area	Republic of Indonesia
Land area (km ²)	662	7,297	1,919,440
Population	9,588,200	27,067,133	238,000,000
Population Density/km ²	14,483	3,462	134

Fig. 1.5 Population and Land Use Changes in Jakarta from 1970-2000.
Greater Jakarta area decreased from 17,956 hectares in 1992 to 7,166 hectares in 2005 (60% reduction in only 13 years).

projects. Jakarta earned the nickname The Project City.

Clusters of highly developed city blocks sprung up around the city, leaving pockets of underdeveloped and neglected areas. Further, the urban poor were also displaced to accommodate for shopping malls, office spaces for the developing middle-class.²¹ Without strict enforcement, by the end of the 1980s, large-scale projects began to infringe on public green space.

Peri-urban Development + The Floating Mass

The 1965 massacres had been directed towards rural populations that were feared to have ties to communism. Out of fear, migrants fled to the city for safety. At the same time, international investment increased and took form in the peri-urban areas where labour was then needed to support factories.

As a strategy to control the countryside and avoid political backlash, Suharto sought out the peri-urban areas of Jakarta as a way to manage population both in the city and rural villages.²² The peri-urban became the place that turned peasants into industrial and commercial labourers, limiting the migration into the city. President Suharto posed the plan, which would later become referred to as a Floating Mass, as a way to promote rural employment and alleviate poverty, but was primarily used as political restructuring. Abidin Kusno defines the Floating Mass as “a demobilized and depoliticized population which became a technique of enforcing order and stability for the New Order”.²³ It was a state invention that uprooted rural communities forcing them to reorganize their lives and become a floating subject, unattached to any political group.

Although the Floating Mass was not defined as the poor, the majority ended up in the informal sector. Between the years of 1966 and 1975, the productive floating mass would experience circular and permanent migration to the city, attempting to establish a home base. They would adopt undesired negative labels – informal workers and vagrants – because of their inability to establishing a home in the city. Those who could not find work in the city would default

bukum mereka sendiri dan melanggar peraturan kota untuk membangun proyek bangunan tinggi. Jakarta kemudian mendapatkan nama baru, Kota Proyek.

Perumahan cluster menjamur di seantero kota dengan menyisakan sedikit ruang bagi beberapa daerah yang belum berkembang dan terabaikan. Selain itu, masyarakat kota yang miskin juga tersingkir dari akses terhadap mall/pusat perbelanjaan dan perkantoran yang dikhususkan bagi kalangan menengah ke atas.²¹ Tanpa penerapan hukum yang ketat, proyek berskala besar mulai memperkosa lahan hijau pada akhir tahun 1980.

Pada 1965, terjadi pembantaian di daerah pedesaan yang dicurigai memiliki hubungan dengan komunisme. Dengan dibantu rasa takut, para warga pedesaan ini melarikan diri ke tengah kota. Investasi internasional kemudian berkembang di daerah pinggiran kota di mana akan dibutuhkan banyak tenaga buruh yang bekerja di pabrik. Sebagai strategi untuk mengontrol negara dan menghindari reaksi perlawanan politik, Soeharto mencari area pinggiran kota (periurban) Jakarta sebagai cara untuk mengatur populasi baik di kota maupun di desa.²² Area pinggiran kota (periurban) menjadi tempat yang mengubah petani menjadi pekerja industri dan komersil dan dengan demikian migrasi menuju ke pusat kota menjadi dibatasi. Presiden Soeharto menggunakan rencana yang kemudian akan disebut sebagai “massa mengambang”, sebagai cara untuk mempromosikan lapangan kerja di pedesaan dan mengurangi kemiskinan, di mana agenda utamanya adalah untuk melakukan restrukturisasi politis. Abidin Kusno mendefinisikan “massa mengambang” sebagai populasi yang tak termobilisasi dan terpolitisasi yang menjadi teknik untuk memperkuat tatanan dan stabilitas bagi Orde Baru.²³ Ini adalah sebuah penemuan yang ditemukan oleh negara di mana komunitas masyarakat didorong untuk menata kembali kehidupan mereka dan menjadi subjek mengambang serta tidak terlibat dalam kelompok politik manapun.

Meskipun “massa mengambang” tidak didefinisikan sebagai orang miskin, tetap saja mayoritas masyarakatnya bekerja di sektor informal. Dalam rentang waktu dari 1966 sampai 1975, “massa mengambang” yang produktif mengalami perputaran migrasi yang permanen ke kota dan berusaha untuk membangun tempat tinggal di sana. Mereka akan menyangkal predikat yang tidak menyenangkan, pekerja serabutan dan gelandangan,

to become a factory worker, and those who did would seek temporary living situations. Suharto wanted the Floating Mass detached from their villages, but at the same time disconnected from the city.²⁴ The spatial implications of the Floating Mass was a flux of migration into the urban center between 1966 to 1977. The government sought efforts to guard the city and control migration, but would still impose control for the nation to benefit from the labour. The government tolerated their existence for their labour, allowing them to create informal networks and occupy unused land near their work. The peri-urban area grew during the end of the 1970s and most industries in the city were relocated to the peri-urban. Driven by a liberalized economy, investment by the private sector in the 1980s contributed to the growth of the peri-urban, forming clusters of industrial zones. They absorbed private capital and became the destination for rural migrants. To encourage domestic and foreign trade, hundreds of licenses were awarded to industrialized Asian countries during the 1980s to allow development along the peri-urban area of Jakarta.

In 1984 the Minister of Agriculture, Affandi, announced another national security measure that would increase the size of the floating mass. The state decided there were too many farmers and that any farms less than a half hectare would be eradicated. The number of farmers would decrease from 60-70% to approximately 8% of the population. Farmers were forced to combine their effort and land or to change to non-agricultural occupations, adding further

karena mereka tidak mampu membangun tempat tinggal di kota. Mereka yang tidak mampu menemukan pekerjaan di kota akan beralih menjadi buruh pabrik, dan akan mencari tempat tinggal sementara. Soeharto menginginkan agar “massa mengambang” ini tetap terpisah dari kampung halamannya dan pada saat yang sama juga tidak terhubung dengan kota.²⁴ Implikasi spasial dari fenomena ini adalah terjadinya fluktuasi migrasi ke pusat kota antara 1966-1977. Pemerintah berusaha untuk membimbing kota dan mengontrol migrasi tapi tetap sambil mengambil kontrol untuk menarik keuntungan dari para buruh. Pemerintah kemudian memberi toleransi atas keberadaan para buruh ini dengan mengizinkan mereka untuk menciptakan jaringan informal dan menempati lahan yang tak terpakai dekat tempat kerja mereka. Area periurban atau pinggiran kota kemudian berkembang sepanjang akhir tahun 1970 dan kebanyakan industri pusat kota direlokasi ke pinggiran kota. Didorong oleh ekonomi liberal, investasi sektor privat pada tahun 1980an kemudian berperan dalam mengembangkan area periurban sehingga terbentuklah kawasan berikat. Kondisi ini kemudian menarik perhatian kaum migran dari pedesaan. Untuk mendukung perdagangan domestik dan luar negeri, ratusan izin diberikan untuk mengindustrialisasi negara-negara Asia selama tahun 1980 agar pembangunan dapat diizinkan di area periurban Jakarta.

Pada 1984, Menteri Pertanian, Affandi, mengumumkan ukuran lain dari keamanan nasional yang akan meningkatkan kadar “massa mengambang”. Negara menyatakan bahwa jumlah petani terlalu banyak dan setiap sawah yang luasnya kurang dari satu hektar akan dihapuskan. Jumlah petani kemudian akan menurun drastis dari 60-70%

Fig. 1.6 Indonesia Sweatshop
Fig. 1.7 Street Food Vendor

support to the peri-urban.²⁵

Environmental degradation increased as a result of the rapid urbanization and the expansion of urban land to the peri-urban area during the 1980s. The abundance of land that was once free became extinct with the deruralization of the countryside. There were no government regulations to limit the destruction of the natural environment, nor any measures to ensure social justice and fair labour practice.

Asia's Financial Crisis

The Asian Financial Crisis of 1997 spread throughout most of East Asia but the countries most affected were Indonesia, South Korea and Thailand. The crisis caused a major economic collapse in Indonesia, causing mass unemployment and food shortages. Construction stopped, factories closed and unemployed workers poured into Jakarta in search of work in the informal sector.

After months of mass unemployment, riots began in May 1998 throughout Indonesia, from North Sumatra, to Jakarta, Surakarta, and Central Java. On May 12, in West Jakarta, 10,000 students gathered with a plan to march towards the Parliament building. Security forces rejected their plan and violence ensued: four students were killed by police. The next day mass violence broke out in 50 different locations in Jakarta. The violence was directed at Chinese descendents because of the strength of their economy. It was widely believed they were the reason for the nation's problems. The Chinese shophouse (ruko) became the main target of looting and burning. Over the next 35 hours, more than 1000 people were killed and hundreds of Chinese women and girls were gang raped and tortured.²⁶ Damage was estimated at USD\$230 million. This theme is recurrent in Jakarta's history, dating back to the start of the 20th century when riots took place once again towards the Chinese. The riots and criticism of the New Order lead to the resignation of President Suharto, ending Nationalist Urbanism. A year following the riots the new government signed an agreement with the World Bank and International Monetary Fund that introduced regional

menjadi hanya sekitar 8% dari populasi. Para petani dipaksa untuk mengkombinasikan usaha dan lahan mereka atau mengubahnya menjadi lahan non-sawah di mana ini akan menambahkan dukungannya terhadap area periurban.²⁵

Degradasi lingkungan meningkat sebagai akibat dari urbanisasi yang pesat dan ekspansi lahan urban ke area periurban pada era 1980an. Lahan yang tadinya kosong dan bebas menjadi hilang karena deruralisasi pedesaan. Tidak ada regulasi pemerintah yang membatasi perusakan lingkungan, begitu pula dengan ukuran mengenai keadilan sosial dan praktik perburuan yang adil.

Krisis Finansial Asia pada 1997 tersebar ke hampir seluruh negara di Asia Timur, tapi yang sungguh merasakan efeknya adalah Indonesia, Korea Selatan dan Thailand. Krisis tersebut mengakibatkan keruntuhan ekonomi yang besar di Indonesia, yang menyebabkan terjadinya pemecatan massal dan kekurangan pangan. Proyek konstruksi bangunan terhenti, pabrik-pabrik bangkrut dan buruh yang menganggur tumpah ruah ke Jakarta untuk mencari pekerjaan pada sektor informal.

Setelah berbulan-bulan mengalami pemecatan massal, terjadilah kerusuhan pada bulan Mei 1998 di Indonesia, mulai dari Sumatera Utara sampai Jakarta, Surakarta, hingga Jawa Tengah. Pada 12 Mei, 10.000 mahasiswa berkumpul dengan rencana mengadakan konvoi dan menduduki gedung parlemen. Aparat keamanan menghadang para mahasiswa dengan cara kekerasan dan akibatnya empat mahasiswa terbunuh. Hari berikutnya, terjadilah kerusuhan massal yang terjadi di 50 titik di Jakarta. Kerusuhan tersebut ditujukan kepada etnis Tionghoa karena kekuatan ekonomi mereka. Mereka dianggap sebagai alasan penyebab terjadinya masalah ekonomi di Indonesia. Toko, warung, dan ruko milik orang Tionghoa menjadi sasaran penjarahan dan pembakaran. Selama 35 jam berikutnya, lebih dari 1000 orang Tionghoa terbunuh dan ratusan perempuan Tionghoa diperkosa.²⁶ Kerugian atas peristiwa ini diperkirakan mencapai 230 juta dollar. Tema peristiwa penindasan terhadap orang Tionghoa ini terulang kembali dalam sejarah kota Jakarta di abad ke-20. Kerusuhan dan kritik terhadap Orde Baru memaksa Presiden Soeharto untuk turun dari jabatannya dan mengakhiri Urbanisme Nasional. Setahun setelah kerusuhan, pemerintah menandatangani kesepakatan dengan Bank Dunia dan IMF yang memperkenalkan otonomi daerah untuk mengakhiri sistem otoritarian Indonesia

autonomy in order to end the centralized authoritarian system of Indonesia. Power was transferred from the state to the city and districts. The intent was for greater public participation, a more efficient government, and privatization of public services at a local level. Along with that power came many new problems and responsibilities.²⁷

Unable to handle unprecedented urban growth from the financial crisis, the city conducted mass evictions from 1998 – 2003, leaving 78,000 homeless.²⁸ The financial crisis not only affected the urban poor, but they were now in competition for employment with the middle-class who had also lost many jobs.

yang tersentralisasi. Kekuasaan dipindahkan dari negara ke kota dan daerah. Iktiar ini ditujukan untuk partisipasi publik yang lebih besar, pemerintahan yang lebih efisien, dan privatisasi layanan publik pada level lokal. Bersamaan dengan itu, datanglah masalah dan tanggung jawab baru.²⁷

Karena tidak mampu menangani pertumbuhan urban dari serangan krisis finansial yang terjadi sebelumnya, Jakarta melakukan penggusuran massal yang terjadi antara 1998-2003 dan membuat 78.000 orang kehilangan tempat tinggal.²⁸ Krisis finansial tak hanya mempengaruhi para urban yang miskin, tetapi juga menempatkan mereka dalam kompetisi lapangan pekerjaan dengan kalangan kelas menengah. Antara 1998-1999,

Fig. 1.8 1998 Riots Targeting Indonesia's Ethnic Chinese Community

Between 1998 and 1999, Jakarta saw a rise in the number of street vendors. Much to their dismay, the city could not ban the vendors for fear of riots. Officials attempted to control the vendors with fences and barbed wire. By 2003, over 300,000 people were arriving in Jakarta each year in search for employment. Kampung's grew significantly over the next decade to accommodate the influx of unemployed workers from peri-urban and rural areas.

The Superblock

The superblock, a spatial designation, was a direct result of the fear from the middle- and upper-class and the desire for tighter security and a safer city.²⁹ Superblocks became a place where the upper classes could escape the crime and chaos of the streets. Roads connected to shopping malls to allow complete disconnect with the outside world. The centres would become a new symbol for the city, often named after international cities. Suburb living was no longer ideal because of the traffic into the city, and preference grew for life in a superblock. They would become a lifestyle only for the elite of safe, self-contained clusters of buildings, showcasing the city's achievements.

Superblocks contributed to the fragmentation of urban space, with massive residential and commercial complexes in strategic spots in the city with urban poor to remain in the leftover, unwanted spaces. This leapfrog development is not specific to Jakarta, but can be seen as an urban form throughout South-east Asia.³⁰

The 1,000 Towers Project was a *Pro-Rakyat low-cost housing project designed to eliminate the image of Jakarta as a poor city. It was intended to relocate the urban poor from the banks of the Ciliwung River, out of the center of the city. The 1,000 Towers Project became the first time *perumahan rakyat became an interest for private developers in Jakarta. In 2008 the government provided USD\$80 million to subsidize the project, and by 2009, financial support had increased to USD\$230 million.³¹ The opportunity to build in land-scarce Jakarta

Jakarta mengalami peningkatan jumlah pedagang kaki lima. Akan tetapi, Jakarta tidak mampu melarang mereka berdagang karena kekhawatiran akan terjadinya kerusuhan kembali. Pemerintah mencoba mengontrol para pedagang kaki lima dengan pagar dan kawat berduri. Sejak 2003, lebih dari 300.000 orang datang ke Jakarta setiap tahunnya untuk mencari lapangan pekerjaan. Kampung menjadi bertumbuh secara signifikan selama dekade berikutnya untuk mengakomodasi pertumbuhan pengangguran dari area pedesaan dan periurban.

Superblock, sebuah design spasial, merupakan cerminan ketakutan dari kalangan kelas menengah dan kelas atas dan sekaligus keinginan atas terciptanya kota yang lebih aman.²⁹ Superblock menjadi tempat di mana kalangan kelas atas dapat terbebas dari kriminalitas dan kekacauan di jalanan. Jalan-jalan langsung terhubung dengan mall/pusat perbelanjaan dan tidak terhubung dengan dunia luar. Pusat dari setiap superblock ini kemudian menjadi simbol kota yang baru, yang kerap kali dinamai dengan istilah kota internasional. Tinggal di pinggiran kota tidak lagi ideal karena lalu lintas ke pusat kota yang merepotkan, sehingga muncullah pilihan baru untuk tinggal di superblock. Fenomena ini kemudian menjadi gaya hidup yang baru bagi kalangan elit, di mana keamanan dan bangunan cluster menjadi pencapaian baru dari gaya hidup di kota.

Superblock menjadi salah satu hal yang menandai fragmentasi ruang urban, dengan residensi yang masif dan kompleks komersial di titik-titik strategis di kota sementara orang miskin tetap tinggal di luar, di tempat yang tak diinginkan. Jurang pembangunan ini tidak hanya terjadi di Jakarta secara spesifik, tetapi juga dapat dilihat di Asia Tenggara.³⁰

Proyek 1000 Tower merupakan proyek perumahan berdana murah yang pro-rakyat yang dibuat untuk menghilangkan citra Jakarta sebagai kota miskin. Proyek ini ditujukan untuk memindahkan para urban miskin di pinggiran Kali Ciliwung dari pusat kota. Proyek 1000 Tower menjadi proyek perumahan rakyat yang pertama yang menjadi daya tarik bagi para pengembang di Jakarta. Pada 2008, pemerintah mengucurkan dana 80 juta dollar untuk mensubsidi proyek ini, dan pada 2009 bantuan finansial bertambah menjadi 230 juta dollar.³¹ Ikhtiar dan kesempatan untuk membangun gedung di Jakarta dengan

*pro-rakyat: pro-people/citizen

*perumahan rakyat: social housing

encouraged almost all major developers to apply to build a low-cost tower, known as Rusunami.

The Rusunami were advertised with pro-rakyat, patriotism, and corporate social responsibility. Housing complexes would be supported by shopping and fitness centers and access cards were needed to enter the buildings. Developers took advantage of the state subsidies and it soon became clear they were marketed to upper-middle-class and only a few units were available for low-income. The project collapsed in 2010 when subsidy was withdrawn for reasons unknown. Fifty-six rental towers with 5,600 units had been constructed but only 20

lahan yang terbatas ini mendorong para pengembang besar untuk membangun perumahan berdana murah yang dikenal dengan istilah Rusunami.

Rusunami ini dicitrakan sebagai tanggung jawab korporasi yang bersifat sosial, pro-rakyat, dan patriotik. Kompleks perumahan tersebut kemudian dilengkapi dengan pusat perbelanjaan dan pusat kebugaran, dan kartu akses dibutuhkan agar bisa masuk ke dalam gedung tersebut. Para pengembang mengambil keuntungan dari subsidi pemerintah dan kemudian diketahui bahwa perumahan itu ternyata dijual ke kalangan menengah ke atas dan hanya sedikit yang tersedia bagi warga berpenghasilan rendah. Pada 2010, proyek tersebut bangkrut ketika subsidi ditarik dengan alasan yang tidak diketahui. Sebanyak

Fig. 1.9 (left) K2Park Superblock by Andre 3D Studio

Fig. 1.10 (right) Grand Kamala Lagoon Towers

Fig. 1.11 NCIDC: Jakarta's 40km-long sea wall is intended to protect the city and house the activities of approximately two million people. The hawk-eagle shaped island will include offices, housing, green areas and beaches.

towers were occupied, the rest remained empty. The 30 remaining towers were for low-income population but only those who had a Jakarta resident ID were accepted. Furthermore, the rent cost was unaffordable and they were located too far from the city.

National Capital Integrated Coastal Development

Since Jakarta's independence, the northern coast of the city was neglected and associated with habitation by the urban poor. During the 1990s the state began to see the coast as a way to transform Jakarta into a coastal city of the future. In 1995, it was decided that the north coast would symbolize the nation's globalization efforts. The Jakarta Bay Enterprise had originally begun during the authoritarian regime of Suharto. The project would become The National Capital Integrated Coastal Development (NCICD), a reclamation project that would create 2,700 hectares of land to accommodate housing for 1.19 million residents. It would be a rebirth of Jakarta, making it a world-class waterfront city. It would be another project to eliminate the image of Jakarta as a poor city. The reclamation had been legalized in 1995 by way of Presidential Instruction by Suharto, allowing plans to continue post-Suharto era.

Controversy regarding environmental issues did not come to light until after the riots and end of Suharto's rule in 1998 but the peoples concern was ignored. The governor stated "reclamation has been implemented successfully in many cities overseas, such as Singapore and Tokyo. Why can't we do the same thing here? It's my dream to turn the bay and its coastal area into something like Tokyo Bay or the Baltimore coastline".³²

In 2003 the Ministry of Environment confronted President Megawati Sukarno Putri to revoke the Presidential Instruction to halt reclamation plans. Developers who had already applied for the project filed law suits against the state once

56 tower rumah sewaan dengan 5.600 unit telah dibangun, tetapi hanya 20 tower yang ditempati sementara yang lainnya tetap kosong. Tiga puluh tower yang tersisa tersebut diperuntukkan bagi warga berpenghasilan rendah, tetapi hanya warga yang memiliki KTP Jakarta yang diterima. Selain itu, biaya sewa yang dikenakan terlalu mahal dan lokasinya terlalu jauh dari kota.

Sejak era kemerdekaan, pantai utara Jakarta telah terabaikan dan kerap diasiasikan sebagai tempat tinggal dari warga miskin kota. Pada tahun 1990an, pemerintah mulai melihat pantai sebagai potensi untuk mengubah Jakarta menjadi kota pantai di masa depan. Pada 1995, diputuskan bahwa pantai utara akan menjadi simbol usaha globalisasi negara. The Jakarta Bay telah memulai usaha ini selama pemerintahan Soeharto. Proyek tersebut bernama The National Capital Integrated Coastal Development (NCICD), sebuah proyek reklamasi yang menciptakan 2.700 hektar lahan untuk mengakomodasi tempat tinggal bagi 1,19 juta warga. Ini akan menjadi kelahiran baru bagi Jakarta dengan membuatnya menjadi kota dekat air yang berkelas dunia. Proyek ini juga akan menjadi usaha untuk menghilangkan citra Jakarta sebagai kota miskin. Reklamasi ini dilegalisasi pada 1995 melalui Instruksi Presiden oleh Soeharto, dan melalui Instruksi Presiden tersebut proyek ini tetap berjalan setelah pemerintahan Soeharto.

Kontroversi mengenai isu lingkungan hidup tidak terdengar sampai peristiwa kerusuhan dan turunnya Soeharto pada 1998. Setelah peristiwa lengsernya Soeharto pun isu ini tetap terbenakalai. Gubernur menyatakan, "Reklamasi telah sukses diterapkan di banyak kota di luar negeri seperti Singapura dan Tokyo. Lantas, kenapa kita tidak melakukan hal yang sama di sini? Mimpi saya adalah mengubah pantai dan teluk di sini menjadi seperti Tokyo Bay dan pesisir Baltimore".³²

Pada 2003, Menteri Lingkungan Hidup mendesak Presiden Megawati Soekarno Putri untuk menghapus Instruksi Presiden untuk menghentikan reklamasi. Para pengembang yang telah melamar proyek ini kemudian mengajukan tuntutan hukum kepada negara

hearing of the Ministry of Environment's request. Governor Sutiyoso decided it would be illegal to revoke the Presidential Instruction and allowed the project to continue. The project remains a controversy and the future of The National Capital Integrated Coastal Development is currently unknown.

Jakarta Urgent Flood Mitigation Project

For the past couple decades in Jakarta, the voice of the people have become increasingly important in the development of the city. Following the controversy of The National Capital Integrated Coastal Development, the concern for environmentally conscious development has become more pronounced and broadened awareness of the importance of sustainability. The city is using "Go Green" as a motto for enticing foreign investment and gaining trust of the middle class. Citizens have a strong voice in urban development projects and are committed to saving Jakarta. Part of the plan involves achieving 30% green space in the city, through the destruction of informal settlements beside railway tracks and riverbanks.³³ Four mass evictions were recorded in 2008, one area in preparation for a sports stadium.

One community-group in support of the urban poor, the Urban Poor Consortium, argue to redefine what a 'green area' is. The group believes there is the possibility that residents can occupy a space in housing that is sustainable, and that a green space does not necessarily mean building-free. More non-profit groups have been forming and are winning against eviction creating methods to on-side development. Yusuf Mangunwijaya worked with a community along the Kali Code River in Yogyakarta to upgrade 35 houses and was able to avoid forced eviction.

Prior to 2009, as defined by the New Order, housing was simply considered a human need for shelter. Social dynamics had shifted in the city and that

setelah mendengar permintaan Menteri Lingkungan. Gubernur Sutiyoso memutuskan bahwa tindakan menghapus Instruksi Presiden bersifat ilegal dan ia tetap mengizinkan proyek ini berlanjut. Proyek ini tetap menjadi kontroversi dan masa depan proyek NCICD tetap menjadi misteri.

Selama dua dekade terakhir ini di Jakarta, suara rakyat menjadi semakin penting dalam usaha pembangunan kota. Setelah kontroversi mengenai The National Capital Integrated Coastal Development, perhatian mengenai pembangunan yang sadar lingkungan menjadi semakin kuat dan kesadarannya semakin meningkat menjadi pentingnya ketahanan lingkungan. Jakarta kemudian menggunakan slogan "Go Green" untuk menarik investasi asing dan memperoleh kepercayaan dari masyarakat kalangan menengah. Para warga juga memiliki suara yang kuat dalam proyek pembangunan kota dan berkomitmen untuk menyelamatkan kota. Sebagian dari rencana tersebut mencakup pencapaian 30% kawasan hijau di tengah kota melalui penghancuran tempat tinggal tidak tetap/informal di samping rel kereta dan pinggir sungai.³³ Pada 2008, tercatat telah terjadi empat kali penggusuran massal di mana salah satu areanya digusur untuk membangun arena stadion.

Salah satu kelompok warga yang mendukung warga miskin kota, Konsorsium Warga Miskin Kota, mengajukan debat untuk mendefinisikan ulang tentang "area hijau". Mereka berpendapat bahwa masih ada kemungkinan bagi para warga untuk menempati ruang yang memiliki ketahanan, dan bahwa "area hijau" tidak selalu berarti bebas dari bangunan. Semakin banyak kelompok non-profit yang membentuk pola pembangunan yang berdampingan dengan kali dan mencegah penggusuran. Yusuf B. Mangunwijaya bekerja bersama komunitas masyarakat di pinggir Kali Code, Yogyakarta untuk membangun dan meningkatkan 35 rumah dan mampu lepas dari ancaman penggusuran. Sebelum 2009, sebagaimana dinyatakan oleh Orde Baru, rumah adalah kebutuhan manusia akan tempat tinggal. Akan tetapi, dinamika sosial telah berubah di kota, dan pada tahun itu konsep rumah didefinisikan ulang sebagai suatu hak asasi manusia, selaras dengan yang tertulis

year housing was redefined to be a human right that conformed to the article 11 of the UN's International Covenant on Economics and Social Rights.³⁴ It states, "The States Parties to the present Covenant recognize the right of everyone to an adequate standard of living for himself and his family, including adequate food, clothing and housing, and to the continuous improvement of living conditions. The States Parties will take appropriate steps to ensure the realization of this right, recognizing to this effect the essential importance of international co-operation based on free consent." (Article 11 of the International Covenant on Economic, Social and Cultural Rights). The city was not only responsible for housing, but also responsible for the development of space—which used to be under the control of developers. Progress is slow, but it is evident that perceptions towards the urban poor are taking place. The recent victory of Jokowi as President offers the people of Jakarta a shimmer of hope and promise, but major infrastructure and urban renewal projects remain in place without concern for the true needs of the urban poor and seemingly impossible to challenge.

History has proven the Indonesian government unreliable and unable to protect the lower class. With the two major infrastructure projects mentioned above, it seems the government has no viable options for the urban poor. If the government has no sustainable intentions, can we work within the infrastructural projects proposed by the government to provide social and economic infrastructure that will provide them with the basic needs to develop their community?

The urban poor of Indonesia have been displaced throughout history for the sole regard and benefit of others. It is time they are given a space to allow them to develop and gain stability. Architecture has the potential to offer protection to the harmful effects of climate change, as well as create spaces for civic engagement and socioeconomic development for the urban poor. This thesis will explore various strategies that reformulate space traumatized by environmental and social injustice, and seek to eliminate the erasure of history and encourage the kampung as the starting point for urban renewal.

di Bab 11 Kovenan Internasional PBB tentang Hak Ekonomi dan Sosial.³⁴ Kota tak hanya bertanggung jawab atas pengadaan tempat tinggal, tetapi juga bertanggung jawab atas pembangunan ruang—yang selama ini berada di bawah kontrol pengembang. Meski kemajuannya lambat, masih dapat terlihat bahwa persepsi dan perhatian terhadap masyarakat miskin kota mulai terjadi. Kemenangan Jokowi menawarkan pancaran harapan dan janji bagi warga Jakarta, tetapi infrastruktur mayor dan proyek pembaharuan kota tetap berjalan di tempat tanpa ada perhatian terhadap kebutuhan yang sebenarnya bagi masyarakat miskin kota, dan memang terkesan agak mustahil dilakukan.

Sejarah telah membuktikan bahwa pemerintah Indonesia tidak mampu dan tidak dapat diandalkan dalam melindungi masyarakat kelas bawah. Dengan dua proyek infrastruktur mayor yang telah dituliskan di atas, terlihat bahwa pemerintah tidak memiliki pilihan praktis bagi masyarakat miskin kota. Jika pemerintah tidak memiliki intensi yang tetap bertahan, bisakah kita bekerja dalam proyek infrastruktur yang ditawarkan pemerintah untuk memberikan pra-sarana sosial dan ekonomi yang bisa membantu mereka memenuhi kebutuhan dasar mereka untuk mengembangkan komunitasnya? Warga miskin kota di Indonesia sepanjang sejarahnya telah tersingkir hanya demi kepentingan pihak lain. Ini adalah saat di mana mereka harus diberi ruang untuk berkembang dan memperoleh stabilitas. Arsitektur memiliki potensi untuk memberikan perlindungan dari efek yang membahayakan dari perubahan iklim dan juga menciptakan ruang keterlibatan bagi warga dan pengembangan sosio-ekonomi warga miskin kota. Thesis ini akan menjelajahi beraneka ragam strategi yang akan memformulasikan ulang mengenai ruang yang telah diguncangkan oleh ketidakadilan sosial dan lingkungan. Selain itu, tulisan ini juga hendak menghilangkan kebiasaan pelupaan sejarah dan mendorong kampung sebagai titik awal pembaharuan warga kota.

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FLOODING IN JAKARTA

FLOODING IN JAKARTA

An Annual Occurrence.

In 2012, The World Bank warned that major floods would soon become an annual occurrence in Jakarta, “resulting in severe socio-economic damage.”¹ The area of DKI Jakarta has experienced flooding since Dutch colonialization. The city lies in a lowland area in the delta of several rivers, with the main one being the Ciliwung River. Thirteen rivers drain from the hilly regions of the south and travel through the city, expelling into the Jakarta Bay in the north. Due to its naturally flood-prone location, Jakarta has seen a long history of coastal and fluvial flooding. Recently the flooding has become more frequent and more severe. In 2002 and 2007, Jakarta experienced the two largest floods in its history. Following these disastrous floods, the government was prompted

Pada tahun 2012, Bank Dunia memperingatkan bahwa banjir besar akan segera menjadi peristiwa tahunan di Jakarta, “berakibat pada kerusakan sosio-ekonomi yang parah”.¹ Banjir Area DKI Jakarta telah mengalami banjir sejak zaman kolonisasi Belanda. Kota ini terletak di area dataran rendah dan berada di delta dari beberapa sungai, yang utamanya adalah Kali Ciliwung. Ada tiga belas sungai yang mengalir dari daerah berbukit di selatan menuju ke kota dan keluar ke selat Jakarta di daerah utara. Karena daerahnya yang memang rawan banjir, maka tak heranlah jika Jakarta kerap mengalami banjir. Akhir-akhir ini banjir tersebut mengalami peningkatan frekuensi dan menjadi lebih parah. Pada tahun 2002 dan 2007, Jakarta mengalami banjir terbesar dalam sejarahnya. Oleh karena bencana ini, pemerintah terdesak untuk segera melakukan penanganan untuk

Fig. 2.1 Development of Built-up Areas in Ciliwung Basin

to act on resolving the devastation—but of equal importance, focus efforts on future flood mitigation.

While these extreme floods occur every 5 years, some residents in low-lying areas experience flooding year round—often with knee-high water—although floods of this magnitude are not considered a ‘major flood’, but rather regular conditions. Flooding occurs regularly throughout the year: stalling traffic, damaging houses, and slowing business for all.²

Subsidence

The main contributing factor to flooding in Jakarta is subsidence: the result of rapid and unrestricted urbanization, causing unregulated groundwater extraction. Jakarta was originally built on a swampy plain and has sunk four meters in the past 30 years.³ With 40% of the city already below sea level, Jakarta is sinking at an average rate of three inches per year⁴, and up to 7 inches annually in some northern districts.⁵

Land subsidence is most often caused by human intervention, and occurs when too much water has been extracted from fine-grained sediments. Subsurface water that was partly responsible for holding up the ground is removed, and the remaining subsoil compacts and collapses into the new voids. In time, as the subsoil compacts, there is less room for groundwater to return and the overall total storage capacity of the aquifer system is reduced, ultimately increasing the amount of surface water in rivers.⁶ The effect is then worsened by the sheer weight of the city’s urban sprawl, extreme weather events, and rising sea levels.

Groundwater extraction is a major problem in Jakarta caused by the lack of a city-wide piped water system. A staggering 75% of Jakarta’s population is not connected to the city’s piped water system. Half of the population draws their water from wells, and the other quarter buy water from vendors who get their water from legal and illegal public wells.⁷ Many cannot afford to connect to the city’s water system. Connecting to the city’s piped water costs approximately one month’s minimum wage, plus additional charges. If it is possible, the

mengatasi kerusakan yang ditimbulkan—dan di saat yang sama juga memberi perhatian terhadap mitigasi banjir di kemudian hari. Meskipun banjir besar terjadi setiap lima tahun, warga Jakarta yang tinggal di dataran rendah tetap mengalami banjir setiap tahunnya yang biasanya setinggi lutut. Banjir tahunan memang tidak dianggap sebagai banjir besar, tetapi lebih dianggap sebagai kondisi regular yang rutin terjadi. Meski demikian, banjir tahunan yang terjadi tetap memberi efek yang buruk: melumpuhkan lalu lintas, merusak rumah, dan melemahkan perekonomian.²

Salah satu faktor penyebab banjir Jakarta adalah penurunan tanah. Penurunan tanah ini terjadi sebagai akibat dari urbanisasi yang masif dan tidak terkendali yang menyebabkan terhambatnya proses pemindahan air tanah. Jakarta dibangun di atas tanah yang lembek dan telah mengalami penurunan sedalam 4 meter dalam kurun waktu 30 tahun.³ Dengan kondisi 40% bagian kota berada di bawah permukaan air laut, Jakarta mengalami penurunan tanah rata-rata 3 inci setiap tahunnya⁴, dan bahkan beberapa daerah di utara mengalami penurunan sedalam 7 inci setiap tahunnya.⁵

Penurunan tanah kerap kali disebabkan oleh campur tangan manusia dan itu terjadi ketika terlalu banyak air yang dikeluarkan dari endapan yang terbentuk. Air bawah tanah yang sesungguhnya berfungsi untuk menahan permukaan tanah telah hilang. Dengan demikian, akan terbentuk rongga kosong di bawah tanah dan itulah yang membuat permukaan tanah mengalami penurunan karena bagian dalam tanah telah memadat. Ketika tanah tersebut memadat, air tanah sudah tidak memiliki ruang lagi untuk mengalir kembali dan kapasitas penyimpanan air di tanah mulai berkurang. Pada saat itulah permukaan air di sungai akan meningkat.⁶ Efek yang terjadi diperburuk oleh persebaran masif penduduk urban, cuaca ekstrim, dan peningkatan permukaan air laut.

Ekstraksi air tanah adalah masalah utama di Jakarta yang disebabkan oleh kurangnya sistem perairan pipa di kota. Sebanyak 75% penduduk kota Jakarta tidak terhubung dengan sistem perairan pipa. Setengah (50%) dari penduduknya mengambil air dari sumur, sementara yang 15% memperoleh air dengan cara membeli dari depot air yang sumbernya berasal dari sumur umum, baik legal maupun ilegal.⁷ Banyak penduduk yang tidak bisa

Variables	1996	2002	2007	2013
Causes	The capacity of river is smaller than the incoming water's runoff. Low stage of river capacity and major canal are caused by the high conversion of area around these rivers and canals into settlement function, sedimentation, and illegal waste disposal.	Land use in urban areas with lots of buildings and settlements has led to the decreasing of land absorption ability as well as narrowing the river canal in downstream area.	Besides poor drainage system, flood was preceded by heavy rain from afternoon on February 1st to the next day on February 2nd. It was worsened by the high volume of water in 13 rivers in Jakarta which originated from Bogor-Puncak-Cianjur and the tide of Jakarta's sea water. All of those causes result in floods in nearly 60% of Jakarta's area which reached up to 5m depth at some locations.	Flood in January 2013 was less intense compared to 2007 but the rainfall was widely distributed upstream and downstream. January 17th was considered the worst but it is predicted to be continue and the city should be put on alert level 1 until January 27th.
Inundation Area	n/a	330 km ²	400 km ²	>400km ² (tentative)
Inundation Point	90	160	70	109 (Google crisis map)
Rainfall Intensity	288.7 mm	361.7 mm	401.5 mm (geographically concentrated)	40 -125 mm (tentative) (geographically widely distributed)
Evacuated	30 thousand	380 thousand	398 thousand	>100 thousands
Dead (ppl)	10	22	57	15 (tentative)
Losses	> IDR 1 Billion	IDR 18 Billion	IDR 8 Billion	To be calculated

Fig. 2.2 (left) Major Floods in Jakarta

Fig. 2.3 (right) Global sea level rise and average land subsidence for several coastal cities.

water isn't always available or sometimes filthy. Half of Jakarta's water supply is sourced from the Citarum River, which has been titled "the world's dirtiest river" by the Asia Development Bank.⁸ From the 75% of the population that do rely on groundwater, 70% of wells are contaminated by E. Coli bacteria.

The only known solution to prevent subsidence is by excavating less groundwater. Regulations and rules must be put in place to limit groundwater extraction from licensed wells—a seemingly impossible feat for the city—and clean water must be supplied to all areas of the city. In terms of architectural interventions, rainwater-harvesting strategies could be employed to further reduce the need for groundwater extraction, and halt subsidence. Light-weight structures could also minimize the burden on the fragile land.

menyambungkan dengan sistem perairan perkotaan. Untuk menyambungkan dengan sistem perairan perkotaan, setidaknya diperlukan biaya yang setara dengan satu bulan gaji UMR, ditambah biaya lainnya. Kalaupun itu memungkinkan untuk dipasang, airnya tidak selalu tersedia atau terkadang malah kotor. Setengah dari pasokan air di Jakarta didapatkan dari Sungai Citarum yang oleh Asia Development Bank (ADB) telah disebut sebagai "sungai terkotor di dunia."⁸ Dari 75% populasi penduduk Jakarta yang mengandalkan air tanah, 70% dari sumber airnya telah terkontaminasi bakteri E. Coli.

Satu-satunya cara yang diketahui untuk mencegah penurunan tanah adalah dengan mengurangi penggalian air tanah. Regulasi dan peraturan harus ditetapkan untuk membatasi pengambilan air tanah dari sumber air yang telah disabkan—yang kelihatannya agak mustahil untuk dilakukan—dan air bersih harus dipasok ke seluruh area di kota Jakarta. Dalam hubungannya dengan intervensi arsitektural, strategi tadah hujan dapat diterapkan untuk mengurangi ekstraksi/pengambilan air tanah dan menghentikan penurunan tanah. Struktur bangunan yang berbobot ringan juga dapat meminimalisir beban terhadap tanah yang ringkih.

Fig. 2.4 (left) Land Elevations in Jakarta in 2010. Areas below sea level account for approximately 40% of Jakarta's land area.

Fig. 2.5 (right) Land Subsidence in Jakarta

Fig. 2.6 Illustration showing the tipping point when Jakarta could be completely below sea level.

Fig. 2.7 Jakarta's Sinking Seawall

A special thank you to Frank Sedlar for his continued support in this thesis. Frank provided advice on recommendations throughout the design process and shared much needed hydrological information. It was not always easy to find information or images of the kampung because of the density of the urban fabric and blurriness of online images. As a civil engineer, Frank Sedlar studies the convergence of the world's urban population with the effects of climate change, particularly flooding, in megacities around the world. His work focuses on building the tools necessary to understand both the technical and societal responses of these complex urban systems. These instruments include developing camera systems to track garbage in flood canals, designing and prototyping emergency flood shelters and using drones to map informal settlements. Frank provided drone videos and images of Kampung Pulo and Bukit Duri that lead to a better understanding of the kampung and were used as base for many of the presentation images. A graduate of the University of Michigan, Frank is a recently named Fulbright Fellow to Indonesia where he will work with PetaJakarta.org and the DKI Jakarta government to coordinate an Urban Drone Research Program.

Sea Level Rise

Jakarta is one of the world's largest cities at risk from the effects of global warming: with annual rising sea levels of $1/3''$. This number, coupled with the subsidence rate, results in the prediction that 13 rivers and canals in Jakarta will be below sea level by the year 2025, dangerously reversing the natural flow of water.⁹ The water will pool in Jakarta's low-lying areas with no permeable surfaces or outlet to escape. In an attempt to control the sea-water from entering the city, a seawall was constructed. Unfortunately, the 40-year-old seawall is now sinking. During high-tide, the ships float at almost the same height of the current seawall.¹⁰ The city must accept the unfortunate possibility of this scenario and consider solutions that involve adapting to a constantly-flooded environment.

Jakarta adalah salah satu kota terbesar yang rawan terhadap efek pemanasan global dengan peningkatan permukaan air laut sebesar $1/3''$ setiap tahunnya. Jika angka ini disandingkan dengan tingkat penurunan tanah, maka akan muncul hasil berupa prediksi bahwa pada tahun 2025 akan ada 13 sungai dan kanal di Jakarta yang berada di bawah permukaan laut dan akan mendorong balik aliran sungai.⁹ Air akan tetap menggenang di daerah dataran rendah Jakarta tanpa ada kesempatan untuk mengalir. Dalam usaha untuk mengontrol masuknya air laut ke kota, dibuatlah dam atau bendungan. Sayangnya, dam yang telah berusia 40 tahun itu juga tenggelam. Ketika ada ombak besar, ketinggian kapal yang mengapung di laut menjadi hampir sama tingginya dengan bendungan tersebut.¹⁰ Mau tidak mau, Jakarta harus menerima kemungkinan terburuk dari skenario ini dan memikirkan solusi yang mampu beradaptasi dengan lingkungan yang tergenang secara konstan.

Fig. 2.8 Walking on the sinking seawall

Fig. 2.9 Floating toilets on the Ciliwung River ensure they don't become flooded with heavy rainfall, but instead rise and fall with the river.

Increased Rainfall

Jakarta, and the area of West Java, have seen increased rainfall in terms of both intensity and frequency, resulting in higher daily averages and maximums, for both metrics. Generally speaking, Jakarta experiences monsoon season from November to March, with the heaviest rainfall occurring throughout January and February. Figure 2.11 shows the difference between the 2002 flood and the 2007 flood. The amount of daily rainfall, the number of days with rainfall, and the resulting flood-levels have all increased.

On average, residents experience 16-20 rainy days per month from January through March. The increase in intensity and frequency of rainfall, coupled with reduced naturally absorptive surfaces, results in major drainage issues in Jakarta. Between 1992 and 2005 alone, developed areas have increased by 40%.¹¹ Urbanization has eliminated natural drainage sites and green areas, leaving very little permeable surfaces for rainwater to percolate down to aquifers. The increased run-off from impermeable surfaces travels to low lying regions, which is often inhabited by the poor. During the 2007 flood, *Bukit Duri experienced a flood level reaching 3.4m in height.

Fig. 2.10 (left) Average Rainfall in Jakarta

Fig. 2.11 (right) Rainfall During 2002, 2007 Major Floods

*Bukit Duri: a kampung in Jakarta along the Ciliwung River

Jakarta dan daerah Jawa Barat telah mengalami peningkatan curah hujan dalam pengertian intensitas dan frekuensinya. Hal ini berakibat pada peningkatan rata rata dan maksimum intensitas dan frekuensi. Biasanya Jakarta mengalami musim penghujan pada bulan November sampai Maret, di mana curah hujan terbesar terjadi pada bulan Januari dan Februari. Figure 2.11 menunjukkan perbedaan antara banjir tahun 2002 dan 2007. Jumlah curah hujan, jumlah hari yang dilanda hujan, dan level banjir yang dihasilkan mengalami peningkatan.

Rata-rata, penduduk Jakarta mengalami 16-20 hari hujan setiap bulannya dari bulan Januari sampai Maret. Peningkatan intensitas dan frekuensi hujan dan berkurangnya permukaan tanah yang dapat menyerap air memunculkan persoalan drainase di Jakarta. Antara tahun 1992-2005, area berkembang telah bertambah sebesar 40%.¹¹ Urbanisasi telah menghapuskan tempat-tempat drainase alami dan daerah hijau serta menyisakan sedikit permukaan tanah yang dapat menyerap air hujan. Air yang tidak terserap akan mengalir ke dataran yang lebih rendah, yang kerap kali dihuni oleh orang miskin. Dalam kejadian banjir 2007, banjir di *Kampung Duri mencapai ketinggian 3,4 meter.

	2001-2002	2006-2007
Total rainfall for five stations (mm)	7,100.0	7,483.9
Maximum rainfall upstream (mm/day)	168.1	247.0
Maximum rainfall downstream (mm/day)	172.0	234.7
Average rainfall intensity (mm/day)	21.1	25.8
Average rainfall intensity upstream (mm/day)	20.6	24.8
Average rainfall intensity downstream (mm/day)	21.9	27.3
Percentage of days with rainfall	69.9	67.0
Duration of event (days)	121.0	88.0
Water level at Manggarai (cm)	1,050.0	1,061.0
Flood level at Bukit Duri (m)	2.3	3.4

Notes

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NORMALIZATION

NORMALIZATION

An Approach to Minimize Flooding

Following the February 2007 flood, permanent remedies became an urgent necessity. It was the first time a storm surge flooded nearly half of the city, with as much as 4 meters of muddy water; 76 people lost their lives, 590,000 were displaced, and resulted in USD\$695 million in damages.¹ The Jakarta Urgent Flood Mitigation Project (JUFMP) was formed, also known as the Jakarta Emergency Dredging Initiative (JEDI).

Early ideas on how to escape the destruction of the floods involved moving the entire city to higher elevations southeast, or even to another island altogether, referred to as ‘Vision Indonesia 2033’.² The President at the time, Soesilo Bambang Yudhoyono, declared the seat of government be moved to the island of Kalimantan—where a new city, termed Global City, would be developed with clear spatial planning, and a well-organized urban fabric providing efficient transportation, and settlement. Meanwhile, temporary solutions resulted in the rise of the 20-mile long seawall in 2008, but this did not solve the problem of subsidence and sea level rise.

The Jakarta Urgent Flood Mitigation Project was developed to improve the existing flood management system in Jakarta. The project involved two components, dredging and rehabilitation of key floodways, and assistance for project management, social safeguards, and capacity building.³ The project affects four of the five municipalities in DKI Jakarta: North, West, Central and East Jakarta.

Setelah Februari 2007, penanggulangan permanen menjadi kebutuhan mendesak. Waktu itu adalah pertama kalinya hujan membanjiri hampir setengah dari kota dengan genangan 4 meter air berlumpur; 76 korban jiwa, dan 590.000 orang lainnya terusir dari rumahnya karena banjir.¹ Kerusakan yang ditimbulkan mencapai 695 dollar. Proyek Mitigasi Siaga Banjir Jakarta (The Jakarta Urgent Flood Mitigation Project, JUFMP) dibentuk, yang kerap dikenal sebagai The Jakarta Emergency Dredging Initiative (JEDI).

Ide awal mengenai cara keluar dari kerusakan yang disebabkan banjir adalah memindahkan seluruh kota ke tempat yang lebih tinggi di daerah tenggara, atau bahkan memindahkan semuanya ke pulau lain, di mana program ini dikenal dengan nama “Visi Indonesia 2033”.² Presiden yang waktu itu memimpin, Susilo Bambang Yudhoyono, mengumumkan bahwa tampuk pemerintahan akan dipindahkan ke Kalimantan—di mana sebuah kota baru, bernama Kota Global, akan dibangun dengan perencanaan tata ruang yang rapi, dan pabrik kota yang diorganisir dengan baik yang akan memberikan transportasi dan pemukiman yang efisien. Sementara itu, solusi sementara yang dibuat—yakni peningkatan dam air laut sepanjang 20 mil pada 2008—tidak menyelesaikan masalah turunnya tanah dan meningkatnya air laut.

Proyek Mitigasi Siaga Banjir Jakarta (JUFMP) dibentuk untuk meningkatkan sistem pengelolaan banjir di Jakarta. Proyek ini memiliki dua komponen tindakan, pelebaran dan rehabilitasi jalur air, dan bantuan terhadap pengelolaan proyek, layanan keamanan sosial, dan pembangunan kapasitas.³ Proyek ini melibatkan empat dari lima daerah di DKI Jakarta: Utara, Barat, Pusat, dan Timur.

One of the tasks of the Strategic Program is the regulation for the Ciliwung River. The Ciliwung normalization is 1 part of 4 (including addition of flood canal, river diversions, and normalization to 2 main sections of the Ciliwung river).

Salah satu tugas ini adalah regulasi terhadap Kali Ciliwung. Normalisasi Kali Ciliwung adalah 1 bagian dari 4 (termasuk penambahan kanal banjir, pencabangan kali, dan normalisasi 2 titik utama dari Kali Ciliwung).

Fig. 3.1 Concrete sheet piles of Normalization already crumbling along the Ciliwung River.

Package 1:

(Manggarai Watergate up to Kampung Melayu Bridge)

Length: $\pm 4,89$ km

Land Needed:

- Manggarai regency: 2,3 Ha
- Kebon Manggis regency : 2,4 Ha
- Bukit Duri regency : 7,3 Ha
- Kampung Melayu regency : 7,4 Ha
- Total: 19,4 Ha

Package 2:

(Kampung Melayu bridge to Kalibata bridge)

Length: $\pm 6,61$ km

Land needed:

- Kebon Baru regency: 6,3 Ha
- Bidara Cina regency : 6,3 Ha
- Cikokol regency : 1,0 Ha
- Cawang regency : 7,9 Ha
- Pengadegan regency: 6,3 Ha
- Bidara Cina regency : 2,9 Ha
- Rawajati regency : 7,8 Ha
- Total: 32,2 Ha

Package 3:

(Kalibata bridge to Satu Condut bridge)

Length: $\pm 6,49$ km

Land needed:

- Pejaten timur regency: 9,1 Ha
- Cililitan regency : 3,8 Ha
- Balekambang regency : 15,4 Ha
- Gedong regency : 3,9 Ha
- Total: 32,2 Ha

Package 4:

(Satu Condut bridge to TB Simatupang Toll bridge)

Length: $\pm 6,18$ km

Land needed:

- Pejaten timur regency: 7,0 Ha
- Tanjung barat regency : 3,2 Ha
- Total: 10,2 Ha

Normalization Plan:

Manggarai Watergate – Tb Simatupang Bridge

Fig. 3.3 Normalization underway along the Ciliwung River.

Fig. 3.4 Various methods of Normalization along the Ciliwung River.

“These evictions are only to give the people a lesson to respect the law, as legal certainty is one of the major concerns of investors in the capital.”

Sutiyoso - Governor of Jakarta: 1997–2007

“Ahok stated he was ready to “eradicate” them without hesitation.”

Residents demanding compensation were labeled “communists” by Ahok, those refusing relocation as “poor who don’t know their place.”

“I’ll happily accept being called the biggest human rights violator in the world” he stated, “if it’s in the interests of the majority.”

Ahok - Governor of Jakarta: 2014–present

Fig. 3.5 Areas of proposed eviction along the 19km extent of Normalization

Fig. 3.6 The Impact Of River Channelization

Environmental Impacts of Normalization

For centuries, humans have attempted to alter rivers' paths, denying them of their true nature, and course. While temporarily successful, such measures are rarely permanent and almost always cause both short- and long-term damage to the neighbouring ecosystems.⁵

River engineering is defined as human intervention in the course, characteristics, or flow of a river to produce a defined benefit. Channelization is a method of river engineering that widens and deepens a river to increase the flow volume at certain sections of the river. Channelization is achieved by dredging and straightening the curves of the river to bypass much of the floodplain.⁶ Package 4 of Normalization involves channelization of a number of sections along 19 kilometers of the Ciliwung River.

The riparian zone is the transition space between the river and the land. When left in their natural state, riparian zones reduce soil erosion, store and recycle organic matter, and improve water quality.⁷ In terms of flood mitigation, the riparian zone slows down the speed of water through the energy transfer to plant root structures along the riverbank. As floodwaters pass, root structures resist the flow to dissipate the energy, thereby stabilizing the riverbank through limiting soil erosion. The floodwater is given more time to infiltrate the soil system, which also helps to recharge the groundwater.

The act of Normalization destroys the riparian zone. Concrete sheet piles are

Selama berabad-abad, manusia telah berupaya untuk mengubah aliran sungai, di mana usaha tersebut merupakan tindakan yang melawan kodrat alami alam itu sendiri. Sebagian usaha tersebut berhasil secara sementara, sebagian berhasil secara permanen, dan hampir selalu mengakibatkan kerusakan terhadap ekosistem sekitar, baik kerusakan jangka pendek maupun jangka panjang.⁵

Perancangan sungai dipahami sebagai intervensi manusia terhadap jalur, karakteristik, atau aliran sungai, untuk memperoleh keuntungan atau manfaat. Kanalisasi adalah metode perancangan sungai dengan cara memperlebar dan memperdalam aliran sungai untuk meningkatkan volume aliran sungai tersebut. Kanalisasi dapat dilakukan dengan cara menggali dan meluruskan kelokan sungai untuk mengakibatkan supaya aliran banjir tetap dapat mengalir lurus.⁶ Bab 4 mengenai normalisasi akan membahas tentang kanalisasi terhadap beberapa aliran Sungai Ciliwung yang panjangnya 19 kilometer.

Zona Riparian adalah zona/ruang transisi antara sungai dan dataran. Jika zona riparian tersebut tetap dibiarkan sebagaimana adanya, ia akan mengurangi erosi tanah, menyimpan dan akan mendaur ulang materi-materi organik, dan sekaligus meningkatkan kualitas air.⁷ Dalam hubungannya dengan mitigasi banjir, zona riparian dapat memperlambat kecepatan air melalui pemindahan energi ke struktur akar tumbuhan di sepanjang tepi sungai. Ketika air mengalir, struktur akar akan menahan aliran dan mengalihkan energinya sehingga akan menstabilkan tepi sungai dan mengurangi erosi tanah. Dengan demikian, aliran air akan memiliki cukup waktu untuk masuk ke dalam sistem tanah dan akan memperbaharui air dalam tanah.

placed along the riverbank to limit the rivers ability to meander and speed the passage of water to reduce flooding. Destruction of a natural riparian zone for a manufactured landscape will mean the ecosystem no longer has the structure to dissipate high-energy water and will instead crumble away. K. J. Gregory, Professor of Geography at the University of Southampton, explains there are four ‘degrees of freedom’ in any self-formed channel: width, depth, slope (or sediment load) and the pattern.⁸ Changing any one of these characteristics by channel modifications can have adverse effects on all parameters. Any one change in a section of the river will promote upstream and downstream responses, and indirectly alter flood frequency characteristics. No matter what modification is done, the river will always fight back to its original shape.⁹ River engineering may have some benefits, but is outweighed by the number of disadvantaged outcomes.¹⁰

Many methodologies used for river management by Jakarta in the past are not sufficient with the current size of the city. Some concrete piles that were put in place have already began to crumble. The example of degrading concrete piles in the river is consistent with a history of poor infrastructure management in the city. Rather than accept channelization as the only solution for flooding in Jakarta, this thesis proposes an alternative approach.

TURENSCAPE was founded by doctor and professor Kongjian Yu (Ph.D. Design, GSD, Harvard). TURENSCAPE is an integrated team that provides quality and holistic services in: Architecture, Landscape architecture, Urban planning and design, and Environmental design. TURENSCAPE is an example of a design institute that practices restoration ecology: the process of renewing and restoring degraded, damaged, or destroyed ecosystems. Restoration ecology can play an essential role in mitigating and adapting to the impacts of anthropogenic climate change.¹¹ It allows rivers to return to their original functions and conditions. As the system restores itself, residents can adapt and discover creative ways to live with the natural functions of the river without detrimental impacts.

Di lain pihak, normalisasi akan merusak zona riparian. Material tembok yang dipasang di pinggir kali akan membatasi kemampuan sungai untuk mengalirkan air yang sebenarnya berfungsi untuk mencegah banjir. Perusakan zona riparian yang alami untuk lahan yang sudah dibangun akan membuat ekosistem tak lagi memiliki struktur untuk mengalihkan air yang berkekuatan tinggi dan malah akan berpotensi merusak lingkungan sekitar. K.J. Gregory, Profesor Geografi di University of Southampton, menjelaskan bahwa ada empat “tingkat kebebasan” di setiap kanal yang terbentuk dengan sendirinya: kelebaran, kedalaman, slope (muatan sedimen), dan pola.⁸ Mengubah satu saja dari karakteristik di atas dengan cara modifikasi kanal akan memberi akibat yang berlawanan dari semua parameter di atas. Setiap perubahan dalam bagian sungai akan mengakibatkan respon peningkatan dan penurunan aliran dan secara tidak langsung akan mengubah karakteristik frekuensi aliran. Bagaimanapun bentuk modifikasi yang dibuat, sungai akan selalu melawan dan berjuang untuk mengembalikan dirinya ke bentuk semula.⁹ Perancangan sungai mungkin akan memberikan keuntungan, tapi akan menjadi kerugian dengan segala efek negatif yang dihasilkan.¹⁰

Banyak metodologi yang telah digunakan di Jakarta di masa lalu tidaklah cukup untuk menjawab persoalan di kota ini. Sebagai contoh, beberapa material tegel yang dipasang sebagai bendungan telah lepas. Contoh di atas sejalan dengan sejarah kurangnya pengaturan infrastruktur di kota ini. Alih-alih menerima kanalisasi sebagai satu-satunya solusi banjir di Jakarta, tulisan ini akan menawarkan alternatif pendekatan lain.

TURENSCAPE didirikan oleh Prof. Dr. Kongjian Yu (Ph.D. Design, GSD, Harvard). TURENSCAPE adalah team yang terintegrasi yang menyediakan kualitas dan pelayanan menyeluruh di bidang arsitektur, arsitektur lahan, perencanaan dan desain tata kota, dan desain lingkungan. TURENSCAPE adalah contoh institut desain yang mempraktikkan tindakan pemulihan lingkungan yang melakukan pembaharuan dan pemulihan ekosistem yang sudah merosot, rusak, dan hancur. Pemulihan ekologi dapat memainkan peranan yang esensial dalam memitigasi dan mengadaptasi dampak dari perubahan iklim yang anthropogenic.¹¹ Ini akan membantu sungai untuk kembali pada fungsi dan kondisi mereka. Sembari sistem lingkungan melakukan pemulihan secara alamiah, manusia dapat beradaptasi dan menemukan cara-cara kreatif untuk tinggal dekat dengan sungai dan fungsi naturalnya tanpa mengalami dampak yang membahayakan.

Figs. 3.7 Resilient green river strategies were used in the transformation of the Sanlithe River in China.

While this thesis does not propose the exact nature of this process, it does propose restoration ecology as the new relationship between the river and surrounding inhabitants; and as such, it advocates for a natural restoration of the riparian zone of the Ciliwung River. Human activities will float over natural ones, allowing for a floodable landscape. Land and river reconfigured as a soft edge.

Tulisan ini tidak memaparkan inti dari proses natural alam, melainkan menawarkan pemulihan ekologi sebagai hubungan yang baru antara sungai dan warga yang tinggal di dekatnya, dan pada gilirannya membantu pemulihan zona riparian Kali Ciliwung secara natural. Aktivitas manusia akan berdampingan dengan alam dan memungkinkan untuk hidup di lahan yang rawan banjir. Sungai dan daratan akan dimaknai secara baru sebagai tepian yang lembut.

allow room to breathe

riparian zone is
soft edge

from private to public

sanitation and waste
control

Figs. 3.8 Natural river restoration strategies are considered to create an architectural solution that will work in harmony with the river. Beginning to think about the river in the larger context of the city: what does the river represent, and what are design strategies that can be used to reconnect city and river.

ACCESS and MOBILITY
opening access to and from river to
outside communities

CONNECTIVITY
access between kampungs across
the river

FLOW
access and flow along the rivers
edge

Social Impacts of Normalization

“These evictions are only to give the people a lesson to respect the law, as legal certainty is one of the major concerns of investors in the capital.”¹²

Governor Sutiyoso

According to the United Nation Human Rights, a staggering 15 million people are facing forced evictions each year.¹³ Through package 4 of the Normalization project alone, it is estimated that 34,000 families will be evicted along only 19km of the Ciliwung River. The density of the kampungs makes it difficult to know the actual number of people that will be evicted, not to mention the number of families affected through social and economic networks.

Forced eviction is “the permanent or temporary removal against their will of individuals, families and/or communities from the homes and/or land which they occupy, without the provision of, and access to, appropriate forms of legal or other protection” (Committee on Economic, Social and Cultural Rights, general comment No. 7 (1997) on the right to adequate housing: forced evictions).¹⁴

Jakarta has a long history of forced evictions and failure to provide proper compensation.¹⁵ It is a common occurrence that the people have come to expect. The community lives in fear waiting for the day the bulldozers arrive

“Penggusuran ini hanya untuk memberi pelajaran kepada orang-orang agar menghormati hukum, karena kepastian hukum ini merupakan salah satu perhatian besar para investor di ibukota.”¹²

Gubernur Sutiyoso

Menurut konsep HAM PBB, jumlah menakutkan sebanyak 15 juta orang sedang menghadapi ancaman penggusuran paksa setiap tahunnya.¹³ Dalam package 4 dari proyek normalisasi itu sendiri, diperkirakan 34.000 keluarga akan digusur sepanjang 19 km Kali Ciliwung. Kepadatan kampung menjadikannya semakin sulit untuk mengetahui jumlah aktual yang akan digusur, belum lagi jumlah keluarga yang terkena dampaknya dalam hubungannya dengan jaringan sosial dan ekonomi.

Penggusuran paksa adalah “pemindahan permanen atau temporal yang berlawanan dengan kehendak individual, keluarga, dan/atau komunitas dari rumah dan/atau lahan yang mereka tempati tanpa ada fasilitas dan akses ke bentuk legal atau perlindungan lain yang sepatutnya” (Komite Hak Ekonomi, Sosial, dan Budaya, general comment no. 7 tahun 1997 tentang hak mengenai rumah yang mencukupi: penggusuran paksa).¹⁴

Jakarta memiliki sejarah panjang mengenai penggusuran paksa dan kegagalan dalam memberi kompensasi yang layak.¹⁵ Adalah kejadian yang biasa bahwa masyarakat telah berharap. Komunitas masyarakat hidup dalam ketakutan menanti hari datangnya bulldozer dan mereka dipaksa untuk angkat kaki. Selama pemerintahan Presiden Soekarno dan Soeharto, penggusuran skala besar dilakukan untuk perencanaan kota dan kepentingan

Figs. 3.9 Kampung Evictions at Bukit Duri (August 20, 2015)

and they are forced to leave. During the rule of both President Sukarno and Soeharto, large scale evictions were authorized for urban planning and private interests.¹⁶ Evictions can be requested by various stakeholders, including Railway Corporation, Public Works Office, Governors or Mayors, Public Parks/Space, Traffic, or even initiated by community complaints.

Some of the main reasons given for evictions in Jakarta are:

- land needed for infrastructure projects and development
- demolished in the name of public order
- natural hazards (flooding)
- removing trespassers from private or state land
- city beautification
- improve the quality of life in Jakarta

In 1950, an indigenous group of Jakarta known as the Betawi had 50,000 of its residents evicted to accommodate the Gelora Bung Karno Sport Complex in Senayan, in Central Jakarta.¹⁷ They were given new plots of land in South Jakarta but not given the skills or support needed to occupy the new district. The majority of the indigenous were farmers but the land given to them was not arable land. Once they ran out of money, many had to sell their houses and move elsewhere. The authorities had not considered the demographics of the people, nor their livelihood, or skillset.

Other documents of forced eviction end in a similar nature, and others still have its residents refusing to relocate—often citing reasons of the new location being too far from their employment, having no access to transit, having no running water or electricity, or even that the rent is not affordable. These irresponsible eviction practices are just one example of the government choosing private interests over public needs.

One of the main themes throughout history is the government's desire for Jakarta to be a world-class waterfront city. It has been a continuous cycle where the government desires international interest but cannot exist without the labour of the urban poor. Unfortunately, the urban poor are never valued and displaced.

pribadi.¹⁶ Penggusuran dapat diminta oleh beragam pemangku kepentingan, termasuk perusahaan kereta api, kantor layanan umum, gubernur atau walikota, ruang/taman umum, lalu lintas, atau bahkan dimulai dari keluhan warga.

Beberapa alasan utama untuk melakukan penggusuran di Jakarta adalah:

- *Lahan dibutuhkan untuk proyek infrastruktur dan pembangunan*
- *Digusur atas nama perintah kebalayak*
- *Ancaman alam (banjir)*
- *Memindahkan penyusup dari lahan privat atau negara*
- *Program mempercantik kota*

Pada 1950, kelompok etnis asli Jakarta yang dikenal dengan nama Betawi digusur ke Gelora Bung Karno di Senayan, Jakarta Pusat.¹⁷ Mereka diberi beberapa petak lahan baru di Jakarta Selatan tetapi tidak dibarengi dengan pembekalan keterampilan atau kebutuhan lain untuk menempati tempat yang baru tersebut. Mayoritas masyarakat asli adalah petani tetapi lahan yang diberikan kepada mereka bukan lahan yang bisa digarap. Ketika mereka kehabisan uang, banyak dari mereka harus menjual rumah dan pindah ke tempat lain. Pemerintah sama sekali tidak mempertimbangkan demografi masyarakatnya, begitu pula dengan kehidupan atau keterampilan warganya.

Dokumen lain yang membahas tentang penggusuran paksa berakhir dengan kisah yang sama: warga menolak pindah dan kerap kali mereka menggunakan alasan bahwa tempat relokasi terlalu jauh dari tempat kerja mereka, tidak ada akses untuk transit, tidak ada aliran air dan listrik, atau biaya sewanya terlalu tinggi. Praktik penggusuran paksa yang tak bertanggung jawab ini adalah salah satu contoh bahwa pemerintah masih mementingkan kepentingan pribadi daripada kepentingan publik.

Salah satu tema besar sepanjang sejarah Jakarta adalah hasrat pemerintah untuk membuat Jakarta sebagai kota dekat air yang berkelas dunia. Ini adalah siklus yang terus berlanjut di mana pemerintah mengharapkan kepentingan internasional tetapi tetap tidak bisa berjalan tanpa kerja dari warga miskin kota. Sayangnya, warga miskin kota tak pernah dihargai dan malah tersingkir sepanjang sejarah kota Jakarta.

Chairman of the Indonesia Street Vendor Association's Jakarta branch Hoiza Siregar has said Jakarta has approximately 150,000 street vendors that have a total revenue of USD\$20.1 million per day.¹⁸ The authorities are slow to realize their importance and the need for street vendors. Kukuh Hadi Santosa, Head of the Public Order Agency (Satpol PP), has admitted, "Jakarta is already [too] crowded. Wherever they [vendors] go, they trash the public place and make it dirty. It is also illegal for them to be there [on the streets and public parks] in the first place, according to the city bylaws... said the series of raids would continue until all public places were cleared of illegal vendors, their booths and shanties."¹⁹ Improvements have been made in recent years to accommodate vendors and have allowed some sanctioned markets where vendors can sell legally.²⁰ Unfortunately, some vendors are not given such market space, and are instead told to vacate. The cycle continues as the vendor relocates and is asked to move yet again.

Just as the government does not realize the importance of vendors in the city, they also fail to see the overall contribution of the urban poor in the city. Local officials state three general reasons for evictions: the housing is illegal, the housing disrupts public order, or the land is required for a development project that will benefit the greater good.²¹ Often it is unclear if the land is state-owned or privately owned.

Ketua Asosiasi Pedagang Jalanan Indonesia cabang Jakarta, Hoiza Siregar, mengatakan bahwa Jakarta memiliki sekitar 150.000 pedagang kaki lima yang memiliki pemasukan total 20,1 juta dollar per hari.¹⁸

Pemerintah terlalu lamban menyadari pentingnya pedagang kaki lima. Kukuh Hadi Santosa, kepala Satpol PP, mengakui, "Jakarta sudah terlalu padat. Ke manapun mereka pergi, mereka selalu meninggalkan sampah dan membuatnya kotor. Sebenarnya keberadaan mereka di jalan dan taman itu ilegal menurut hukum...Rangkaian keramaian seperti ini akan berlanjut sampai seluruh ruang publik dibersihkan dari pedagang kaki lima dan lapaknya."¹⁹ Telah ada perkembangan yang dibuat untuk mengakomodasi para pedagang ini dan toko-toko resmi telah diizinkan untuk berjualan.²⁰ Sayangnya, beberapa pedagang tidak diberi lapak untuk berjualan dan malah diminta untuk berkeliling. Demikianlah siklusnya terus berjalan di mana pedagang direlokasi tetapi diminta untuk berpindah lagi.

Sebagaimana pemerintah tidak menyadari pentingnya pedagang di kota, mereka juga tidak mampu melihat kontribusi warga miskin kota di Jakarta.

Petugas lokal menyatakan tiga alasan terjadinya penggusuran: pemukiman tersebut ilegal, pemukiman tersebut mengganggu ketertiban publik, atau lahan tersebut dibutuhkan untuk proyek pembangunan yang akan memberikan keuntungan lebih besar.²¹ Kerap kali masih tidak jelas apakah lahan tersebut dimiliki oleh negara atau privat.

Figs. 3.10 'City beautification' as envisioned by Jakarta Ministry of Public Works

Kementerian Pekerjaan Umum
Direktorat Jenderal Sumber Daya Air
Balai Besar Wilayah Sungai Ciliwung Cisadane

Fig. 3.11 'City beautification' as envisioned by Jakarta Ministry of Public Works

When the city evicts a group from a plot of land, the root issue of the problem is not addressed. In a report done by Human Rights Watch, it was found that when compensation was given, it only ranged from \$50 - \$100 USD for the structure, and did not include any funding towards the replacement of loss income or any other disadvantages related to displacement.²² Compensation is also not provided at locations that were previously cleared. With no compensation, residents relocate to other illegal areas to rebuild their lives. The main reason evictions are cyclic is the lack of compensation and support organized for the community.

The Members of the Land Acquisition Committee determine the amount of compensation to be given.²³ They are responsible for determining the appropriate amount of compensation based on the existing structure. Unfortunately, the Members of the Land Acquisition Committee are chosen by the Governor of Jakarta and do not represent the interests of the people. In order to receive compensation and assistance from the government, a Jakarta residency card is needed and the land must be registered. Insecure land tenure is a major issue in Jakarta, the result of several factors: poor administration by government agencies, corruption, lack of transparency by government agencies, and violations of the rights of the urban poor.²⁴ Much of Indonesia's legal system is outdated, complex and contradictory. Land disputes can be lengthy and expensive. Furthermore, the limited amount of time residents receive for evictions, make it impossible to go through any legal arbitrations. A study was conducted in 2000 regarding the land registration process and determined it required 17 steps, 19 different agencies, and approximately two to three years to complete.²⁵ Out of the 80 million land parcels in Indonesia, only 17 million are registered. It is extremely difficult to convert occupation to full ownership because 99% of the land in Indonesia is state-owned.²⁶ Even if land registration is possible, there are thousands of fraudulent and conflicting land titles. Instead of registering their land with the state, residents will use other, more local methods of securing land in kampungs, such as paying officials to live on the land, or by paying land taxes. The government has allowed kampungs to exist for hundreds of years without contestation, but at any moment have the ability to destroy their habitation for the benefit of the state.

Ketika kota mengusir sekelompok orang dari suatu lahan, akar permasalahannya tak pernah dibahas. Berdasarkan laporan Human Rights Watch, ditemukan bahwa ketika kompensasi diberikan, nominalnya hanya berkisar antara 50-100 dollar Amerika untuk struktur, itupun tidak termasuk biaya penggantian kerugian pemasukan atau kerugian lainnya yang terkait dengan penggusuran.²² Kompensasi juga tidak diberikan di lokasi yang telah dibersihkan sebelumnya. Tanpa adanya kompensasi, para warga berpindah ke tempat ilegal lainnya untuk kembali membangun kehidupan mereka. Alasan utama mengapa penggusuran tetap bergulir adalah karena kurangnya kompensasi dan dukungan yang terorganisir bagi komunitas masyarakat.

Anggota Komite Akuisisi Tanah menentukan jumlah kompensasi yang diberikan.²³ Mereka bertanggung jawab menentukan jumlah kompensasi yang diberikan berdasarkan struktur yang ada. Sayangnya, Komite Akuisisi Tanah dipilih oleh Gubernur Jakarta dan tidak mewakili kepentingan warga. Untuk dapat menerima kompensasi dan bantuan dari pemerintah, diperlukan adanya kartu identitas kependudukan dan lahannya harus tercatat di pemerintah. Lahan ilegal adalah masalah utama di Jakarta, sebagai akibat dari beberapa faktor: administrasi yang buruk dari aparat pemerintah, korupsi, kurangnya transparansi dari aparat pemerintah, dan pelanggaran hak warga miskin kota.²⁴ Kebanyakan sistem hukum di Indonesia telah usang, kompleks, dan kontradiktif. Masalah sengketa tanah bisa menjadi sangat panjang dan mahal. Terlebih lagi, tenggat waktu penggusuran yang terbatas membuat warga kesulitan untuk melakukan upaya mediasi legal. Studi telah dilakukan pada tahun 2000 mengenai proses registrasi lahan, dan dari situ didapat data bahwa diperlukan 17 langkah, 19 instansi berbeda, dan sekitar 2-3 tahun untuk dapat melengkapi registrasi.²⁵ Dari 80 juta petak tanah di Indonesia, hanya 17 juta yang terdaftar. Sangat sulit untuk mengubah lahan tempat tinggal menjadi hak milik karena 99% lahan di Indonesia merupakan tanah milik negara.²⁶ Betapapun registrasi lahan dimungkinkan, masih ada ribuan tanah yang masih berstatus sengketa. Alih-alih mendaftarkan tanah mereka, warga lebih memilih jalan lain dalam mengamankan kampung mereka, yakni dengan membayar para petugas agar dapat tetap tinggal, atau membayar pajak bumi dan bangunan (PBB). Pemerintah telah mengizinkan keberadaan kampung selama ratusan tahun tanpa kontestasi, tapi di saat kapanpun mereka dapat menghancurkan tempat tinggal itu untuk kepentingan negara.

Dampak penggusuran dimulai dari saat di mana warga menerima informasi bahwa akan digusur. Segala bentuk perlawanan kerap kali dihadapkan dengan berbagai ancaman dan

Fig. 3.12 The Cyclic Nature of Forced Evictions

Fig. 3.13 Eviction Outcomes

The impact of evictions begins from the moment a community is informed. Any resistance or objections are often met with threats and violence. The amount of warning depends on each case, but many have witnessed as little as two days or no warning at all.²⁷ Officials will arrive and begin to demolish, torch, and destroy houses. Tear gas, firearms, and water-cannons have been used against residents who resist. Their efforts result in injuries, rape, and sometimes death.²⁸ One strategy the government has employed is to conduct evictions during the major national holiday of Lebaran. Knowing many residents are out of town on vacation, the Deputy Governor has stated he prefers this time to avoid protests or clashes.²⁹

The brutality and ruthlessness of forced evictions result in both short- and long-term physical and psychological effects. Evictions will further socio-economic decline in the already marginalized or vulnerable population. Figure 3.12 illustrates the effects of forced evictions and the possible outcomes. In all cases, contrary to the very nature of development, residents are left in worse conditions than they were before the eviction. The Jakarta Urgent Flood Mitigation Project, also known as Normalization, recognizes those evicted as Project Affected Persons (PAP).

1. Persons affected by the repossession of state or government lands or,
2. Persons affected by the acquisition of privately owned land

As of 2011, seven PAPs sites were scheduled for forced evictions. 53% of families of these seven sites have lived there for more than 10 years.

Responsibility: Provincial Government of DKI Jakarta

Budget: Provincial Government of DKI Jakarta has allocated budget to provide compensation in cash or in-kind (e.g. rental housing) for the PAPs.

kekerasan. Jumlah peringatan yang diberikan tergantung dari perkara itu sendiri, tetapi banyak yang menyaksikan setidaknya dua hari sebelum penggusuran atau malah tanpa peringatan sama sekali.²⁷ Gas air mata, senjata api, dan atau water-cannon digunakan untuk menyerang warga yang bertahan. Usaha mereka dapat mengakibatkan cedera, perkosaan, atau bahkan kematian.²⁸ Satu strategi yang dilakukan pemerintah adalah melakukan penggusuran selama libur hari raya Lebaran. Berhubung banyak warga yang keluar kota pada masa itu, pemerintah melakukan penggusuran pada saat itu untuk menghindari protes atau kerusuhan.²⁹

Kebrutalan penggusuran paksa yang tanpa ampun memunculkan akibat baik jangka panjang dan jangka pendek dari segi fisik maupun psikologis. Penggusuran akan semakin menimbulkan penurunan sosial ekonomi bagi populasi masyarakat yang sudah terpinggirkan dan rapuh ini. Figure 3.12 menjelaskan tentang efek dari penggusuran paksa dan akibat yang mungkin terjadi. Dalam semua kasus, berlawanan dengan esensi pembangunan, keadaan warga setelah penggusuran justru menjadi semakin buruk dibanding sebelum digusur. Proyek Mitigasi Siaga Banjir, yang dikenal dengan istilah normalisasi, menyebut mereka yang terkena gusuran sebagai orang-orang yang terkena dampak proyek penggusuran (Project Affected Persons, PAP) yang pengertiannya mencakup:

- 1. Orang-orang yang terkena dampak dari pengambil-alihan tanah negara atau pemerintah, atau*
- 2. Orang-orang yang terkena dampak dari akuisisi lahan privat.*

Pada 2011, dijadwalkan ada 7 titik PAP yang akan digusur secara paksa. Sebanyak 53% keluarga dari 7 titik PAP ini telah tinggal di sana selama lebih dari 10 tahun.

Penganggung jawab: Gubernur Provinsi DKI Jakarta

Budget: Pemprov DKI Jakarta telah mengalokasikan dana tunai untuk kompensasi atau sejenisnya (contoh: rumah sewa) bagi para PAP.

Fig. 3.14 From Horizontal to Vertical

The overall estimated budget for the Resettlement Program is about \$2.8 million USD, it has been noted in the Project Appraisal Document for The World Bank, that the city does have concerns with acquiring the reputation of ‘rewarding illegal behaviour’ by providing compensation to residents without proper documentation.³⁰ In the past, evictions have been made possible by a number of land acquisition laws—most importantly, the Local Regulation No. 8 of 2007 pertaining to Public Order: which states public land or public space can be repossessed if residents do not have permits from DKI Jakarta or are not in line with DKI Jakarta’s land use plan.

Approximately, there are plans to clear 131 spots in 2014 (as of April 2014)³¹ Plan proposed:

- 35 spots used for normalization of rivers and reservoirs
- 34 for establishment of open green spaces
- 32 for road expansion and toll road projects
- 10 for construction of low-cost apartment buildings
- The rest, development of ponds, cemeteries, and other

The housing complexes proposed for the PAPs from Normalization:

The proposals for the social housing provided by the government will align and cause many issues as outlined in Figure 3.12. The vertical towers clearly do not take into account the demographics of the majority of PAPs being evicted in

Perkiraan keseluruhan dana untuk program penempatan ulang mencapai sekitar 2,8 juta dollar Amerika, dan telah tercatat di Project Appraisal Document for The World Bank bahwa kota tidak memiliki perhatian terhadap reputasinya yang “memiliki tindakan ilegal” karena telah mengadakan kompensasi bagi warga tanpa dokumentasi yang layak.³⁰ Sebelumnya, penggusuran dimungkinkan oleh beberapa pasal hukum akuisisi tanah—terutama Perda no. 8 tahun 2007 mengenai Ketertiban Umum yang menyatakan bahwa lahan atau ruang publik dapat diambil alih jika warga tidak memiliki izin tinggal dari DKI Jakarta atau tidak sesuai dengan rencana penggunaan lahan kota.

Ada rencana untuk membersihkan 131 titik di Jakarta pada 2014 (sejak April 2014)³¹ Rencana yang diusulkan:

- 35 titik untuk normalisasi sungai dan reservoir
- 34 titik untuk pembangunan ruang hijau terbuka
- 32 titik untuk ekspansi dan proyek jalan tol
- 10 titik untuk pembangunan gedung apartemen murah
- Sisanya untuk pengembangan kolam, makam, dll

Kompleks pemukiman yang diusulkan bagi PAP dari program normalisasi adalah sebagai berikut:

Usulan pemukiman sosial yang ditawarkan pemerintah akan memunculkan banyak persoalan seperti ditunjukkan dalam Figure 3.12. Gedung menara vertikal sama sekali tidak mempertimbangkan mayoritas PAP yang digusur di kampung sepanjang Kali

Figs. 3.15 (left and right) Proposed Housing for Evicted Kampung Residents

Fig. 3.16 The Impossible task of calculating the number of networks and people affected by Normalization.

kampung along the Ciliwung River. Many cannot continue their livelihoods in the vertical complex, and will have no money to pay the expensive rent.

This thesis calls for a more appropriate solution for residents in order to continue their lives safely, and free from the effects of flooding. The absolute best eviction alternative to avoid disrupting the lives of the residents and their existing networks is one that ‘preserves the community on the existing land, secures land tenure, and works with the residents for on-site upgrading’.³² A collaboration between authorities and communities is required, one that takes a proactive and constructive role in solving the root of the problem, and breaking the cycle of evictions—while still addressing local environmental issues. This thesis aims to help authorities realize there are better solutions than the vertical social housing proposal. Urban development should work to improve lives, not cause disruption.

Ciliwung. Banyak yang tidak bisa melanjutkan kehidupannya di kompleks vertikal dan tidak mampu membayar biaya sewanya.

Thesis ini menawarkan solusi yang lebih layak bagi para warga agar mereka dapat melanjutkan kehidupan mereka dengan lebih aman dan terbebas dari efek banjir. Cara alternatif mutlak yang dari penggusuran ini adalah dengan tetap menjaga warga di lahan yang mereka tempati dan bekerja sama dengan warga untuk meningkatkan dan mengembangkan lahan mereka.³² Ini akan menghindarkan mereka dari kehidupan dari masalah dan kehilangan jaringan kerja yang selama ini terbentuk. Dibutuhkan kolaborasi antara pemerintah dan warga, suatu kolaborasi yang mengambil peranan proaktif dan konstruktif dalam mengatasi akar permasalahan, dan memutus rantai siklus penggusuran—sementara tetap memperhatikan isu lingkungan. Tulisan ini bertujuan untuk membantu pemerintah menyadari bahwa ada solusi lain yang lebih baik ketimbang usulan tentang pemukiman vertikal. Pembangunan kota dan masyarakat warga kota haruslah pembangunan yang meningkatkan daya hidup dan bukan malah menimbulkan masalah.

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LIFE IN THE KAMPUNG

LIFE IN THE KAMPUNG

The River, The Street, The House

Flooding in Jakarta has increased in recent years and continues to threaten the livelihood of local riverside residents. Of note is two kampungs that face the damages of annual flooding: Kampung Bukit Duri and Kampung Pulo. Additionally, the residents are now faced with the socioeconomic repercussions associated with the governments plan for normalization and eviction. While there are flood-mitigation proposals presented by local community leaders, organizations, and government agencies, they each fail to acknowledge the complexity of social and economic relationships in these communities. To be successful, a proposal must include participatory design, and understand the violence that occurs to local communities at a social-economic level.

Removal of the street life for vertical housing is removal of their social and economic relationships. Essentially, residents will have to choose to squat elsewhere and start over, or become homeless with the inability to continue their livelihood in the new communities. Not only is Normalization detrimental to the ecological systems of the river, but also harmful to the thousands of families and their networks.

The main problem with the government's proposal for vertical housing is that it does not take into account the unique structure of the kampung. Life happens in the street: eating, leisure, business. The house is not only for domestic use but often acts as the primary source of income for the family. Economic needs take place on the ground floor, and domestic needs occupy the second.

Banjir di Jakarta telah meningkat dalam beberapa tahun terakhir ini, khususnya di Kampung Pulo dan Bukit Duri; dan ini akan terus menjadi ancaman bagi kehidupan warga di bantaran kali. Ditambah lagi, para warga juga dihadapkan dengan dampak sosio-ekonomi yang mengacu pada rencana pemerintah untuk melakukan normalisasi dan penggusuran. Meskipun pemimpin masyarakat lokal, LSM, dan agen pemerintah telah menawarkan proposal mitigasi banjir, tetap saja tawaran itu masih belum mampu mengenali kompleksitas hubungan sosial dan ekonomi di komunitas ini. Agar bisa berhasil, proposal tersebut harus melibatkan desain yang bersifat partisipatoris dan memahami kekerasan yang dialami oleh masyarakat lokal pada level sosial dan ekonomi.

Pemindahan kehidupan yang sudah ada ke rumah vertikal merupakan pencerabutan hubungan sosial dan ekonomi mereka. Secara esensial, para warga diminta memilih untuk merangkak dan memulai semuanya dari awal atau menjadi gelandangan tanpa mampu melanjutkan kehidupan mereka dengan komunitas yang baru. Normalisasi tidak hanya berbahaya bagi sistem ekologis sungai, tetapi juga membahayakan ribuan keluarga dan jaringan mereka.

Problem utama dari tawaran pemerintah tentang rumah vertikal ini adalah tidak adanya pertimbangan tentang struktur unik dari kampung. Kehidupan terjadi di pinggir jalan: makan, istirahat, dan bisnis. Rumah tidak hanya berfungsi untuk kegunaan domestik, tetapi juga sebagai sumber utama pendapatan keluarga. Kebutuhan ekonomi berlangsung di lantai dasar, sementara kebutuhan domestik berlangsung di lantai dua rumah mereka. Bagi banyak orang, kehidupan seperti inilah yang mereka tahu.

Figs. 4.1 (top and bottom) The people and the streets of the Kampung.
Fig. 4.2 (middle) Administrative Divisions of Jakarta

Many residents have spent their lives along the river. Their networks and connections stem from a lifetime spent in their respective kampungs. Normalization not only disconnects their relationship from the river, but also destroys their social and economic relationships, affecting many indirect connections that begin in the kampungs, unbeknownst to the government.

The Kampung is known as the home or birthplace of an individual, but has become representative of poorer neighbourhoods.¹ Unfortunately this perception is not accurately representative of a kampung. Not everyone who lives in a kampung is poor. It is a mixture of lower and lower-middle class groups, sometimes even middle-class. The majority of residents live in permanent dwellings, and have lived there for decades—with some dwellings dating back to the 1800s.

A misconception of the kampung is that it is a result of urbanization; but the kampung existed long before any urbanization took place in Jakarta. Development has been built around kampungs. Now superblocks of office towers, apartment complexes, and five-star hotels are built right up against them. It is unclear the percentage of city that kampungs occupy, but it is most likely to be around 20 - 25% of the total population.²

During the Japanese Occupation of Indonesia, every family was directed to register as part of a Rukun Tertangga (RT), which translates to 'neighborhood unit'.³ Each RT consisted of 60-80 households. Groups of 12-18 RT's, depending on the population density, forms a Rukun Warga (RW), which translates to 'community unit'. In urban and peri-urban areas, RW's formed a kelurahan, making a large urban neighbourhood. In rural areas, RT's were formed into villages. This division would continue up into provinces. Only leaders at the RT position were popularly elected, all others were appointed.

The street, and direct access to it, is the most important aspect of kampung life. Residents rely on this access for social and economic support. Socializing happens on the street. Groups will gather along their streets, and children will explore freely. Almost all meals are also eaten in the street at neighborhood shops. Refrigeration is only available to the wealthy, and the small dwellings are

Banyak warga yang telah menghabiskan hidup mereka di pinggir kali: seluruh jaringan dan hubungan terjadi di kampung mereka. Normalisasi tidak hanya memutus hubungan mereka dengan sungai, tetapi juga dengan hubungan sosial ekonomi, mempengaruhi berbagai hubungan tak langsung yang terjadi di kampung—dan ini adalah sesuatu yang tidak diketahui oleh pemerintah.

Kampung dikenali sebagai rumah dan sekaligus tempat lahir seseorang, tetapi juga telah menjadi representasi masyarakat miskin.¹ Sayangnya persepsi ini bukanlah representasi yang akurat mengenai kampung. Tidak semua orang yang tinggal di kampung itu miskin. Kampung adalah perpaduan antara kalangan bawah, menengah ke bawah, dan sekaligus kalangan menengah. Mayoritas warganya tinggal di rumah permanen dan telah tinggal di sana selama puluhan tahun—bersamaan dengan mereka yang telah menempati tempat itu sejak tahun 1800an.

Kesalahpahaman mengenai kampung adalah bahwa kampung merupakan akibat dari urbanisasi, padahal kampung telah ada jauh sebelum urbanisasi terjadi di Jakarta. Pembangunan telah dilakukan di sekitar kampung-kampung. Sekarang, superblock menara perkantoran, kompleks-kompleks apartemen, dan hotel bintang lima dibangun di sekitar kampung. Persentase jumlah kampung yang ada di kota memang tidak begitu jelas, tetapi kemungkinan besar mencapai 20-25% dari total populasi.²

Selama Jepang menduduki Indonesia, setiap keluarga diperintahkan untuk mendaftar sebagai bagian dari Rukun Tetangga (RT), yang berarti unit keluarga.³ Setiap RT terdiri dari 60-80 keluarga. Kumpulan dari 12-18 RT, tergantung dari kepadatan populasi, membentuk Rukun Warga (RW), yang berarti unit komunitas. Di area perkotaan dan pinggiran kota, kumpulan RW akan membentuk kelurahan yang menjadi lingkungan masyarakat kota yang besar. Di area pedesaan, kumpulan RT dibentuk menjadi desa. Pengelompokan ini akan terus berlanjut hingga membentuk provinsi. Hanya posisi ketua RT yang dipilih secara aklamasi, sementara yang lainnya ditunjuk oleh aparat pemerintah.

Jalanan, dan akses yang langsung ke sana, merupakan aspek paling penting dalam kehidupan kampung. Para warga bergantung pada akses ke jalan untuk mendukung kehidupan sosial dan ekonomi mereka. Proses sosialisasi terjadi di jalanan. Sekelompok orang akan berkumpul di jalan, dan anak-anak akan bermain dengan bebas di sana. Hampir semua makanan juga dimakan di jalan di warung warga. Lemari es hanya dimiliki oleh keluarga

not ideal for cooking hot meals. Many argue it is cheaper to buy food than to prepare it themselves.

Informal settlements rely on their neighbours differently than more developed communities. They rely on the community to help protect their assets, and watch their children. Creative vendors have tailored their services to children. Carts will have small ferris-wheel type rides powered by a bicycle that will take children up and down the street. Vendors are constantly traveling up and down the kampung streets selling supplies to households and businesses.

The street also provides residents a shaded retreat. Many of the houses overhang onto the streets and provide a cool environment, away from the hot sun. There is a hierarchy of streets: from wider public streets, to narrower private streets closer to the river. The lives of informal settlements are made possible by their independence. As Fran Tonkiss explains in *Cities by Design: The Social Life of Urban Form*, “Economic strategies of self-help rely on social networks to access resources (credit, information, land, physical capital, protection, labour or work opportunities)”.⁴

The majority of residents along the Ciliwung River, 90% in Bukit Duri and Kampung Pulo, work in the informal economy: food stalls, trade goods, motorcycle repair, electronic repair and refrigerator, chicken butcher, broom maker, maker of mattresses and pillows, sell oil, water distribution.

With the help of local organization, Ciliwung Merdeka, a study of 14 different informal businesses in Kampung Bukit Duri proved how crucial, and how far, their networks reached. Businesses supplied or relied on other businesses from all over Jakarta, as well as many villages outside of the city.

mampu dan rumah yang kecil tidak ideal untuk kegiatan masak-memasak. Banyak yang berpendapat bahwa membeli makanan lebih murah daripada memasak sendiri.

*Para pedagang kreatif juga menyediakan layanan bagi anak-anak. Ada kereta bertenaga motor bernama “odong-odong” yang akan membawa anak-anak berkeliling kampung. Para pedagang kaki lima juga secara rutin berkeliling kampung dan menyediakan barang-barang kebutuhan rumah tangga. Warga kampung yang miskin mengandalkan tetangganya dengan cara yang beda dari komunitas masyarakat yang lebih berkembang. Mereka mengandalkan komunitasnya untuk membantu menjaga asset mereka dan mengawasi anak mereka. Di jalan kampung juga tersedia tempat teduh. Banyak rumah memasang atap sampai ke jalan sehingga jalan menjadi lebih sejuk terhindar dari sengatan sinar matahari. Ada hierarki di jalan: mulai dari jalan umum yang lebih lebar hingga jalan privat yang lebih sempit yang menuju ke sungai. Kehidupan masyarakat informal menjadi mungkin oleh karena kemandirian mereka. Sebagaimana dijelaskan oleh Fran Tonkiss dalam bukunya yang berjudul *Cities by Design: The Social Life of Urban Form*, “Strategi ekonomi yang mandiri mengandalkan jaringan sosial untuk memperoleh akses sumber daya (kredit, informasi, lahan, modal fisik, perlindungan, kesempatan kerja)”.⁴*

Mayoritas warga bantaran Kali Ciliwung, 90% di Bukit Duri dan Kampung Pulo, bekerja di sektor ekonomi informal: warung makan, toko kelontong, bengkel sepeda motor, reparasi barang elektronik, tukang potong ayam, pembuat sikat, pembuat matras dan bantal, penjual minyak, pengantar air. Studi mengenai 14 bisnis informal di Bukit Duri menunjukkan betapa krusialnya jaringan yang mereka raih. Bisnis-bisnis tersebut saling bergantung dengan bisnis lain di seluruh Jakarta, begitu pula dengan desa-desa di luar kota. Penghancuran jaringan yang tak kasat mata ini akan membahayakan kota Jakarta sebagai satu keseluruhan.

Fig. 4.3 Distribution Networks to the Greater Jakarta Area of Informal Economies from Bukit Duri and Kampung Pulo

The Ciliwung River is currently treated as a private space. Houses back, or even sit on, the riverbank, and face the street. Some residents currently only use the river for waste disposal and sanitation. Garbage bags are thrown over the riverbank and pipes from the houses expel waste into the river. It is not uncommon to see children swimming and cooling-off beside the floating toilets. Hygiene, leisure and play, fishing, and transportation are all part of the river's daily use. There are public toilets throughout the kampungs but they are often flooded or full. Residents prefer floating toilets that quickly dispose of waste into the river and adapt to the changing water levels. The typical kampung house is similar to many informal dwellings. The house is not just for sleeping but is used for income generation as well. The ground floor is usually reserved for manufacturing or selling products; while the second and third floor is for sleeping.

Kali Ciliwung kerap diperlakukan sebagai ruang privat, sebagai pemandangan belakang rumah, atau juga sebagai tempat duduk di pinggir kali yang menghadap ke jalan. Para warga saat ini hanya memanfaatkan sungai sebagai tempat sampah dan tempat pembuangan. Kantong sampah dibuang ke sungai dan pipa dari rumah-rumah mengalirkan kotoran ke sungai. Suatu pemandangan yang biasa jika melihat anak-anak berenang dan berendam di samping toilet apung. Kebersihan, kesenangan dan permainan, pemancingan, dan transportasi adalah bagian dari kehidupan sehari-hari. Toilet umum memang disediakan di setiap kampung, tetapi kerap kali mampet atau penuh. Warga lebih memilih toilet apung yang dapat dengan segera mengalirkan buangan mereka dan mereka mampu beradaptasi dengan ketinggian air yang berubah-ubah. Tipikal kampung kerap kali sama dengan tempat tinggal informal. Rumah tak hanya sebagai tempat untuk tidur, tetapi juga sebagai sumber pemasukan. Lantai dasar biasanya dipakai untuk membuat atau menjual barang, sementara lantai dua dan tiga dipakai untuk tidur.

Water is an occupant of space, just as people are.

Dilip Da Cunha, *Water's Everywhere*

Fig. 4.7 (top, right)
Figs. 4.8 The River and the House

Sanggar Ciliwung Merdeka is an 'Open House', open to the community of Bukit Duri; performing as a Cultural and Education Facility. They have been working with the community for years to develop housing solutions for the people in the kampung. They advocate for a participatory strategy, one that can be filled in over time and be more appropriate to the needs of the people. This thesis intends to respect their work and provide a framework that might support and strengthen it. I would also like to thank Ciliwung Merdeka for sharing their work with us while we visited Bukit Duri in 2014, and specifically to Ariel Shepherd for providing me information from Jakarta during my thesis studies. They are doing wonderful work in Jakarta and are truly dedicated to the people of the kampungs along the Ciliwung River.

Residents refer to the flooding not by measurements or height. They use the human body to communicate how high the waters were: ankle, knee, waist, and shoulders. Ankle and knee height floods are a regular occurrence throughout the year, and rarely affect daily life in the kampung. Many houses that experience this regular flooding keep the ground floor of their houses empty at all times.

Kampung households have created a number of informal methods to cope with mobility during the floods. Red string can be seen along the road that the community uses to hold on to while walking through the waters. Small footpaths are placed between the houses to get around without entering the muddy waters. The resilience of the community was an inspiration for this thesis. It is not possible for residents to vacate every time there is a flood; and it is crucial a more viable strategy is needed for mobility, and continuity within these resilient communities.

Warga menilai banjir bukan dari ukuran atau ketinggian, melainkan menggunakan tubuh mereka sebagai ukuran ketinggian air: engkel, lutut, pinggang, dan bahu. Banjir setinggi engkel dan lutut adalah banjir yang rutin terjadi setiap tahun, dan tidak begitu memberikan efek signifikan bagi kehidupan kampung. Banyak rumah yang mengalami banjir rutin ini membiarkan lantai dasar rumah mereka tetap kosong.

Rumah tangga di kampung telah menciptakan banyak metode untuk menghadapi persoalan mobilitas selama banjir. Tali merah dapat dilihat sepanjang jalan, yang digunakan oleh komunitas masyarakat untuk berpegangan ketika berjalan. Jejak kecil ditaruh di antara rumah-rumah agar bisa berjalan tanpa terjebak air berlumpur. Kelenturan komunitas masyarakat inilah yang menjadi inspirasi dari tesis ini. Tidak mungkin bagi warga untuk melakukan evakuasi setiap kali ada banjir; dan yang krusial adalah strategi yang lebih praktis yang dibutuhkan untuk mobilitas, dan keberlanjutan di dalam komunitas masyarakat yang lentur ini.

Figs. 4.9 Measuring Flood Levels

Fig. 4.10 (left) Low State Flooding
 Fig. 4.11 (right, top) High Level of Flooding
 Fig. 4.12 (right, bottom) Mid State

Notes

- ¹ McCarthy, P. (2003). The case of Jakarta, Indonesia. *World Bank*. Retrieved from http://www.ucl.ac.uk/dpu-projects/Global_Report/pdfs/Jakarta.pdf
- ² McCarthy, P. (2003). The case of Jakarta, Indonesia. *World Bank*. Retrieved from http://www.ucl.ac.uk/dpu-projects/Global_Report/pdfs/Jakarta.pdf
- ³ McCarthy, P. (2003). The case of Jakarta, Indonesia. *World Bank*. Retrieved from http://www.ucl.ac.uk/dpu-projects/Global_Report/pdfs/Jakarta.pdf
- ⁴ Tonkiss, F. (2013). *Cities by Design: The social life of urban form*. Oxford: Polity Press

THE BAMBOO BRIDGE

THE BAMBOO BRIDGE

An Alternative to Normalization.

The original plan for the Project Affected Persons (PAP) was to provide access to social housing in other locations in Jakarta. Since this plan has begun, the residents, along with community advocates, have convinced the state to build the housing complex on the existing site of Kampung Pulo. This is a victory for the community, but as history has seen the government is often unable to keep their promises. There are many reasons to why this promise may not be fulfilled. Firstly, lives will be disrupted during eviction and construction. Will there be interim housing provided? Compensation? Assuming the government actually follows through, the housing promised still does not address the issue of how residents who currently work out of their homes will continue, not to mention the fact the residents may not be able to afford the rent.

What is certain from this recent development is that the State has considered on-site upgrading. As stated by “UN Habitat and Cities Alliance”, in *Housing the Poor in African Cities*, “the best eviction alternative is one that preserves the community in the same place and gives people secure tenure rights to that land.

One of the best ways for cities to help their poor citizens access better housing and living conditions is by providing secure tenure in the informal settlements where they already live (including protection from predatory land speculators), and then working with them to upgrade their settlements together.”¹ The

Rencana awal Project Affected Person (PAP) adalah untuk menyediakan akses pemukiman sosial di beberapa tempat di Jakarta. Sejak rencana ini berjalan, warga—bersamaan dengan komunitas advokat—telah berusaha meyakinkan pemerintah untuk membangun kompleks pemukiman di daerah Kampung Pulo. Ini adalah suatu kemenangan bagi warga, tetapi sayangnya pemerintah kerap kali tidak mampu untuk memenuhi janjinya. Ada banyak alasan mengapa janji tersebut tidak dapat terpenuhi. Pertama-tama, tata kehidupan akan tersendat selama proses penggusuran dan pembangunan. Apakah ada pemukiman sementara yang disediakan pemerintah? Kompensasi? Betapapun pemerintah menepati janjinya akan pembangunan, pemukiman sementara yang dijanjikan tidak menyentuh permasalahan tentang bagaimana warga yang memanfaatkan rumah sebagai ruang produksi akan bertahan, melihat fakta bahwa warga tersebut tidak akan mampu membayar sewa rumah di pemukiman sementara tersebut.

Yang penting dari proses pembangunan ini adalah bahwa pemerintah telah mempertimbangkan tentang peningkatan mutu. Sebagaimana tertulis di “Aliansi Kota dan Habitat PBB”, dalam “Memberi Pemukiman kepada Warga Miskin di Afrika”, dinyatakan bahwa “Alternatif penggusuran yang paling baik adalah dengan cara tetap mempertahankan komunitas masyarakat di tempat tersebut dan memberikan kepada mereka hak kepemilikan tanah yang aman bagi mereka.

Salah satu cara terbaik yang bisa dilakukan oleh kota untuk membantu warganya yang miskin untuk mengakses kondisi hidup dan pemukiman yang lebih baik adalah dengan memberikan hak guna lahan di lahan pemukiman informal tempat mereka tinggal

collaborative, joint on-site upgrading process reinforces confidence in the residents to dedicate themselves to neighbourhood or kampung development without the fear of eviction. An alternative proposal was developed to explore the possibilities of on-site development.

(termasuk perlindungan dari para spekulator lahan), dan bekerja bersama mereka untuk meningkatkan pemukiman mereka.”¹ Proses peningkatan yang dilakukan secara bersama-sama ini akan memberikan kepercayaan diri warga terhadap pembangunan lingkungannya, kampungnya, tanpa takut akan adanya penggusuran. Usulan alternatif telah dikembangkan untuk menggali kemungkinan-kemungkinan pembangunan yang ada.

Constraints + Opportunities

This thesis proposes an alternative architectural intervention that addresses the major issues of the kampung: a network of physical connections that strengthens existing social and economic relationships and encourages a stronger sense of communication. Similar to many informal settlements found globally, many kampungs lack space for development. The only space available is between and above. Between refers to the small slivers of space found between homes. Above represents the space above the river, roads, paths, and houses in the kampung.

Tesis ini akan mengusulkan sebuah alternatif arsitektural yang menyentuh persoalan utama kampung: sebuah jaringan koneksi fisik yang menguatkan hubungan sosial dan ekonomi yang sudah ada dan mendorong komunikasi yang lebih kuat. Senada dengan pemukiman informal yang ditemui secara global, banyak kampung kurang mengalami pembangunan. Ruang yang tersisa untuk pembangunan hanyalah di antara kampung-kampung dan di atasnya. Di antara artinya ruang sempit yang tersisa di antara rumah-rumah. Di atas artinya ruang yang ada di atas sungai, jalan, jalan setapak, dan rumah-rumah di kampung.

Lack Of Space

Kurangnya Ruang

Fig. 5.1 Density in the Kampung allows only for space above the houses and river, and between houses in the streets and alleys.

Another problem facing the 19km stretch of the Ciliwung River affected by Normalization is the lack of connections. Creating stronger ties and banding together can help kampung development and community revitalization. Through research and on-site experience, it became clear there was a general lack of communication in Jakarta regarding kampung development. A greater sense of connection between those involved could encourage commitment, trust, and the transparency required to conceive solutions.

Persoalan lain yang muncul dari bentangan 19 km Kali Ciliwung yang disebabkan oleh normalisasi adalah kurangnya keterhubungan. Dengan menciptakan ikatan yang lebih kuat, hal ini akan membantu pembangunan kampung dan revitalisasi komunitas. Melalui riset dan pengalaman langsung di lapangan, menjadi jelas bahwa secara umum ada kekurangan keterhubungan di Jakarta mengenai pembangunan kampung. Rasa keterhubungan yang lebih besar akan meningkatkan komitmen, kepercayaan, dan transparansi bagi para pihak yang terlibat.

Lack Of Connections & Communication

Kurangnya Keterhubungan & Komunikasi

stilts

plinth

float

A look at existing solutions to flooding point to the lack of consideration for flood resistant communities.

What happens when the community is flooded for an extended period of time?

... imagine the 100 year flood... every year. disconnect and isolation.

Fig. 5.2 Considering a condition where flooding will exist for most of the year.

Fig. 5.3 Conceptual Rendering of the Bamboo Bridge at Bukit Duri

The Bamboo Bridge

The Bamboo Bridge is proposed as a family of bridges extending across the floodplain of the Ciliwung River. It connects kampungs to create access and mobility, and to protect residents from the limitations of urban flooding. The success of social and economic relationships in kampung life depends on the relationship between the residents and the street. The Bamboo Bridge provides a secondary, crucial, path for the residents to use all year round but specifically for use during the monsoon season which is slowly becoming longer and more detrimental. Two types are proposed: the Pedestrian Bridge and the Community Bridge.

The Bamboo Bridge provides an opportunity for residents to remain in their kampungs throughout the flood conditions created during monsoon season. During this time in Jakarta many informal businesses located in the floodplain must suspend business and find work elsewhere until it is possible to return. Residents choosing not to relocate often spend time recovering from the floods, cleaning and fixing product spoiled by the raised water. The Bamboo Bridge strengthens social and commercial ties, while linking into shared memory and local culture of the kampung development. The networks of the past are celebrated, and used as inspiration for the future.

Di sepanjang bentangan Kali Ciliwung, terdapat beberapa jembatan bambu. Jembatan tersebut dibuat untuk menjadi penghubung antar kampung, untuk menciptakan akses dan mobilitas, dan untuk membantu warga ketika terjadi banjir. Keberhasilan hubungan sosial dan ekonomi warga di kampung tergantung pada hubungan antara warga dan jalan. Jembatan bambu memberikan jalur sekunder namun krusial bagi warga yang menggunakan jembatan tersebut, khususnya selama musim penghujan, di mana kali menjadi semakin besar dan berbahaya.

Jembatan bambu juga memungkinkan warga untuk tetap tinggal di kampung selama banjir yang muncul di musim penghujan. Selama musim penghujan dan banjir ini, banyak kegiatan ekonomi informal harus terhenti dan warga harus mencari mata pencaharian lain. Warga tidak memilih untuk pindah tempat tinggal dan lebih memilih untuk merapikan dan membenahi barang-barang yang telah rusak karena banjir. Jembatan bambu menguatkan ikatan sosial dan komersil, sementara pada saat yang sama juga menghubungkan ingatan bersama dan kultur lokal dari kampung. Keterhubungan dengan masa lalu dirayakan dan digunakan sebagai inspirasi bagi masa depan.

poured concrete path
for ease of vendor carts

construction completed by kampung
community

stair + bay
component

column + bay
component

*disclaimer: bamboo panels and roofing not shown in rendering
for clarity of bridge and functions*

1. panels can be inserted horizontal for railings or vertical for privacy and sun protection
2. panels left off to create access from homes

bamboo is proposed for panels, but other recycled, found materials can be used (metal, fabric)

Fish-mouth Joint by Simón Vélez
 Source: <http://www.deboerarchitects.com/BambooThoughts.html>
 Bamboo Detail by Andrea Fitrianto
 Source: <http://tulaykavayan.blogspot.ca/>

for the formwork of the base of concrete columns

Figs. 5.4 Nine existing vehicular bridges along the 19km length of the Ciliwung River experiencing Normalization.

Bukit Duri and Kampung Pulo Prototype

The locations of the Community Bridges are proposed above existing vehicular bridges throughout the floodplain, where space allows. The density of kampungs make it difficult to find large open areas to build community spaces, but existing vehicular bridges provide open space that is needed.

There are nine vehicular bridges along the length of the 19km of the Ciliwung Normalization that vary in size and construction. Assuming the existing structure is credible, these could all be community spaces throughout the floodplain that could connect the pedestrian bridges. They provide continuity along the floodplain and act as a hub of social and economic activity. The existing bridge and area at Bukit Duri was chosen as a prototype for this thesis.

Lokasi konsep “Jembatan Warga” diadakan di sepanjang jembatan penyeberangan kendaraan di sepanjang aliran sungai, sejauh ruang memungkinkan. Cukup sulit untuk menemukan area terbuka yang besar yang digunakan untuk membangun ruang warga karena kampung bersifat padat; akan tetapi jembatan penyeberangan kendaraan tersebut memberikan ruang terbuka yang dibutuhkan. Ada sembilan jembatan penyeberangan kendaraan di sepanjang 19 km normalisasi Kali Ciliwung yang ukuran dan bangunannya bervariasi. Dengan mengandaikan strukturnya yang kredibel, jembatan-jembatan tersebut dapat menjadi ruang bersama di seluruh aliran sungai yang dapat menghubungkan jembatan-jembatan pedestrian. Jembatan-jembatan tersebut memberikan keterhubungan dengan aliran sungai dan dapat berperan sebagai pusat kegiatan sosial dan ekonomi. Jembatan dan area Bukit Duri dipilih sebagai prototipe untuk thesis ini.

Figs. 5.5 The existing vehicular bridge at Bukit Duri currently being used as a sale space for furniture refurbishing.

Bukit Duri (RT 05,06,07,08 RW12)
 Kampung Pulo (RT 10,11,12 RW 03)
high density settlements:
 +14.500m2 and +8.641m2
population:
 + 691 hh /2407 peoples.
Source: Ciliwung Merdeka

Fig. 5.6 (left) Bukit Duri in relation to Jakarta.

Fig. 5.7, 5.8 (right) Major Flood Conditions at the bend of the river across from Bukit Duri.

Fig. 5.9 Locating Bukit Duri and Kampung Pulo

Fig. 5.10 Proposed Community Bridge across the existing vehicular bridge at Bukit Duri

Fig. 5.11 Site Plan of Bamboo Bridge at Bukit Duri.
Direction of bridge was based on available space at the ground floor for vertical supports.

Design Strategies

First Strategy: encourage a collective voice and connectivity

The first strategy places emphasis on the importance of public space for informal settlements and prepares the community for the worst-case scenario of a permanently flooded landscape. Other flood-adaptive architecture focuses on the individual family dwelling and does not take into account how the community would respond as a whole during flooding.

When floods do occur, residents who are left stranded in their houses have to rely on rafts and string to get around. Kampung residents will place small elevated footpaths between their houses in order to stay connected. Rather than focus on specific flood-adaptive solutions for single dwellings, a community-wide solution was desired to ensure residents are not isolated from one another. The physical barrier of the river and neglect of the state has created tension and feelings of hopelessness in the kampungs. A collective voice and stronger connection between kampungs is needed in order to mobilize and empower the community towards collective action.

Informal settlements are unique in their relationship to public space. They rely heavily on wasted space and the space in-between as it provides them the physical space to develop informal networks and facilities that support their social relationships.² Currently when floods occur that public space is removed. It must be replaced to ensure those social and economic relationships are not destroyed. Because there is limited space available in informal settlements, creative solutions must be explored to create new space.

Strategi Pertama: mengusabakan kolektivitas suara dan konektivitas

Strategi awal menekankan pada pentingnya ruang publik untuk pemukiman-pemukiman ilegal. Selain itu, juga mempersiapkan masyarakat untuk skenario terburuk saat berhadapan dengan banjir. Arsitektur yang mengusung tema adaptasi terhadap banjir lainnya hanya berfokus pada tempat tinggal keluarga secara individu dan tidak menyinggung bagaimana tanggap bencana masyarakat pada saat banjir tiba.

Pada saat banjir tiba, para penghuni yang terjebak di dalam rumah mereka harus mengandalkan rakit dan tali jika ingin berpergian. Mereka akan meninggikan rumah mereka agar masih bisa berhubung dengan tetangganya. Daripada berfokus pada solusi adaptasi terhadap banjir secara spesifik hanya pada satu tempat tinggal, lebih baik ditawarkan solusi bagi masyarakat yang lebih luas agar tidak terisolasi satu sama lain. Beban fisik sungai dan kelalaian negara telah menciptakan tegangan dan rasa putus asa di perkampungan. Kolektivitas suara dan hubungan yang lebih kuat di antara kampung-kampung lebih dibutuhkan untuk mengerahkan dan memberdayakan masyarakat menuju tindakan kolektif.

Pemukiman ilegal memang unik dalam sudut pandang ruang publik. Mereka sangat bergantung pada ruang yang tidak terpakai dan ruang-ruang “antara” karena ruang-ruang ini menyediakan bagi mereka suatu ruang fisik untuk mengembangkan jejaring dan fasilitas ilegal lainnya yang juga mendukung ikatan hubungan sosial mereka.² Saat ini, saat banjir tiba, ruang publik ini harus dipindahkan. Harus dipastikan bahwa hubungan sosial dan ekonomi di antara mereka tidak terputus. Karena terbatasnya ruang yang tersedia bagi pemukiman ilegal, solusi yang kreatif harus dieksplorasi lebih dalam untuk menciptakan suatu ruang baru.

Fig. 5.12 Existing condition of kampung

Fig. 5.13 (left) Vertical Chicken Coop

Fig. 5.14 (right, top) Red string used to guide residents through the roads during flooding

Fig. 5.15 (right, bottom) Footpaths placed during flooding for mobility

Lifting the activities off of the ground

The first design step was to relieve the residents of the harmful effects of flooding by lifting the community up above the water and providing a dry path network that enabled daily activities to continue.

Connecting

The bridge extends over houses and the Ciliwung River to connect residents to drier land, neighboring kampungs, and crucial community resources – transit hubs and commercial areas. The Pedestrian Bridges are connected by nodes of public space hovering atop of existing vehicular bridges. These Community Bridges provide the necessary space for community discourse and collective action to combat the political, socioeconomic, and environmental issues that they face.

A flexible structure

In order to access the bridge, the structure allows the community to independently build up to meet the bridge and connect to it. Local community groups and residents are responsible for the decisions of the design and structure of the upper floors of the houses that must be constructed to meet the bridge.

3: Existing Condition + Bamboo Bridge

Memindahkan segala bentuk tindakan ke ruang atas (ruang yang lebih tinggi)

Langkah awal adalah untuk menolong para penghuni dari dampak bahaya banjir dengan memindahkan masyarakat ke ruang yang lebih tinggi di atas air dan menyediakan jalanan yang kering agar kegiatan harian masih bisa berjalan normal.

Menghubungkan

Jembatan membentang di atas rumah dan kali Ciliwung untuk menghubungkan para penghuni dengan lahan yang lebih kering, kampung-kampung tetangga, dan sumber daya masyarakat yang penting – titik berkumpulnya masyarakat dan area perdagangan. Jembatan ini dihubungkan dengan persimpangan ruang publik yang berada di atas jembatan kendaraan yang sudah ada. Hal ini tentunya menyediakan lahan yang diperlukan bagi wacana masyarakat dan tindakan kolektif untuk melawan masalah-masalah politik, sosial-ekonomi, dan lingkungan hidup yang mereka hadapi.

Membangun rangka yang fleksibel

Untuk bisa mengakses ke jembatan, rangka yang dibangun nantinya memungkinkan masyarakat jika hendak membangun rumah tingkat dengan tetap terhubung pada jembatan. Kelompok masyarakat dan penghuni lokal bertanggung jawab pada keputusan rancangan dan struktur rumah bertingkat yang tetap harus terhubung dengan jembatan.

4: Existing Condition + Bamboo Bridge + Flood

Fig. 5.16 Beginning stages of development of Bamboo Bridge

Fig. 5.17 Bukit Duri Prototype of Bamboo Bridge

Second Strategy: creating ownership and giving agency to the community

One discipline that architects can borrow techniques from to successfully facilitate behaviour change is psychological and behavioural economics. Adam Ferrier, a consumer psychologist, is an expert on behavioural economics and understands the requirements to influence and motivate people.

According to both Adam Ferrier and BJ Fogg, Director of the Persuasive Tech Lab at Stanford, there are two main concepts of behaviour change: motivation and ease. Behaviour change is most likely to happen if a person is motivated and it easy for them to do so. If motivation is high but the ability is not there, or vice versa, it becomes more difficult to complete the desired task. As the motivation increases people are able to complete harder tasks.

In a lecture entitled 'The Health Solution', Fogg stresses his belief on facilitating behaviour change rather than motivating behaviour change.³ There are levels of motivation that range from high to low, and the most successful way to alter the most difficult to change behaviours is to intervene when motivation is at its highest. When our motivation is at its highest peak we are temporarily able to do hard things.

It is expected that users will be slow to connect to the Bamboo Bridge until monsoon season is upon them and motivation is high. The first season it might be that people sit atop their room during floods for immediate protection and access the bridge. If the floods are long-lasting, residents might build temporary coverings to protect them or temporary storage to secure their belongings. If funding becomes available the next step would be to build more permanent structures for the following season. It also expected that residents will build various types of protection – from added floors with shops to just covered seating spaces.

As Global Chief Strategy Officer / Partner at cummins&partners, Ferrier has had years of experience in the advertising industry and in his recent book, *The Advertising Effect: How to Change Behaviour*, he teaches of the main strategies for behaviour change, useful in any industry.⁴ Contrary to some

Strategi Kedua: menciptakan rasa memiliki dan menyiapkan agen perubahan dalam masyarakat

Salah satu disiplin ilmu yang berhasil menginspirasi teknik para arsitek untuk memfasilitasi perubahan tingkah laku adalah Psikologi dan Ekonomi Perilaku. Adam Ferrier, seorang psikolog konsumen, adalah salah satu ahli dalam Ekonomi Perilaku dan begitu memahami kebutuhan-kebutuhan untuk mempengaruhi dan memotivasi orang-orang.

Menurut Adam Ferrier dan BJ Fogg, Direktur Laboratorium Teknologi Persuasi Stanford, ada dua konsep penting tentang perubahan perilaku : motivasi dan kemudahan. Perubahan perilaku yang paling mungkin terjadi dan yang relatif mudah adalah pada saat seseorang termotivasi. Sekalipun memiliki motivasi tinggi, tetapi tidak ada kemampuan, atau juga sebaliknya, perubahan perilaku menjadi seperti yang diharapkan terasa lebih sulit. Jika motivasi seseorang meningkat, dia akan sanggup menyelesaikan tugas beratnya.

Dalam perkuliahan "Solusi Kesehatan", Fogg menegaskan bahwa dia lebih yakin untuk memfasilitasi perubahan perilaku daripada memotivasi perubahan perilaku.³ Ada tahapan-tahapan motivasi dari yang paling tinggi sampai paling rendah. Dan, apa yang paling berhasil mengubah apa yang paling sulit dalam perubahan perilaku adalah tetap berjuang, terlebih saat memiliki motivasi yang tinggi. Saat kita memiliki motivasi yang tinggi, kita akan mampu melakukan beragam hal berat.

Mungkin para pengguna akan perlahan-lahan dalam menghubungkan Jembatan Bambu sampai musim hujan ini. Hal ini bergantung pada mereka dan motivasi tinggi mereka. Pada awal musim, mungkin mereka akan memilih duduk di atap rumah mereka saja selama banjir untuk berlindung dan nantinya juga akan mengakses jembatan. Jika banjir terjadi dalam jangka waktu yang lama, para warga mungkin akan membangun atap sementara untuk melindungi mereka sendiri atau membangun tempat penyimpanan sementara untuk mengamankan barang-barang mereka. Jika proses pendanaan memungkinkan untuk melaju pada tahap selanjutnya, maka akan dibangun struktur permanen untuk musim-musim selanjutnya. Pun juga diharapkan agar para warga membangun beragam bentuk perlindungan lainnya – untuk warung-warung mereka sampai ruang duduk mereka.

Selaku Kepala Strategi Global Petugas/Rekanan pada Cummins & Partners, Adam Ferrier telah berpengalaman selama bertahun-tahun dalam industri periklanan. Dan, dalam

5: Development + Bamboo Bridge

6: Development + Bamboo Bridge + Flood

7: Future Growth

Fig. 5.18 Possible final stages of Bamboo Bridge

Fig. 5.19 Possible scenarios of housing development alongside The Bamboo Bridge

skeptics, he believes it is possible to influence others to undertake an intended behaviour.

It is impossible to know for certain which behaviours are likely to happen, but there are methods that hint to possible results. There are eight listed influences on human behaviour, but Ferrier states the first three are sufficient for adopting a behaviour: motivation, capacity, and opportunity. A person must have high motivation, have the skills or capacity to perform the behaviour, and be void of constraints that would limit the opportunity for them to do the behaviour.

With the Bamboo Bridge, the intended behaviour desired is of kampung development and a commitment to building up to create space for softscape and prepare for a possible future of more recurrent and intense floods.

The first concept of behaviour change, motivation, is based on both individual incentives and social norms. We are social in our nature and according to Psychologist Albert Bandura (1977) what others do has the most impact on human behaviour – far more than our individual incentives.⁵ When deciding if one should undertake a behaviour, many will subconsciously ask themselves how they will appear when doing this behaviour to help them decide if they will partake or not. In order for the success of the Bamboo Bridge, a couple of key players in the kampung would be required to commit to the mission. Once other community members witness the benefit, it will be easier for others to adopt the behaviour and agree to do the same.

The second concept of behaviour change, ease, has two components: ability and opportunity.⁶ Ability depends on someone's attributes to complete the behaviour, and opportunity refers to a person's environment and if it allows that behaviour to take place. The design of the Bamboo Bridge allows residents to build as little or as much as they can to connect to the bridge. It does not require them build stories above their houses, but does encourage it. It is possible some who do not have enough funds simply connect with a ladder for transportation and access to resources. The amount of ease in order to take advantage of the design was kept minimal to allow all to participate.

bukunya yang terbaru, The Advertising Effect: How to Change Behaviour, dia mengajarkan strategi-strategi penting dalam perubahan perilaku yang bermanfaat dalam perusahaan.⁴ Hal ini berlawanan dengan para skeptik, dia meyakini bahwa masih ada kemungkinan untuk mempengaruhi orang lain agar mengusahakan suatu perilaku yang diharapkan.

Sungguh tidak memungkinkan untuk mengetahui secara pasti perilaku mana yang cenderung muncul. Akan tetapi, ada metode-metode yang mengisyaratkan hasil yang memungkinkan. Ada delapan pengaruh dalam perilaku manusia, tetapi Ferrier menyatakan bahwa 3 hal yang pertama cukup untuk mengangkat suatu perilaku : motivasi, kapasitas, dan kesempatan. Seseorang harus memiliki motivasi yang tinggi, memiliki kemampuan atau kapasitas untuk menampilkan perilaku, dan berani menghadapi kendala yang akan membatasi kesempatan bagi mereka untuk memperbaiki perilaku.

Dengan Jembatan Bambu, perubahan perilaku yang diharapkan akan menunjukkan suatu pembangunan kampung, suatu komitmen untuk membangun ruang ke atas dan berjaga-jaga kala banjir besar kembali lagi.

Konsep pertama dalam perubahan perilaku, Motivasi, didasarkan pada dorongan pribadi dan norma-norma sosial. Kita adalah makhluk sosial. Menurut Albert Bandura (1977), seorang psikolog, apa yang orang lain lakukan memiliki dampak yang penting bagi perilaku manusia. Jadi, tidak sekedar dorongan pribadi semata.⁵ Saat memutuskan apakah seseorang sebaiknya mengusahakan perilaku yang baik, banyak orang secara tidak sadar akan bertanya kepada diri mereka sendiri bagaimana mereka akan menampilkan diri saat melakukan perilaku yang dimaksudkan untuk membantu mereka membuat keputusan apakah mereka tetap ikut ambil bagian atau tidak. Demi keberhasilan Jembatan Bambu, dibutuhkan pasangan pemain kunci dari kampung untuk berkomitmen atas tugas ini. Setelah warga lain melihat manfaatnya, akan lebih mudah bagi mereka untuk mengadopsi perilaku yang baik dan setuju untuk melakukan hal yang sama.

Konsep kedua dalam perubahan perilaku, Kemudahan, memiliki dua komponen : kemampuan dan kesempatan.⁶ Kemampuan tergantung pada apa yang dimiliki oleh seseorang, seperti sifat-sifat untuk memenuhi perilaku yang baik. Kesempatan sendiri merujuk pada apa yang dimiliki oleh lingkungan dan seberapa direstui suatu perubahan perilaku yang baik itu mungkin.

There are certain steps one can take to increase motivation and ease to facilitate behaviour change, which Adam Ferrier refers to as action spurs. If the user group has low motivation and ease to complete a certain task there are two action spurs that can boost motivation: ownership and skill-up.

Creating ownership was the most important concern for the design. Ownership asks the user, *what do you think?* Instead of dictating the design with no concern for the opinions of the users, ownership blurs the relationship between designer and user. Members of the community become co-designers as they give their input on what they think should and should not be done. This method gives a sense of control to the user, and the design is valued more than if there was no connection. The Endowment Effect is the theory that people place a higher value on things simply because they own them.⁷ That same theory is applied to someone co-creating something – a higher value is placed on the creation.

Residents in informal settlements place a higher value on their community because they are responsible for its creation. Many architects who design interventions for informal settlements fail to involve the community in the design and construction, and realize the end product isn't valued, used, or maintained as planned. The architects' role in contributing to informal settlements should involve the community and create ownership in the design. If the architect is to seek a certain behaviour or result from their design – for example, more structurally sound dwellings to fight against natural disasters, the

Rancangan Jembatan Bambu memberikan ruang bagi para warga untuk membangun sarana untuk menghubungkan mereka dengan jembatan ini. Upaya ini tidak menuntut mereka untuk membangun lantai-lantai atau loteng-loteng di atas rumah mereka. Akan tetapi, justru mendorong mereka untuk membangun sarana yang dimaksudkan agar mereka terhubung dengan jembatan. Dimungkinkan bagi siapa saja yang tidak memiliki dana untuk membangun penghubung dengan tangga sebagai sarana transportasi dan mengakses ke sumber-sumber penghasilan. Beragam kemudahan untuk mendapatkan manfaat dari desain jembatan ini akan tetap diupayakan minimalis agar semua warga bisa terlibat. Ada langkah-langkah pastii yang dapat dilakukan seseorang untuk meningkatkan motivasi dan kemudahan untuk memfasilitasi perubahan perilaku, yang merujuk pada dorongan dalam bertindak. Jika para pengguna memiliki motivasi yang rendah dan kesulitan untuk menyelesaikan tugas tertentu, ada dua dorongan tindakan untuk meningkatkan motivasi : Rasa Memiliki dan Ketrampilan.

Menciptakan Rasa Memiliki adalah hal yang paling penting jika menimbang soal rancangan jembatan. Rasa Memiliki membuat warga bertanya "Apa yang kamu pikirkan?". Alib-alih mendikte rancangan tanpa memperdulikan opini para warga, Rasa Memiliki malah mengaburkan hubungan antara perancang dengan warga. Para warga menjadi rekan-perancang sebagaimana mereka memberikan masukan tentang apa yang mereka pikirkan menyangkut apa yang seharusnya dan apa yang tidak seharusnya dilakukan. Langkah ini memberikan rasa Pengendalian Diri kepada para warga. Rancangan pun jadi lebih bermakna. Dampak Sumbangsih macam ini adalah teori yang mengatakan bahwa orang menempatkan nilai lebih pada hal-hal yang sederhana karena mereka memiliki Rasa

Participatory Design Process

Traditional Design Process

Incremental Housing Strategy by architects Filipe Balestra and Sara Göransson is a successful project that included community participation in all stages of design. The project is a strategy to incrementally develop informal settlements into permanent urban districts. The design of the dwelling allows for gradual improvements when funding is available as an alternative to demolition and rebuilding. This project is an example of on-site development of informal settlements that help to give permanence and recognition to the community. Engaging the community in the process of the design gave ownership to the community and encouraged motivation towards neighborhood development. The architects' role in this project was a collaboration with the community and prompted the Indian government to initiate a grant program of 4500 euro / family for those living in an old temporary structure not suitable for living. The role of the architect is not necessarily a designer in this case but more appropriate as an intermediary between community and government, creating awareness and attention to the needs of the informal.

encouragement of recycling or proper waste disposal, or rainwater harvesting – the community must be involved in order for these behaviours to take place.

Participation in the planning and construction phases of the Bamboo Bridge gives the community ownership of the project while at the same time improves their skills that can be used for future construction of their individual dwellings. The design is supportive of this co-creation and gives agency to the community to move towards on-site kampung development.

Figs. 5.20 Incremental Housing Strategy empowering residents in Pune, India

Memiliki.⁷ Teori yang sama juga bisa diaplikasikan terhadap orang yang menjadi rekanan perancang suatu hal – sebuah nilai lebih yang disematkan pada proses kreasi. Para warga di pemukiman ilegal memberikan nilai lebih terhadap komunitas mereka karena mereka turut bertanggung jawab pada proses pengerjaannya. Banyak arsitek yang merancang turut berperan dalam pembangunan pemukiman ilegal gagal melibatkan masyarakat dalam rancangan dan konstruksi. Mereka menyadari pada akhirnya bahwa hasilnya tidak bernilai, tidak bermanfaat, dan tidak bisa dirawat seperti perencanaannya. Para arsitek dalam kontribusinya terhadap pemukiman ilegal hendaknya melibatkan masyarakat dan menciptakan Rasa Memiliki terhadap rancangannya. Jika seorang arsitek mencari perilaku tertentu atau hasil dari rancangan mereka, misalnya rumah yang dibangun lebih kokoh saat ada bencana alam, dorongan untuk mendaur ulang limbah, atau penampungan air hujan, masyarakat harus dilibatkan agar maksud dari perubahan perilaku yang diharapkan bisa diwujudkan.

Partisipasi dalam fase perencanaan dan konstruksi Jembatan Bambo memberikan masyarakat Rasa Memiliki terhadap proyek ini. Sementara itu, di waktu yang sama, mereka juga mengembangkan kemampuan mereka yang nantinya dapat digunakan untuk rancangan konstruksi selanjutnya, khususnya untuk membangun tempat tinggal mereka. Rancangan ini mendukung masyarakat untuk menjadi rekanan dalam pembangunan, sekaligus menyiapkan agen-agen perubahan kepada masyarakat untuk mau maju bersama mengembangkan kampung.

The design of the Bamboo Bridge is broken up into various components that can be applied differently depending on the kampung's need and the space available. During the planning stage residents can decide as a community where the bridge will go, where it will terminate, and what other buildings it will connect to. The ability for the community to decide how the parts come together gives them control and ownership of the design; they become co-designers. By simply asking their opinion rather than dictating the design, they become invested in it and find it difficult to let go. Through this process a higher value is placed on the Bamboo Bridge and the likelihood of the residents building-up to meet and use the bridge is increased.

Rancangan atau desain dari Jembatan Bambu dibagi-bagi dalam beragam komponen yang dapat diaplikasikan secara berbeda tergantung pada kebutuhan kampung dan ruang yang tersedia. Selama tahap perencanaan, para warga sebagai suatu masyarakat dapat memutuskan dimana jembatan hendak dibangun, dimana ujung jembatan, dan bangunan apa yang bisa berhubungan dengan jembatan ini. Kemampuan masyarakat untuk memutuskan bagaimana bahan material dapat didatangkan dan diadakan memberikan mereka daya kontrol dan rasa memiliki terhadap rancangan. Mereka menjadi rekanan-perancang. Dengan mengajukan pertanyaan sederhana tentang rancangan daripada mendikte rancangan, mereka turut terjun dalam proyek pembangunan ini. Mereka pun menjadi terikat dan susah untuk tidak menghiraukannya. Melalui proses ini, Jembatan Bambu memiliki nilai lebihnya sendiri dan jumlah para warga yang ingin membangun ruang ke atas untuk terhubung dengan jembatan dan menggunakan jembatan ini pun bertambah.

Fig. 5.21 Section of Bamboo Bridge over Bukit Duri heading towards Jatinegara Market

Fig. 5.22 Pedestrian Bridge Components.

The proposed Bamboo Bridge prototype at Bukit Duri and Kampung Pulo display how these components could potentially come together for the community.

Fig 5.23 (top) Key Plan

There are levels of ownership that can be utilized by the architect, and the greater the involvement, the greater the value of the end product. The residents can be involved through survey and focus groups during the design stage to have input in the design, a method which is becoming more prevalent in the public interest design sector. The first level of involvement is the ability for the community to decide how the design components come together. The second, is that the community which is responsible for construction, which instills more value and therefore the more motivated they will be to change their behaviour to align with the goals of the design.

Often the architect is a visitor, and once they are gone after construction the community is left to occupy and maintain the structure. It is proposed that residents, in collaboration with local community groups, are responsible for construction of the Bamboo Bridge. It was important that the design be kept simple and easy to understand. Knowledge of its construction and structure must be left with the residents. Ownership ensures a power shift from the architect to the community.

Ada beberapa tahapan dari Rasa Memiliki yang dapat diberdayakan oleh sang arsitek, dan semakin besar keterlibatan, semakin besar pula nilai dari jembatan ini. Para warga dapat dilibatkan melalui jejak pendapat dan diskusi kelompok pada tahap perencanaan untuk memberikan masukan. Metode ini akan menjadi lebih populer dalam sektor rancangan kepentingan umum. Tahap pertama dalam keterlibatan mereka adalah kemampuan masyarakat untuk memutuskan bagaimana komponen-komponen rancangan bisa didatangkan. Kedua, masyarakat yang bertanggung jawab juga dalam proses konstruksi, yang menanamkan nilai lebih.

Oleh karena itu, semakin mereka termotivasi, semakin mereka mengubah perilaku mereka sesuai tujuan dari rancangan jembatan. Sering kali, arsitek hanya sekedar menjadi pengungjung saja. Setelah sang arsitek pergi, konstruksi yang dibangun pun ditinggalkan oleh warga dan mereka enggan merawatnya. Karena sudah direncanakan, para warga bertanggung jawab atas konstruksi Jembatan Bambu. Dan, ini adalah hal yang penting bahwa rancangan disajikan dengan mudah dan sederhana agar bisa dipahami oleh banyak orang. Pengetahuan akan konstruksi dan struktur harus diberikan kepada para warga. Rasa Memiliki meyakinkan suatu daya yang berpindah dari sang arsitek kepada

Fig. 5.24 Crossing Ciliwung River
Fig. 5.25 Connection to Jatinegara Market

Fig. 5.26 (top) Key Plan
 Fig. 5.27 Pedestrian Bridge crossing Jalan Jatinegara Barat towards Jatinegara Market

Skill Up, according to Adam Ferrier, is the second action spur that addresses ease to complete a task.⁸ Skill up, which I refer to as education, teaches the user how to do the desired behaviour. This technique is important when the user does not have the sufficient resources or skills.

One of the biggest barriers to adopting a behaviour is simply that there is a lack of knowledge. It is less likely that someone will participate in an activity if they do not know the correct terms and techniques associated with the topic. The motivation might be there to complete a task but if the user does not have the skills to do so, that motivation is wasted.

Part of what an architect can contribute to informal communities is education and resources. This information can be taught through classes or with the community during construction of the Bamboo Bridge.

It is proposed that material and construction costs for the Bamboo Bridge be funded by the State. Rather than allocating funds towards a new development and providing compensation fees from eviction, it is proposed the money be put towards on-site development.

Peningkatan Ketrampilan, menurut Adam Ferrier, adalah dorongan tindakan kedua untuk mengatasi Kemudahan dalam menyelesaikan tugas.⁸ Peningkatan Kemampuan, dalam hal ini bisa dimengerti sebagai Pendidikan, mengajarkan kepada para warga bagaimana untuk mewujudkan perilaku yang diharapkan. Teknik ini sungguh penting saat para warga tidak memiliki sumber daya yang atau kemampuan yang memenuhi standar.

Salah satu beban terberat untuk mewujudkan perubahan perilaku adalah soal Miskin Pengetahuan. Hal ini seperti seseorang yang ingin berpartisipasi dalam suatu kegiatan akan tetapi dia tidak tahu menahu soal kosakata yang digunakan dan teknik yang dilakukan. Motivasi bisa jadi mendorong seseorang untuk menyelesaikan misinya. Akan tetapi, jika para warga tidak memiliki kemampuan yang cukup untuk melakukannya, motivasi akan terbuang sia-sia.

Bagian dari apa yang seorang arsitek sumbangkan bagi masyarakat pemukiman ilegal adalah Pendidikan dan Sumber Daya. Informasi yang diajarkan dapat diberikan melalui kelas-kelas atau kepada masyarakat secara langsung saat proses pembangunan Jembatan Bambu. Rencananya, segala bahan material dan ongkos pembangunan Jembatan Bambu ini didanai oleh pemerintah.

Daripada mengalokasikan dana untuk pembangunan baru atau menyediakan uang kompensasi penggusuran, lebih baik jika yang ini digunakan untuk pembangunan seperti yang dimaksudkan di sini.

Fig. 5.28 (top, opposite) Key Plan
 Fig. 5.29 Pedestrian Bridge crossing Jalan Jatinegara Barat towards Jatinegara Market

Fig. 5.30 Possible termination of Pedestrian Bridge with column component.

Fig. 5.31 Possible termination of Pedestrian Bridge with stair component.

Fig. 5.32 (top, opposite) Key Plan
Fig. 5.33 Pedestrian Bridge crossing Ciliwung River towards Kampung Pulo.

Indonesia is one of the countries with the largest bamboo resources in the world. In 1980 two of the largest cities of Indonesia – Jakarta and Surabaya – had 41.5% of dwellings of the low income groups still constructed from bamboo.⁹ The community is familiar with this material but there is still room for improvement with construction techniques. Residents would be employed during the construction of the Community Bridge to learn better methods of bamboo construction. A bamboo structure has very low weight and the foundation can be minimized, which limits the amount of interference at the ground.

Indonesia adalah salah satu negara penghasil bambu terbesar di dunia. Pada 1980, dua dari kota besar di Indonesia, yaitu Jakarta dan Surabaya, memiliki 41,5% rumah penduduk dengan penghasilan rendah yang terbuat dari bambu.⁹ Masyarakat tidak asing dengan bahan material ini. Akan tetapi, masih terbuka ruang untuk pengembangan dengan teknik-teknik konstruksi lainnya. Para warga akan diajak untuk bekerja selama proses pembangunan jembatan pasar untuk belajar metode-metode penggunaan bambu dengan lebih baik. Struktur bambu memiliki berat yang cukup ringan dan pondasi yang masih dapat diminimalisir, yang mengurangi kerusakan tanah sebisa mungkin.

Figs. 5.34 (above and opposite) Davao Bridge designed by Andrea Fitrianto. The bridge was pre-assembled completely on a lawn besides the road and the operation only required a two hour road block. At a weight of 8 tons, a mobile crane simply lifted it onto the bridgeheads. The entire project was finished in one month.

The community center in Yogyakarta, Indonesia, is an example of unique architectural solutions in areas of intense density that lack physical space. The community faced the constraints of space and financial support but needed a larger meeting space to host meetings and gather residents. The community center sits atop a drainage facing the river and was built by volunteers from the community. The bamboo community center was initiated by a group of community women apart of Kalijawi collective, a city-wide network consists of 31 riverside communities in Yogyakarta. Built out of local black bamboo, construction took less than two months. The steel bolt and mortar joinery system used was new to the volunteers but instilled confidence in the participants and taught them new skills.

Fig. 5.35 (top) A community center made out of bamboo built above drainage situated in Kampung Pakuncen, Yogyakarta, Indonesia.

The roof shown to the left was designed by architect Simón Vélez, pioneer of the modern use of bamboo in architecture. The roof design was used as a case study for the roof of the Community Bridge. Vélez, in collaboration with friend Marcelo Villegas and colleagues, developed the fish-mouth joint, which creates strong joints between bamboo canes by injecting them with cement. At the points where joints are to be made, liquid cement is injected and then steel plates and screens are inserted. Vélez also employs the technique of plastic drinking bottles as moulds for concrete connections. The bottles are inserted into the concrete-filled ends of the bamboo. Steel connectors are then inserted into the concrete-filled bottle. Simón Vélez has been creating beautiful structures with a material often associated with the poor. His work has positively contributed to the changing perception of bamboo as a construction material.

Fig. 5.36 (top) Bamboo Roof by Simon Valez
Fig. 5.37 (bottom) Community Bridge components

The issue of waste disposal is a controversial topic in Jakarta. Many blame the kampungs for much of the trash in the Ciliwung River. While it is difficult to attribute the trash to any one single population, the residents do in fact use the Ciliwung River as a waste disposal site. Part of the reason is the lack of space to sort trash and locate recyclables. The exact nature and purpose of the Community Bridge was left flexible but offers the potential to contribute to better waste management. The community spaces above the existing vehicle bridges offer space for trash to be collected, sorted, sold or transferred to larger waste disposal sites. The trash can be transported via the Bamboo Bridge from collection points throughout the bridge. The Bamboo Bridge changes the environment for the residents and could possibly contribute to better waste management and encourage more sustainable methods.

Masalah pembuangan sampah yang sembarangan adalah topik kontroversial di Jakarta. Banyak orang menyalahkan warga kampung bantaran kali yang dianggap paling banyak membuang sampah ke kali Ciliwung. Meski susah untuk mencari konektivitas antara sampah dengan suatu populasi manusia, para warga memang pada kenyataannya menjadikan kali Ciliwung sebagai tempat pembuangan sampah. Soal kekurangan tempat untuk memilah sampah dan menemukan tempat daur ulang adalah alasan yang diungkapkan. Meskipun sifat dan tujuan Jembatan Masyarakat dianggap tidak fleksibel, tapi menawarkan kontribusi bagi perbaikan pengaturan sampah dan limbah. Ruang-ruang warga di atas jembatan kendaraan yang sudah ada membuka kemungkinan sampah-sampah masih bisa dikumpulkan, disortir, dijual, dan dibuang ke tempat pembuangan sampah yang lebih besar. Sampah dapat dipindahkan dari tempat-tempat pengumpulan sampah melalui Jembatan Bambu. Jembatan Bambu mengubah lingkungan hidup bagi para warga dan menyumbangkan kontribusi bagi pengaturan sampah dan limbah, dan tentunya, semakin menggiatkan langkah-langkah selanjutnya.

Fig. 5.38 (top) Transition to Pedestrian Bridge.

Fig. 5.39 (bottom) Underside of Community Bridge sitting atop existing vehicular bridge.

Fig. 5.40 Community Bridge in use as market above existing vehicular bridge.

Figs. 5.41 (top) Perspectives of community bridge above existing vehicular bridge.

Fig. 5.42 (bottom) Longitudinal section of community bridge with vertical access at each end.

Fig. 5.43 Floor plan of Bamboo Bridge Prototype at Bukit Duri

Fig. 5.44 (top) Key Plan
Fig. 5.45 The Transition in Elevation with Community Bridge in Behind

Fig. 5.46 Section of Community Bridge Above Existing Vehicular Bridge

Fig. 5.47 (top, right) Key Plan

Fig. 5.48 The Transition Between Community Bridge and Pedestrian Bridge

Fig. 5.49 Looking towards Bukit Duri with Bamboo Bridge Proposal

A Future Above Water

The first stages of the Bamboo Bridge accommodate the community's short term needs. Currently, residents move all belongings to the highest rooms in their houses during floods. The Bamboo Bridge encourages residents to build-up incrementally to connect with the new, elevated path. It is an alternative location for shop-houses and provides salvation for both personal and commercial life during annual floods. The Bamboo Bridge extends throughout the kampungs over houses, through the floodplain, and across the Ciliwung River. It connects residents to higher elevations for drier land, existing markets, and transit stations, and connects neighbouring kampungs across the river. As the community builds up, the ground floors can be opened up to create more areas for softscape that will contribute to flood mitigation.

With environmental conditions worsening, Jakarta's floods are only intensifying. Coupled with potential higher frequency, there could be in addition major floods every year, with constant flooding for extended periods. Despite the government's best attempts to be prepared, the flooding has continually surpassed their declared expectations, with 50- and 100-year floods occurring several times in the past two decades. As such, this thesis aims to plan for a worst-case scenario of a 100-year flood occurring every year. As the flooding increases, Jakarta faces the potential of pockets of low-lying urban areas permanently flooded. The city must prepare for possible life above water.

Jembatan bambu mampu memberi akomodasi terhadap kebutuhan jangka pendek komunitas warga. Selama banjir, warga memindahkan semua barang mereka ke ruangan paling tinggi di rumahnya. Jembatan bambu juga membantu warga untuk membuat jalur mobilitas di atas air, di mana ini dapat menjadi lokasi alternatif untuk memindahkan warung yang ada di rumah mereka. Demikianlah jembatan bambu ini mampu menyelamatkan warga untuk kehidupan personal dan komersial mereka selama banjir tahunan berlangsung. Jembatan bambu ini membentang di seluruh kampung dan menghubungkan setiap rumah. Ia terbentang di atas banjir dan Kali Ciliwung. Jembatan ini juga menghubungkan warga ke lokasi yang lebih tinggi, ke tempat yang lebih kering, ke warung-warung yang ada di atas rumah, ke tempat persinggahan, dan jembatan ini juga menjadi penghubung antar kampung yang berseberangan dengan sungai. Sembari masyarakat membangun ruang di atas banjir, lantai rumah paling bawah dapat digunakan sebagai area mitigasi banjir.

Dengan kondisi lingkungan yang memburuk, banjir Jakarta juga semakin intensif. Bersamaan dengan potensi frekuensi yang lebih tinggi, dikhawatirkan ada banjir besar setiap tahunnya dengan frekuensi banjir yang konstan untuk waktu yang lebih panjang. Meskipun pemerintah telah melakukan upaya terbaiknya, banjir tetap terjadi beberapa kali dalam dua dekade terakhir ini. Oleh karena itu, thesis ini bertujuan untuk melakukan perencanaan atas segala kemungkinan terburuk yang terjadi sehubungan dengan banjir yang terjadi setiap tahunnya. Sementara banjir meningkat, Jakarta menghadapi potensi daerah-daerah dataran rendah yang rawan banjir permanen. Dengan demikian, Jakarta harus mempersiapkan segala kemungkinan kehidupan di atas air.

Fig. 5.50 The Bamboo Bridge Extended Along the 19km of the Ciliwung River.

The Bamboo Bridge provides kampungs vulnerable to permanent flooding a framework that encourages the process of incrementally building up to form a community living above a liquid landscape. Lifting the community off the ground creates a permeable surface for flood waters to percolate back into the ground. When and if the low-lying areas of Jakarta become permanently flooded the community will be able to continue life above a liquid landscape.

The Bamboo Bridge is proposed as an integral community framework, to encourage kampung development. Working independently with local non-profit organizations, the bridge has the ability to connect with new housing projects. The Bamboo Bridge acts as the starting point for community revitalization, and is driven by a revitalization of economic activities. At its heart, it is about interaction, human relations, and forming spaces to catalyze social activity. These activities create living memories and create a future of positive growth along the Ciliwung River.

Jembatan Bambu ini memberikan, bagi kampung-kampung yang rentan terhadap bencana banjir yang rutin, suatu struktur yang mendorong proses pembangunan tambahan ruang ke atas secara bertahap untuk membentuk sebuah kehidupan masyarakat di atas daerah perairan. Penyediaan ruang atas bagi perumahan masyarakat ini tentunya membantu tersedianya permukaan yang dapat ditembus oleh air sebagai resapan pada saat banjir. Saat dan jika daerah-daerah permukaan rendah di Jakarta ini terkena banjir, masyarakat akan tetap bisa tinggal di atas daerah perairan ini.

Jembatan Penyebrangan ini digagas sebagai suatu kerangka masyarakat yang integral, untuk menggalakkan pengembangan kampung. Melalui kerja bersama dengan LSM-LSM lokal secara independen, seperti dengan Cilivung Merdeka, jembatan ini akan mampu menjai penghubung bagi proyek perumahan yang baru. Jembatan Penyebrangan ini adalah langkah awal bagi revitalisasi masyarakat, dan didorong oleh revitalisasi kegiatan-kegiatan ekonomis. Pada intinya, upaya ini adalah sebuah interaksi, suatu hubungan antar-manusia, dan pembangunan ruang sebagai katalisator tindakan sosial. Kegiatan-kegiatan ini menciptakan kenangan-kenangan hidup serta sebuah masa depan pembangunan yang cerah sepanjang bantaran kali Cilivung.

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Appendix A - The Evolution of the Bamboo Bridge

Flow and Overflow

This exploration was inspired by Hebert Dreiseitl, sculptor, artist, landscape architect and interdisciplinary urban planner. Dreiseitl founded Atelier Dreiseitl, a “design practice specialized in integrating urban hydrology, environmental engineering, landscape architecture and art within an urban context” (Atelier Dreiseitl, 2004). For this exploration, the intention was to understand how water reacts to human intervention.

A sandbox was created, tilted, and water poured from one end to the other. Objects were used to try alter the waters natural course, but it impossible to control the flow and predict where it would go. Early design proposals and thoughts included attempts to alter the flow of the Ciliwung River for human needs. It was quickly realized after experiments and research that any change the river would lead to further disruptions upstream and downstream.

How does water react and respond?
What would happen if the water encountered resistance?
What would happen if a new pathway was formed?

Bridging the River

After realizing it was not possible to interfere with the river, it was necessary to find solutions that allowed the community to stay in their kampungs with the river and flooding taking its natural course. A number of different ideas were considered to determine how the community might be able to remain in the floodplain. During this stage the intended program of the thesis was to provide housing for the kampungs. The idea of bridging across the river was chosen to be explored further as the Inhabitable Bridge. Housing would occupy the proposed bridges, similar to the Ponte Vecchio in Florence, Italy.

bridges

stilts

cantilevers

islands

**would have adverse effects up and downstream*

incisions

**would have adverse effects up and downstream*

The Inhabitable Bridge

A family of bridges that extends along the Ciliwung River, as well as across the floodplain, to connect kampungs, create access and mobility, and protect residents from the limitations of urban flooding.

“But this is still a designed place. We are not making a mountain stream; we are not trying to recreate a natural structure. We are translating nature into a design language.”

Hubert Dreiseitl
Design in the Terrain of Water

Making Connections Across the Floodplain

The Inhabitable Bridge did inform the physical shape this thesis would take but it was quickly decided that designing housing was not appropriate. The Inhabitable Bridge would not provide all residents safe housing and would only be for the elite few. I decided to place my focus on community interventions that would address the greater kampung population, rather than focus on housing for a small population. What was evident, from visiting the kampung and through research, that physical and social connections did need to be made throughout the floodplain. The idea of bridges was continued, but not

limited to over rivers, but extended far into kampungs located in the floodplain. A series of bridges of various size and purpose was chosen to pursue. The bridges would not be proposed for habitation but focus on the socioeconomic and political needs of the communities. I am aware though that it would be impossible and naive to imagine I can predict or control what the exact use of a built structure would be. Moving forward, spaces would be flexible and attempt to accommodate as many uses as possible, and accept that they might in fact be used for dwelling.

“For us the territory of architecture should concern itself with the whole of the built environment redefining the relationships between landscape, architecture, infrastructure, and art.”

*Marion Weiss and
Michael Manfredi*

Determining a Form

The next step involved taking a closer look at the site of Bukit Duri and Kampung Pulo and developing a form for the bridges. It was decided early on that the bridge at the existing vehicular bridges would extend vertically to house programmed spaces. This specific idea explored was based on a wood shaving collected in Jakarta in 2014.

Bukit Duri is well known for its furniture refurbishing industry within their informal economy. Furniture is created, refinished and sold along Jalan Bukit Duri Utara and continue across bridge housed in makeshift shelters. When flood warnings occur shop owners tie the furniture to the bridge to secure it when flood waters pass through. Contact with the flood water damages the furniture and business is put on hold until flood waters recede. Loss of product accumulates each year as the floodwaters come and go.

During the process of refinishing and creating pieces of furniture, large piles of wood shavings pile up along the side of the street. The wood shavings represent the resourcefulness and independence of the informal economy; a mark of the people. The wood shaving was used to inspire a form that the bamboo bridge would take.

Determining a Form

Thesis
The Programmed Bridge

a Floodplain community

across, above, and
through Kampung

to community initiatives

The Intent of the Pedestrian Bridge

The purpose of the Pedestrian Bridge was always to protect residents during flooding, but it was crucial to allow them to continue their livelihoods. Bamboo scaffolding was the inspiration to develop a framing system that would surround the houses and create the pathways between and along streets at second and third stories. The first idea was only pathways to help with mobility. This was a system that might rely heavily on the existing structures for support and might not be that safe.

The second idea was the final idea chosen: to place the pathway above houses and allow them to access from rooftops (see opposite page). What was unclear was how the bridge would ‘open’ to allow residents to connect. That became a major design challenge.

Final Concept of Pedestrian Bridge

existing condition

- structure for pedestrian bridge
- bamboo panels for shade and safety, but able to be dismantled or deconstructed to allow adjacent houses to access the bridge for a storefront

- third floor bamboo 'scaffolding' structure constructed by residents to connect to bridge for sale of items and safety during flooding
- bridge becomes the street during floods

plan at bridge level

- sale space during floods
- evacuation space
- storage during floods

Recreation of the Vehicular Bridge

Parallel to the design of the Pedestrian Bridge, a proposal was developed for the Community Bridge. Early designs involved full replacement of the existing vehicular bridge for a bamboo structure of a new vehicular bridge with community space above. In an attempt to showcase the possibilities of bamboo, a complicated design was proposed. The idea was to have a strong base with lighter, flowing roof. During the design, it was realized that the structure needed to be simpler if it was to be constructed by the residents. The flowing structure would not be easy to recreate for different sized vehicular bridges. It was decided the next stage must consider component-based structural parts that could be easily understood and constructed.

The other major design decision that arose during this stage was the problem of the new bamboo vehicular bridge. When flood waters did occur, the base of the structure would be exposed to water. The decision to keep the existing concrete vehicular bridge and build above was chosen to minimize costs, reduce complexity in the design, and limit the contact between the bamboo structure and flood waters. A simpler, more comprehensible structure can be seen in the final design, one that would not have been possible without first determining what wouldn't work.

river

community made partition walls for flexible use

solid bamboo wall for privacy and protection from traffic pollution

openings to allow for ventilation

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