

Research Article

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Transitional Domesticity: Collectivisation and Fractionalisation in Peer-to-Peer Digital Citizenry Learning from Socio-Innovations of Chinese-Asian Historical Contexts

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Abstract: Collectivisation, as a socio-innovation, is an incremental part of history that has much to teach on questions of asset commoning. Such notions can provide renewed perspectives in understanding today's peer-to-peer (p2p) economy and its influence on housing ownership models, which are constituting new forms of domesticity. This study understands domesticity as processes of collectivisation and de-collectivisation, and questions its conceptualisation as universal and invariant. It compares the transitioning moments by which a new governing body is instituted within recent-historical Chinese-Asian contexts, including mainland China, Taiwan, Hong Kong, and Singapore. These moments were often postcolonial, full of changes, uncertainty, crisis, and anticipation; these contexts were unprecedented in scale, density, and cultural collision; in common, these were junctures of socio-innovation in land distribution that fashioned different forms of citizenry. By looking at these instances of innovation with situated thinking and against their historical-cultural backgrounds, the findings in this study reflect on the design of socio-technological systems, the potential consequences of our design interventions, and what "innovation" may mean given the complexity of transitional challenges. Putting together cosmopolitan and vernacular histories, the historiography presented is a collage of card game narratives, archived posters, news headlines, statistical figures, and literature. This journey through events of socio-innovation from the twentieth century till recent decades reveals how the history of governance has always been a question of cultivating collective actions, one way or another, and today's p2p economy is simultaneously collectivising and fractionalising such socio-economic exchanges in digital citizenry.

Keywords: transitional challenges, collectivisation, peer-to-peer, digital citizenry, social innovations

1 Introduction

The term "domesticity" translates to Chinese as 家庭性 – the characteristics of home 家 and courtyard 庭 – a combination of the intangible and the tangible constituents, tying place with space. Together, the two Chinese characters give rise to the meaning of family 家庭. Its variant "domestic" may be translated as 家國 home and country, which in its cultural connotation are not separate or dichotomous entities: in the ancient text "The Ways of the Great Learning · Book of Rites" (ca. 700–400 BCE) 《禮記·大學之道》, it is stated that one must first cultivate the moral self 修身, before one is able to bring order to the family 治家, and the governing of people 齊國, then peace will be upon the land 平天下. But what is the peace of land 平天下? As one of the oldest

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agricultural and multi-ethnic civilisations, ideas of home and frontier are deeply entangled – domesticity is relational to the frontier and is grounded in the settling moments 平 of land distribution 天下. It is with these thoughts in mind that this study takes an interest in the transitioning moments which brought about the settled. These contexts are/were directly or indirectly postcolonial; their understanding of collectivity and experiences in collectivisation may be learnt to understand alternatives in domesticity beyond western epistemes and inspire new ways in looking at today's digitised landscapes and peer-to-peer (p2p) practices.

Collectivisation means that “peasants would work together on larger, supposedly more productive farms,” pursued intensively during the rise of the Soviet Union.¹ Then in twentieth-century China, the idea became prominent over periods of Land Reform that spanned across its nationalist and communist histories (1920s–1970s); Chinese thinkers and revolutionaries internalised the ideas of collectivisation, citizenry, and nation-state to liberate itself from the feudal system and the power of its colonisers.² Through Land Reform movements, land was being redistributed amongst peasants as common assets, constituting the small commons 小共 and big commons 大共, cascading down scales of higher level government, village government, local households, and their people.^{3,4,5} Land reforms happened simultaneously in mainland China and Taiwan – the latter can be seen as a continuation of the Nationalist–Communist war, where the Nationalist government tried to establish control and settlement over land distribution in Taiwan.⁶ Such reforms cannot be simply defined as success or failure, provoking reflections on how much can be collectivised on what terms and at what scale – a question fundamental to both transitional and settling moments throughout histories of domesticity.

The transitional moments pivoted convoluting periods of collectivisation, decollectivisation, and re-collectivisation, especially in face of large-scale challenges, crisis, and class struggles and finally found itself settling into a new form of urban–rural relation through rural marketisation: going from land reform to economic reform.^{7,8} This is also the moment when rural struggles are deeply entangled with urban problems through three fundamental questions – where will goods be sold, where will money come from, and where will the labourers go – a free precursor to the Three Rural Issues 三农问题: agriculture, villages, and peasants.⁹ The domestic demand and exchanges between rural and urban areas formed part of the basis to China's phenomenal economic developments in the past 70 years and its leapfrogging into digital citizenry.

Today, collectivisation can be redefined in its broadest sense as the practises of individuals working together on larger, supposedly more productive systems – the collectivisation of individual efforts. Rising trends in digital and p2p economies, like blockchains, revealed how the boundary between collectivisation and fractionalisation is becoming progressively ambiguous. Here, the frontier of the debate is not on the technology, but a renewed discussion on the fundamentals of asset commoning and ownership–authorship dependency.^{10,11} The definition of such dependency characterises contemporary domesticity, driven by stakeholder-driven cooperatives and co-housing practices.

Housing, as a derivative of land distribution, is facing unprecedented challenges against an exponentially growing population: especially in high-density contexts like Hong Kong, which are geographically small-scale, but proportionally large-scale in its domestic projects, and the varying needs of communities are every so

¹ National Archives UK, “How Did Stalin Industrialise the USSR.”

² Kung and Putterman, “China's Collectivisation Puzzle.”

³ Kipnis, “Cadres and Kin.”

⁴ Kipnis, “Constructing Commonality.”

⁵ Kipnis, *From Village to City*.

⁶ Guo, “土地改革 = Land Reform.”

⁷ Fang, “Family Dynamics after Migration in Post-Mao Rural China.”

⁸ Steinmüller, “Communities of Complicity.”

⁹ Xi, “中国农村市场化研究: A Tentative Study on China's Rural Marketization.”

¹⁰ Lam, “Towards Chinese Blended Social Finance Opportunities for Social Impact Bonds, Impact Investment and Public-Private-Partnership for Ecotourism Development Cases in China.”

¹¹ Lam, “Linked Hybrid in Beijing.”

often overlooked.¹² In reaction to the subsequent global financial crises for the past few decades, there have been constant pivots in housing policy between collectivisation and privatisation, often creating and intensifying conflicting values between the small commons and the big commons. Amidst this, the rising p2p economy promises to compensate the situation with its digital tools, collectivising the communities that generate economic value into supposedly larger, more productive systems in a trustless manner. What lessons can be learnt from history to reflect on today's digital economy and digital citizenry, which are challenging the existence and definition of "domesticity"?

This article first introduces notions of rites and virtues in ancient Chinese thinking. Within Chinese tradition, these are fundamental ideas in the constitution of "collectivity" through everyday practices. Second, it reflects on the history of collectivisation and de-collectivisation, inspired by the Chinese card game Doudizhu (Defeat Land Lord). Third, it tries to analyse how housing is socially defined respectively in Hong Kong and Singapore through the framework of collectivisation. Fourth, it studies a case of p2p digital economy – DAO (decentralised autonomous organisation) – and rethinks how such techno-economy is blurring the boundaries between collectivisation and fractionalisation, which are easily mistaken for one another. Finally, it questions the nature, novelty, and impacts of the rising digital economy by situating it in the long history of design debate in ownership–authorship dependency, and argues that the collectivisation of individual efforts may redefine domesticity through a digital citizenry of participation.

2 Collectivisation In Modern Chinese Contexts

The culture of domesticity is often associated with the binarism of roles within a home, the prevailing value system in the nineteenth-century United States as the standard universal model of domestic values.¹³ Such values imply a normativity that was especially prevalent amongst the upper and middle classes at the time, an ideology supported by its material reality, both fundamentally unequal in today's standard. Today, domesticity is still challenged both by normative values and the material reality, but the debate has scaled to the inter-regional – the enforcing of a universal ideal by one culture to another, disguised as an inevitable process of globalisation, and the distribution of basic resources that facilitates a home. The discussion of domesticity may provide a critical framework to which the "universal" and the "basic" may be re-examined.

2.1 Universal Basic Service (UBS) as a Collective Practice

UBS is a form of social security and public services that "enable every citizen to live a larger life by ensuring access to safety, opportunity, and participation."¹⁴ The term appeared in 2017, with the first modelling report from University College London (UCL) on seven major UBS – health care, education, food, transport, information, shelter, and democracy – a welfare state model that was much welcomed by The British Labour Party. Throughout the report, financial calculations were carried out to support the argument of UBS as a means to "secure the productive capacity of our full population," exemplifying a case of contemporary collectivisation.¹⁵ On the other hand, UBS will form the basis of domestic practices, living arrangements, and their safeguarding, ultimately becoming the material benchmark that facilitates domesticity – the quality or state of being at home.¹⁶ Across cultural and natural geographies, how can the notion of UBS be contextualised beyond financial parameters?

¹² Van Ameijde, "Non-Standard Housing."

¹³ Keister and Southgate, *Inequality: A Contemporary Approach to Race, Class, and Gender*.

¹⁴ Portes et al., "Social Prosperity for the Future," 11.

¹⁵ Ibid., 9.

¹⁶ Cambridge Dictionary.

The popular Chinese proverb 食衣住行 – clothing, food, housing, and transportation – seems to be describing the basic material needs necessary to sustain the everyday life, but it may not be as tangible as it sounds. Take clothing as an example; in Confucian thinking, clothing is associated with rites, virtues, moral self, and social structures.¹⁷ Whilst rites may sound performative today, it is the performative quality that constitutes collectivity through everyday practise and synchronises moral standards from the tangible to the intangible.

The ancient gentleman must wear jade. When walking, rhythm must be mastered, the jade pendants on the left and right sides make a beautiful sound in line with the rhythm. When walking with small steps, it is like the music of “Cai Qi”, and when walking slowly, it is like the music of “Si Xia”. 《礼记·玉藻》: “古之君子必佩玉, 右征角, 左宫羽。趋以《采齐》, 行以《肆夏》。”

In ‘Yuzao · The Book of Rites’ 《礼记·玉藻》 (ca. 206 BCE – 8 AC), it is stated that a gentleman’s virtue is as one’s jade 君子比德于玉, when walking properly, the jade pendants can be heard making a sonorous sound: one should turn around in circles, and turn about in squares 周还中规, 折还中矩. The two Chinese characters – circles 规 and square 矩 – together mean rules, this implies that a gentleman should always salute to and restrain one’s code of conduct, even when doing something as basic as walking – good virtue is an everyday practise. As a book about social and personal benevolence, righteousness, and morality, it records how if a gentleman has no reason, the jade does not leave one’s side 君子无故 玉不去身, symbolic to how one must remember to strengthen personal moral characters and cultivate the self at all times. Although later, it was extended to mean an over adherence to laws and guidelines 中规中矩¹⁸ (Figure 1).

Similarly, food in Confucian thinking does not simply mean the consumption of nutritious substances, but to eat according to the natural rhythms of the cosmos.¹⁹ In Chinese medicine, all that can be consumed, even water, can be thought of as medicine. It cures when taken properly with the suitable amount at appropriate times, and poisons when overconsumed unnaturally; “natural” has the same connotation as befitting. Chinese medicine is part of Chinese thinking that embodies everyday practices, and modernised through the science of the body within a cosmological environment. For instance, in the spring season of solar terms when there is a change of climate, one must pay attention to eating light and warm to nurture the stomach and spleen, preferably with seasonal fruits and vegetables.²⁰ At the same time, traditional Chinese medicine is generally not universally prescribe-able, unlike prescribing paracetamol to all who have pain and fever. A person with a “hot” body type and a person who has a “cold” body type may receive different medicines and diet guidelines in the same case of coughing; a person living inland versus a person of coastal areas would also receive different medical treatments.²¹ In this sense, “basic” services are subject to both spatial and temporal parameters, according to each’s nature, and respecting the cycles of cosmo – suddenly, the body of knowledge becomes not so basic.

On the topic of Chinese cosmology, one is entering the territory of Taichi – the cosmological modelling of system states through notions of yin-yang 阴阳, which are not dichotomies and cannot be seen as separate entities.²² Yinyang can be understood as states that interact to form a dynamic system, in which the whole is greater than the bare sum of the parts, and there are always yin in yang and yang in yin. The Taichi diagram may be read as many things, for instance, as development cycles – yin as developed, ordered, and settled, while yang as developing, growing, and transitional.²³ Then UBS is not only subject to geographies and seasonal domains, but also the development cycles of the context, transitioning or settling, forming a complex system of distribution. In Daoist thinking, which precedes Confucian thinking and traces back to the book of I

¹⁷ Hsu, “Dressing as a Sage.”

¹⁸ Liu and Yu, “君子如玉怀瑾握瑜——张炜谈古玉收藏 = A Gentleman Like Jade Huai Jin Holding Yu - Zhang Wei Talks About Ancient Jade Collection.”

¹⁹ Chen, “Chinese Values, Health and Nursing.”

²⁰ Zhang, “立春 雨水 养生之道 = Beginning of Spring, Rainwater and the Way of Health.”

²¹ Nestler, “Traditional Chinese Medicine.”

²² Wong et al., “A Methodology for the Integration of Ancient and Modern System Theories.”

²³ Zeng, 易经的奥秘 = *The Mystery of I Ching*.



Figure 1: The Book of Rites stated that a gentleman's virtue is as one's jade, when moving forward in an upright manner, the jade pendants can be heard making a sonorous sound. Image: Xie Peng.

Ching (1000–750 BCE), land is the Yin in Yinyang and seen as the mother who provides 陰爻 坤為地、為母. Thus, land becomes the core to the problem as all is provided by the mother land, and issues of UBS become the distribution and management of such finite heterogeneous resources (Figure 2).

During the rise of the Nationalist party in early twentieth-century China, Dr. Sun Yat Sen integrated such cultural ontology with his “Three Principles of the People” 三民主義, which was foundational to a new socialist thinking during China's liberation from feudalism.²⁴ It combined Chinese thinking with western application 中學西用, and had the aim to resolve the entanglement between land and capital to harmonise land ownership 平均地權. Nationalising land ownership 土地國有 and systematising price discovery for all land 核定天下地價 were the primary objectives to enhance the socio-economic structure. The original land value may belong to its owner, the landlord, but rise in land prices should be a public asset 漲價歸公, since it is the public who would contribute to the building of infrastructures that drives the nation's developments. In his socialist spirit, Sun proclaimed in the third lecture of his “People's Livelihood” 民生主義 series that “if all can perform their respective duties, then everyone will naturally get the four basic services of clothing, food, housing, and transportation” 大家都能各盡各的義務, 大家自然可以得衣食住行的四種需要.²⁵ This implies that UBS is

²⁴ Sun, “三民主義 (The Three Principles of the People).”

²⁵ Ibid.

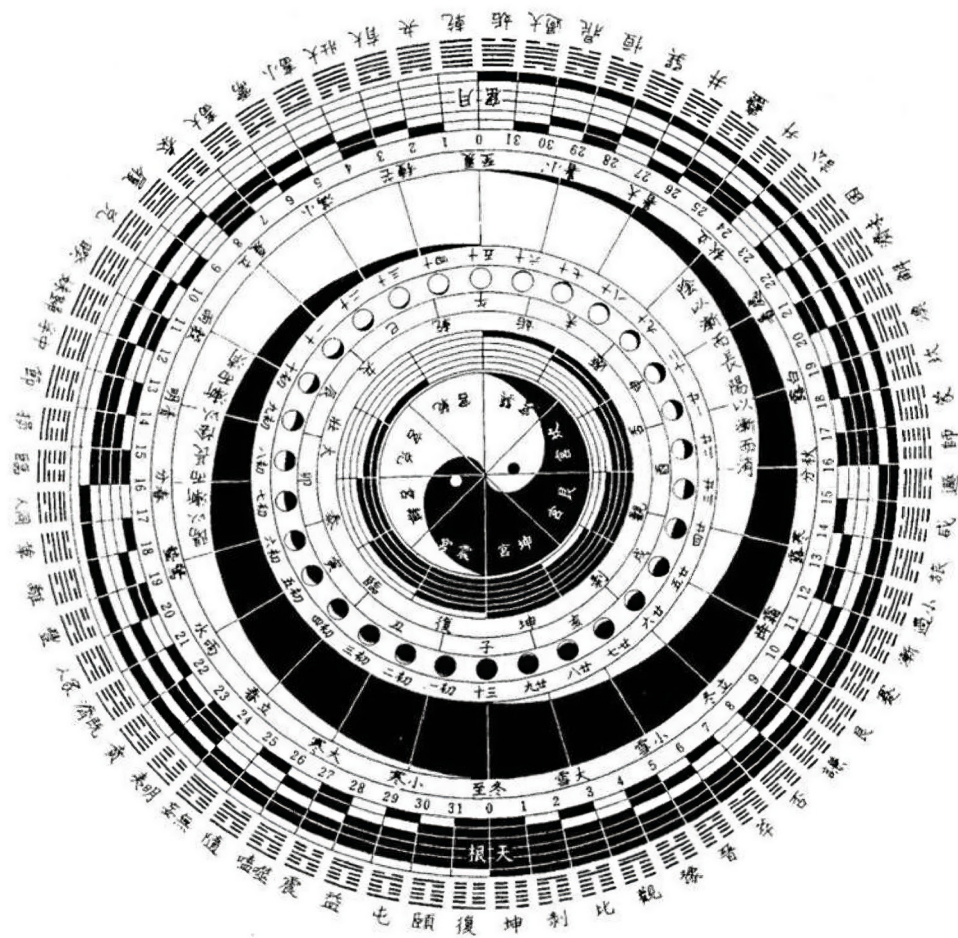


Figure 2: Yinyang is the cosmological modelling of system states; it is a calendar, an ancient time piece, a predictive system; it tells the seasons, rites, and virtues. Image: “Fuxi Sixty-Four Hexagrams” – Baidu.



Figure 3: Sun's hand-painted manuscript of people's livelihood. Image: Academia Historica.

not only a universal basic need, but also a universal responsibility. How would this communal effort and collectivisation process look like in action? This may be simulated as a thought experiment using the Chinese card game Doudizhu (Figure 3).

2.2 Doudizhu

Doudizhu, or Defeat the Landlord, is one of the most popular card games played in China. It was inspired by the history of class struggle and land distribution during Land Reform, especially in rural areas.²⁶ The game is easy to learn but hard to master, requiring mathematical and strategic thinking, as well as carefully planned execution. It is a role-playing teamplay game, each round with three players – one landlord and two peasants. Peasants have to collaborate to defeat the landlord without knowing each other's cards, while the landlord would be distributed with a bit more cards to start with and the first to make a hand²⁷ (Figure 4).

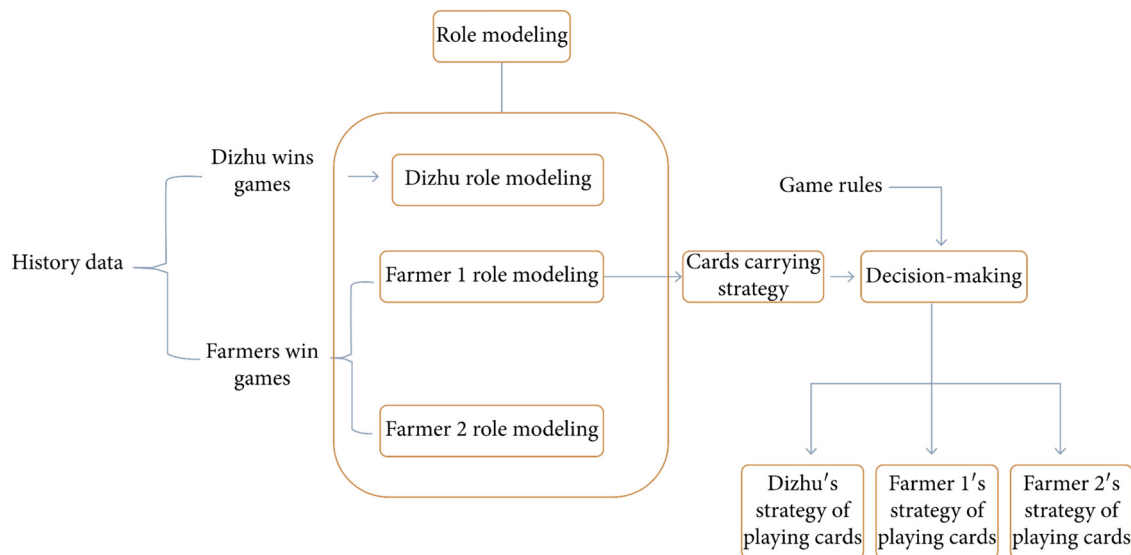


Figure 4: The overall framework of the Doudizhu card playing system.²⁸

The importance of land cannot be overstated within an agricultural civilisation, and the land distribution process can be simulated under two scenarios – collectivisation and de-collectivisation. When the party instituted a land reformation, people who had plenty of land were labelled as landlords, who were generally farmers. The connotations of farmers and peasants are different, especially in a feudal system – farmers are rich and make profits from farming as a business, but peasants are poor and barely make a living, they farm to feed themselves, rent land from landlords, and pay back the rent every year with most of their crops.²⁹ The Land Reform Movement in China started gaining momentum long before its law was formally promulgated in 1950. In 1934, “landlord households who comprised merely four percent of the total population owned 50 percent of the land, while 70 percent of the peasant households owned only 17 percent of the land”; by 1952, “land reform succeeded in redistributing about 43 percent of China’s cultivated land to about 60 percent of the rural population.”^{30,31} During reformation, land was taken away from landlords and redistributed in every village in an even manner; thus, the critical question here is how to define “even” (Figure 5).

Let’s presuppose there are X pieces of land and Y amounts of households in a village, and each household gets an equal share of land, then the distribution equals X/Y . Cascading down to the individual scale, if there are Z person(s) in a household, then each person may get Z shares of land for farming, equalling $(X/Y)/Z$. Here,

²⁶ Guo, “「鬥地主」遊戲所引發的反思 = Reflections Triggered by the Game ‘Fighting Landlords.’”

²⁷ Li et al., “Study on the Strategy of Playing Doudizhu Game based on Multi-Role Modeling.”

²⁸ Ibid.

²⁹ Kipnis, “Within and Against Peasantness.”

³⁰ Ching, *Revolution and Counterrevolution*.

³¹ MacFarquhar, “The Cambridge History of China.”

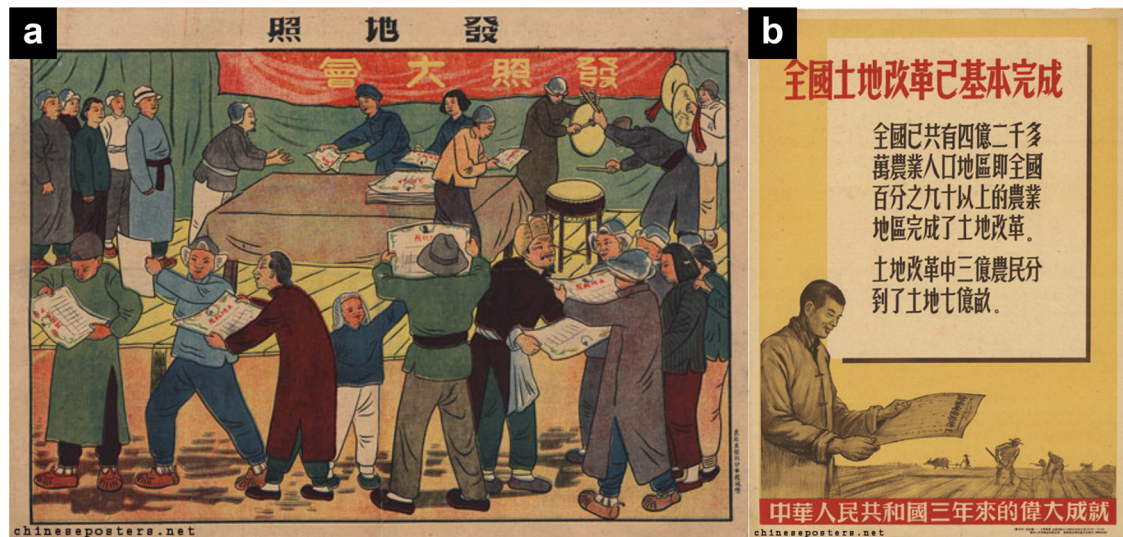


Figure 5: Posters showing (a) the “licensing assembly” 發照大會 distributing land to peasants, ca. 1948; and (b) the achievements of the People’s Republic of China within its first 3 years of establishment – “300 million peasants were allocated 700 million mu of land,” 1952. Image: Chinese Posters.

de-collectivisation becomes a mathematical problem: some villages start out with more land but few households, so each household gets more land; on the other hand, some households may have more people than others, and each person has less land per capita than others.³²

The other way to think about the problem is to evenly distribute work and harvest amongst a village, rather than land – collectivisation. During a collectivisation process, land becomes a larger grouping that is not distributed by household – a village as a whole cooperatively owns the village lands. Such is a form of asset commoning, to which a collective controls all assets together, distributes work and payoffs amongst themselves, and each person becomes a form of factory worker.³³ Some may be told to pick all the crops in the field, others may be told to feed all the livestock; instead of a day-to-day labouring decided by individual households, it becomes a form of village government that manages all harvest and redistributes them to people in the village based on the amount of work they have done – work points. A collectivised agricultural structure provides the benefit of scalability and convenient taxation; at the same time, it may be difficult to manage and sort out those who are not productive. During the Great Leap, such conditions are further challenged by natural hazards, like famine, and problems with communication, literacy, and administrative conditions in rural areas.³⁴

In response to large-scale crises, especially economic ones, a certain level of de-collectivisation may help to stimulate productivity. Let us suppose this time, land is being evenly distributed amongst people of a village, rather than households, and each household goes to a central taxation bureau to report their harvest annually. Playing the role of the bureau, one may immediately recognise the problem that households are not constant entities, every year there are newborns, pass-aways, or women who get married in another village, and it is difficult to keep land shares even unless it is redistributed regularly.³⁵ This implies a system to account for land that is rented out and given back every year at Spring Festival, village meetings to report population changes and allocate resources, and portions of land to be held as reserves to be distributed in future years if population increases. Here, the “village” is not only a unit of accounting, but also a “platform” to matchmake resources with users – a sharing economy – and the challenge of how to incentivise users to take good care of

³² Kipnis, “China and Postsocialist Anthropology.”

³³ Kipnis, “Constructing Commonality.”

³⁴ Kipnis, “Cadres and Kin.”

³⁵ Jacka et al., *Contemporary China: Society and Social Change*.

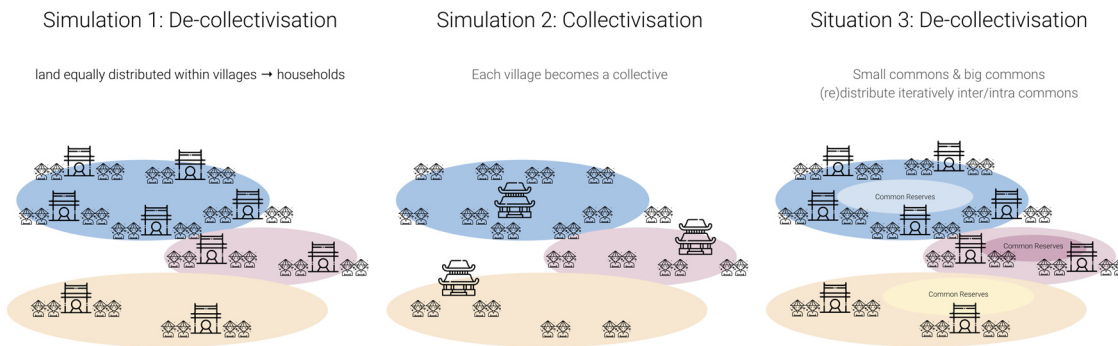


Figure 6: Three scenarios on land distribution in collectivisation and de-collectivisation processes.

the resources they share remains.³⁶ For instance, the system may reallocate land every five or ten years instead of one, to provide some consistency and variability over time. This gives both temporal and spatial challenges to the question of how small commons and big commons 小共大共 are formed and managed, and how resources may be distributed inter and intra commons, where the ‘common’ is not so simple-to-define – or defined – as a dynamic system (Figure 6).

2.3 Land Reform

In mainland China, Land Reform won the major support of the people at the time; simultaneously in Taiwan, land reform policy was promoted by the Nationalist government in the early post-war period, which can be seen as a continuation of the Nationalist–Communist war. After the Nationalist government retreated to Taiwan in 1949, there was a strong need to establish a financial foundation to ensure food and resources for the huge army to strengthen its rule in Taiwan; thus, it was necessary to implement land reformation to eliminate the power of landlords, with the United States actively assisting the process.³⁷ The three major policies included “375 Rent Reduction” 三七五減租 (stipulate the rent rate paid by the tenant farmers to the landlord, with a maximum of 37.5%), “common land release” 公地放領 (release the publicly leased arable land to be purchased by existing tenant farmers), and “land to the tiller” 耕者有其田 (government expropriated private land to rent to farmers).³⁸ The policies in Taiwan anchored on relieving the burden of peasants while ensuring rights of landlords, and moving landlord capital towards industrialisation, tying land redistribution with industrial asset distribution.

In face of urban development, land reform in China faces the challenge of declining value in farming – the average income of farmers cannot match that of factory workers, while the wages of the latter are continuously increasing every year.³⁹ Considering the relative amount of hard work, not many would want to stay in villages as farmers. There emerged the “consolidators” – the villagers who would stay behind to farm by renting and consolidating the land of many households that went to work in the city.⁴⁰ This gave rise to an economy of scale and a division of labour, effectively having less people farming, urging a demand for more mechanisation, which attracted larger corporations and businesses to enter.⁴¹ This brings much challenge in terms of governance. First, how should the consolidators and corporations be regulated, and how centralised should farming be managed to ensure productivity? As exemplified by intensive farming practices in the west,

³⁶ Köbis et al., “The Consequences of Participating in the Sharing Economy.”

³⁷ Guo, “土地改革 = Land Reform.”

³⁸ Xiong, “臺灣土地改革紀實 = Documentary of Taiwan’s Land Reform, Taiwan Provincial Documentation Commission.”

³⁹ Kipnis, “Urbanisation in Between. Rural Traces in a Rapidly Growing and Industrialising County City.”

⁴⁰ Lu, “Benefits of China’s Land Consolidation.”

⁴¹ Kipnis, “Chinese Nation-Building as, Instead of, and Before Globalization.”



Figure 7: Two photos taken 70 years apart, both documenting groups of determined villagers; a moment captured during (a) land reformation; and (b) the biggest annual e-commerce shopping festival with \$84.54 billion volume of gross merchandise during a two-week span. Image: Getty; Ali Research.

which have high yield efficiency (per unit of arable land has higher levels of input and output), that streamlines the industrial structure with more centralisation. On the other hand, if food security is a form of UBS, then privatisation should be dealt with to a certain extent, considering there are 1.4 billion mouths to feed and more with export trades. Second, as technology advances, farming is becoming easier (with chemical fertilisers, genetic modification, mechanical automation, etc.), this calls into question the end of small-scale farming, the rise of migrant workers, and mega-scale urbanisation, entangling rural issues with urban ones. This brings to the third problem – livability and community. As an agricultural civilisation, the amount of villagers cannot be underestimated or easily moved out, and with increasing ageing and declining birth rate, there is a large population of older adults who have been left behind in far rural areas, places without proximate infrastructural provisions, how to care for them?

In 2001, a 180-page PhD thesis by Xi documented a “Tentative Study On China’s Rural Marketisation,” which questioned the three fundamental rural issues: where will goods be sold, where will money come from, where will labourers go?⁴² This piece of work is monumental to the understanding of the rising digital economy in China, including Taobao village and the Central Bank Digital Currency (CBDC) scheme. The former created the world’s largest “locally physical, globally virtual” e-commerce economy that brought the young generation back home to the villages; the latter is currently targeting poverty alleviation in internet-scarce rural areas.^{43,44} Such forms of digital citizenry are, in fact, not simply a derivative of hyped technologies, but

⁴² Xi, “中国农村市场化研究: A Tentative Study on China’s Rural Marketization.”

⁴³ Fan, “Taobao Villages.”

⁴⁴ Mierzejewski and Chan, “China’s Digital Development.”

came from a long history of experiences in tackling problems of rural economy, cascading from local households, village governments, to higher level governments (Figure 7).

3 Ownership and Domesticity: Hong Kong and Singapore

Today, collectivisation can be redefined in its broadest sense as any practises of individuals working together on larger, supposedly more productive systems. From the rural to the urban, from historical perspectives to today's challenges, the question of collectivisation is not so much manifested in the distribution of farm lands, but housing as a derivative of land, where the understanding of the relationships between home and ownership fundamentally defines domesticity. Hong Kong and Singapore are two of the highest density cities in the world; such densified scales increasingly blur the boundaries between small and big commons 小共大共, where the distribution of resources goes from horizontal to vertical – from a 2D mapping of collectivisation to 3D. This section first compares the housing landscape of Hong Kong and Singapore to identify problems in housing and its planning, then reformulate the housing problem from four perspectives: social mobility vs social stability, assets vs rights, property vs owner, facility vs habitat.

3.1 Hong Kong: The Transitional

Hong Kong's housing crisis is a multi-faceted problem: housing is more than the design of a singular building, but is deeply embedded and entangled within the urban fabric, its planning, and a societies' future development as a whole. In relation to longer-term planning, recent social housing schemes attempt to transition Hong Kong out of its crisis by providing temporary and targeted stepping stones to demographics with pressing needs. Transitional housing is one of the more innovative projects in recent years; it “generally refers to the provision of short-term accommodation to help vulnerable individuals and households transition into longer-term housing.”⁴⁵ Although these projects promoted multi-stakeholder involvement and cross-departmental approaches, general problems with transitional housing schemes are that there is little to no common space for social interactions due to limited land area, insufficient social services to help individuals mobilise socially, and some of the sites have to be returned to developers who lend them to the government free-of-charge.⁴⁶ This leaves inhabitants passive and oriented them as recipients of housing services, rather than taking them as active contributors and participants of society. How may we look back at history to reframe and reformulate today's urgency? (Figure 8)

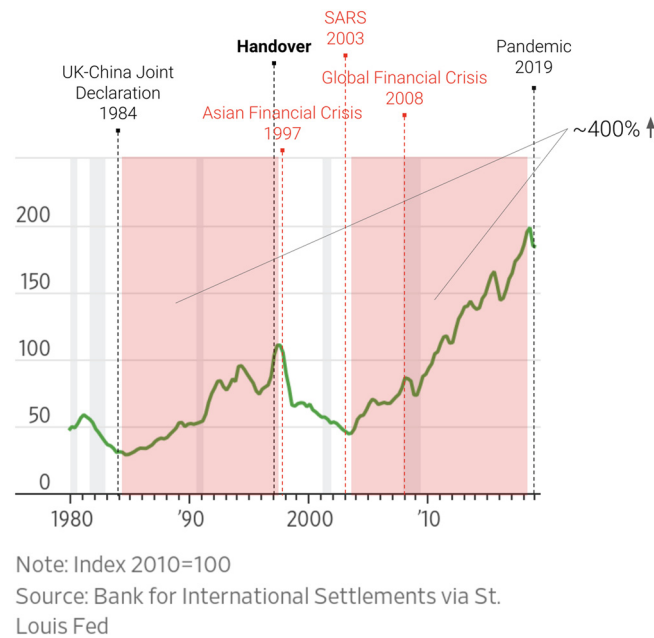
Figure 8 shows the fluctuations of housing prices in the past 40 years, with major economic crises highlighted in red. Since Hong Kong's return from British colonial rule, periods of crisis response provoked pivoting processes of collectivisation and de-collectivisation in the housing economy. There had been two main waves of surge with a period of deflation in between, both waves surged ~400%, and in the middle, there were two global-scale financial crises and an epidemic. The first wave experienced a surge from 1984, and the figure shows how, during the 1997 handover, the housing price in Hong Kong was inflating at an exponential rate, until later that year, when the Asian Financial Crisis hit, which gave the illusion that the housing crisis was relieved.⁴⁷

The year 1984 witnessed the signing of The Joint Declaration of UK–China to ensure a smooth handover, whereby Annex III “Land Leases” specified that a maximum of 50 hectares of new land can be granted per year (excluding land for public housing) by the British Hong Kong government from 1984 to 1997, which is around

⁴⁵ HKSAR, “Transitional Housing in Selected Places. Legislative Council Fact Sheet.”

⁴⁶ SoCO, “過渡性房屋推行及紓困成效質性研究報告 發布會新聞稿 = Press Release of the Qualitative Research Report on Transitional Housing Implementation and Relief Effects.”

⁴⁷ Forrest and Lee, “Cohort Effects, Differential Accumulation and Hong Kong's Volatile Housing Market.”



Real-time price index: residential property

Figure 8: Real-time price index in residential property of Hong Kong; the author had highlighted incremental events of that period. Image: Bank for International Settlements, post-processed by the author.

20 football fields in size.⁴⁸ Fifty hectares was the outcome of much evaluation that referenced the land sale sizes in adjacent years, together with the annual expenses of the British Hong Kong government at the time.⁴⁹ This is to protect the involved parties and to ensure that land value stays locally within Hong Kong; nonetheless, the release of such news caused developers to stock up on land and capped the flexibility in balancing supply and demand of housing and other land uses, and has had lateral effects on Hong Kong still.

The first Chief Executive Tung Chee-hwa was very determined to provide housing for all, and came up with the “85000 policy,” which can be seen as a period of housing collectivisation that mobilised individual efforts into a foreseeable goal. The policy promised to build 85,000 units of housing every year, in the hope that within 10 years, 70% of families can have permanent homes, shortening the queueing time from 6.5 to 3 years, increasing transportation infrastructure and urban density.⁵⁰ Unfortunately, such policies came across the 1997 Asian Financial Crisis; within five years, average private housing deflated for more than 70% and the middle-class suffered heavily from effects of negative equity and economic depression, leading to many protests urging the government to stop building public and subsidised housing.⁵¹ The “85000 policy” had since been dropped to stabilise the market and from 2003 onwards Hong Kong recovered from its negative equity market. This was monumental to the following decades, which has seen another wave of surge, and the subsequent periods of de-collectivisation and increased privatisation of housing in Hong Kong.

⁴⁸ HKSAR, “ANNEX III Land Leases.”

⁴⁹ Leung, “[歷史檔案] 1984年 - 中英聯合聲明特輯 (梁振英談及土地房地產問題) [Historical Archives] 1984 - Sino-British Joint Declaration Special (Leung Chun-Ying Talks about Land and Real Estate Issues).”

⁵⁰ Tung, “Hong Kong Policy Address 1997.”

⁵¹ HKEdCity, “政府的角色 - 政府應否干預市場? (說明版) = The Role of the Government - Should the Government Intervene in the Market? (Explanation Version).”

3.2 Housing Problem or Housing Crisis?

In order to understand the housing situation of Hong Kong, it may be helpful to comparatively analyse Singapore: both were under British colonial rule and tried to reform their housing policy after independence, both are international financial centres with limited land resources, high population density, yet, resulted in different housing landscapes.⁵² Take home ownership rates as a reference, Hong Kong is 49.8%, whereas Singapore is 87.9%; in Hong Kong, public housing is a rental scheme and does not count as home ownership, whereas in Singapore, citizens purchase public housing at a lower-than-market rate.^{53,54} In Hong Kong, public housing rental constitutes 29.1%; together with private residential, ~80% of Hong Kong has permanent housing, making a ~10% difference with Singapore.⁵⁵

These summative numbers do not provide a rich enough picture. First of all, although Hong Kong's home ownership showed a 1.8% increase, there was a 2% decrease in public rental housing from 2010 to 2020, whereas Singapore had an overall 0.9% increase.^{56,57} Second, the quantitative data do not provide qualitative information of domestic spaces, for instance, "the average living space of public rental housing tenants in Hong Kong was 13.5 square metre per person," whereas an average Singaporean enjoys 24 m², and their government has, in recent years, issued stricter guidelines to raise the average size of private flats.^{58,59,60} Third, future accessibility to home ownership is not evident for the young generation (the share of "younger persons aged below 35 heading owner-occupied families has plunged from 22.1 to 7.6% in 23 years") and produced a sandwich class – those who do not meet the income cap and are not eligible for public housing, but do not make enough earnings and financial credibility to mortgage for private housing^{61,62,63} (Table 1).

The most urgent problems are the following: 1) the time is too long for lower-income people to queue for public housing (ca. 6–7 years), 2) prices are too high for the sandwich class to buy private housing, and 3) a lack of competition in the real estate market to stimulate innovation.^{64,65} This affects the quantity and quality of housing – both affordability and spatial quality. Apartment layouts in Hong Kong are relatively monotonous, designed towards maximising Gross Floor Area (GFA) and densification, highly optimised standard spatial layouts constrained by parameters in the building ordinance that are heavily weighted on quantitative measures of housing; there are also no minimum size requirements.⁶⁶ This research wishes to problematise the issue via rethinking the objectives of housing.

3.2.1 Social Mobility or Social Stability?

Former prime minister, Lee Kuan Yew, was determined to have Singaporeans "own their own home" after Singapore's independence from British colonial rule; "otherwise, there will be no political stability" – for Singapore, housing is a matter of social stability.⁶⁷

52 Castells et al., "Economic Development and Housing Policy in the Asian Pacific Rim."

53 LegCo, "Socioeconomic Implications of Home Ownership for Hong Kong."

54 Singstat, "Households - Latest Data."

55 HKSAR, "Housing Characteristics of Hong Kong Population."

56 HKSAR, "Housing in Figures 2021."

57 Singstat, "Households - Latest Data."

58 Zhang, "Hong Kong: Public Rental Housing Average Living Space per Person 2022."

59 Chu, "Workable Solutions to Hong Kong Dire Housing Situation."

60 URA, "Guideline on Minimum Plot Size for Party-Wall Residential Flat Developments."

61 LegCo, "Socioeconomic Implications of Home Ownership for Hong Kong."

62 HKPH, "香港青年婚姻意向與住屋期望意見調查分析報告 = An Analysis Report on the Opinion Survey of Hong Kong Youth's Marriage Intentions and Housing Expectations."

63 Wong, "Home Ownership Aspiration in Hong Kong."

64 HKHA, "Number of Applications and Average Waiting Time for Public Rental Housing."

65 RICS, "Housing Need and Affordability in Hong Kong."

66 HKSAR, "Buildings Ordinance (Cap. 123)."

67 Lee, 李光耀回憶錄 1965-2000 - *Memoirs of Lee Kuan Yew 1965-2000*.

Table 1: Quantitative comparison of permanent housing in Hong Kong and Singapore⁶⁸

	Hong Kong	Singapore
Home Ownership (2021)	49.8%	87.9%
Changes (2010–2020)	+1.8%	+0.9%
Youth home owners under 35 y/o (2021)	7.6%	—
Public Housing Rental (2021)	29.1%	—
Changes (2010–2020)	–2%	—
Average space per capita	13.5 m ²	24 m ²
Average queuing time	–6–7 years	—

After independence in 1965, I was disturbed by the fact that almost all of Singapore's voters lived in the city centre. I have noticed that voters in capitals always tend to vote against the government, and [I have] therefore determined to have families in Singapore to own their own homes, otherwise there will be no political stability. Another important purpose is to make parents whose sons have national service obligations feel that Singapore has their share and is worth defending by their children. If these families don't have their own housing, then sooner or later, they will come to the conclusion that they are defending the property of the rich. – Lee, KY., (2000). Lee Kuan Yew's Autobiography 1965–2000, shì jiè shū jú, p. 109

In Hong Kong, housing is seen as a social ladder for social mobility – from public to private housing, it has a unique property ladder alongside its social ladder. Property ladder is a series of stages in owning houses as the ability to service larger loans goes up.⁶⁹ Individuals advance from public to private housing, then from smaller flats (上車樓/上會) to bigger apartments as the family grows.^{70,71} Rather than moving into a home and staying permanently, housing is to provide a temporary ground alongside individuals' internal developments. HKSAR's business review on "Planning for a More Inclusive Housing Ladder" had addressed the "needs of families in different income brackets," which comprises public rental housing (PRH), subsidised sale flats (SSFs), and private housing, with an overview of the timeframes, including short and long-term goals for implementation and enhancement.⁷² Typically, PRH is aiming for lower-income population, SSFs for lower-middle-income population, and private housing for middle-higher-income population.⁷³

The difference in ideology partially led to the difference in ownership conditions; Singapore successfully kept reality to its ideology, whereas Hong Kong faced difficulties in implementation. "Social mobility is a multi-dimensional concept, but it is most often quantitatively measured in terms of changes in earnings, education and occupation. In Hong Kong, recent statistics and research studies have revealed limited opportunities for upward earnings, educational and occupational mobility."⁷⁴ If housing is simply a problem of building more homes, increasing governmental income for public housing development would be the response, but Hong Kong is set to facilitate for individuals to advance and mobilise together. This is being reflected in the legislative and administrative concerns over the identification of individuals who breached the monthly income and net-asset limits but are still occupying public housing; there have been news reports on public housing occupiers owning Lamborghinis, demonstrating the defaulted social ladder.^{75,76}

⁶⁸ HKSAR, "Private Domestic Rental Market in Hong Kong."

⁶⁹ Holmes et al., "Climbing the Property Ladder."

⁷⁰ Chan, "香港人的置業行為與態度 = Hong Kong People's Home Buying Behavior and Attitude."

⁷¹ Feng, 香港地产业百年 = *Centenary of Hong Kong's Real Estate Industry*.

⁷² HKSAR, "完善階梯 惠及市民 = Planning for a More Inclusive Housing Ladder."

⁷³ Ho and Wong, "The Housing Ladder and Hong Kong Housing Market's Boom and Bust Cycle."

⁷⁴ HKSAR, "Social Mobility in Hong Kong."

⁷⁵ HKHA, "Income and Asset Limits Hong Kong."

⁷⁶ HK01, "【停車場加租】利東不乏名車停泊 250萬黑色林寶車主住另一條邨 = [Parking Lot Rent Increase] There Is No Shortage of Famous Cars in Lidong. 2.5 Million Black Limbo Owners Live in Another Village."

3.2.2 Assets or Rights?

Within a social mobility framework, should housing be considered a financial asset or a basic right? When one invests, one expects the asset to rise in price and give a good return; if housing is a right, it serves to fulfil some basic utilities of living to all of society and remains a liability before its value is realised through trade.⁷⁷ This question can be understood via two scales: urban and individual.

At the urban scale, Hong Kong is duty-free and low-tax; thus, land became a major revenue source for the government, which can then be spent on public housing and other expenses.⁷⁸ Land price discovery becomes a delicate issue: it cannot be too cheap when sold to developers, but the cost may trickle down to rising property prices. Whereas in Singapore, it is statutory that land sale should not be counted as part of governmental income at all,⁷⁹ and is part of the state's treasury shared by the people, much like Sun's belief that the rise of land price is a public asset 漲價歸公.⁸⁰ In balancing supply and demand of Hong Kong, there is a constraint on how many public housing units the market can absorb annually; just as what happened with the “85000 policy,” macroeconomic measures on housing directly affects individuals' equity. Alchain had claimed that “every question of pricing is a question of property rights.”⁸¹ Within the delicate game of ensuring market demand and leveraging price margins of land, real estate property is an investment for the city's development as a whole (Figure 9).

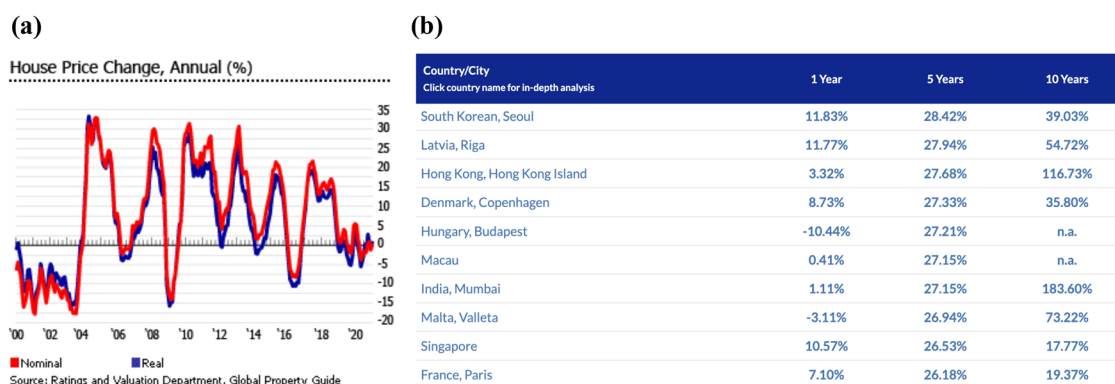


Figure 9: (a) Changes in HK's housing prices 2000–2020 and (b) in comparison to other cities. Image: Global Property Guide.

According to Figure 9, Hong Kong's housing prices have seen some stability in the past 2–5 years, with a 27.68% overall increase, ranking between Seoul and Copenhagen.⁸² This is achieved with extra taxation on housing investments to prevent speculation – Special Stamp Duty (SSD), Double Stamp Duty (DSD), and Buyer Stamp Duty (BSD), which the Hong Kong people refer to as “Chilli” 辣招.⁸³

3.2.3 Credits vs Values?

On an individual scale, the question of asset/right becomes problematised. If housing is simply an asset, it may benefit only a few in the society; in the case of Hong Kong – 50%. If ownership is a basic right, then housing

⁷⁷ Phillips, “Sheltered Housing for the Future.”

⁷⁸ HKSAR, “Government Revenue and Expenditure.”

⁷⁹ GovSG, “Why Are Some Revenues Not Included in the Budget Statement?”

⁸⁰ Sun, “三民主義 (The Three Principles of the People).”

⁸¹ Alchain, “Some Economics of Property Rights.”

⁸² Delmendo, “Hong Kong's Property Market Remains Healthy.”

⁸³ HKSAR, “Stamp Duty Rates.”

may become a liability for most. Can housing be seen as both an asset and a right? To achieve this, not only the value of housing has to be stabilised in its increase, but the credit of the buyer also has to increase.

The amount of mortgage loans in Hong Kong in the first half of 2021 alone amounted to HKD 56.7 billion; banks have to ensure that those who buy real estate can survive financial crisis.^{84,85} Financial institutes evaluate the value of the property, the credit of the buyer – the individual – and also the overall economy of the city. This leads back to the social mobility problem: affordability is not simply to make real estate cheaper, but also to make people worth more, and financial credit is dependent on factors of annual income, occupation, and education.⁸⁶ This highlights housing as an interdisciplinary challenge encompassing the planning of industrial structure, taxation, education system, macroeconomy, and urban development – just as the Chinese proverb “if one hair is pulled, the entire body has to move” 牽一髮動全身. Hong Kong housing is a crisis where all such problems are deeply entangled; holistic approaches and innovation are much needed.

Hong Kong’s industrial structure is relatively monotonous, with over 90% of economic activity dependent on service sectors; this limits flexibility of the taxation structure in leveraging land prices for governmental income, and hinders diversity in social ladders.⁸⁷ Alongside the “85000 policy,” Tung had promoted concepts such as Hong Kong Science and Technology Park (HKSTP), InnoCentre, CyberPort, Chinese Medicine Port 中藥港, Business Parks, and so on; unfortunately, most had been abandoned after the 1997 Asian financial crisis.^{88,89} Today, the four key industries are financial services, tourism, trading and logistics, and professional and producer services.⁹⁰ Most of these industries rely on bonus, service charges, and/or commissions; some research have also estimated that Hong Kong’s precarious employment rate is ~18%.⁹¹ These demographics make up a large portion of the working force in Hong Kong, who may be earning a few times more than what is eligible for public housing, but scoring quite low in financial credit and volatile in terms of financial “stress-testing” for mortgages.

Current Chief Executive Carrie Lam has initiated “Starter Homes Pilot Scheme for Hong Kong Residents” (港人首次置業先導計劃 aka 首置上車盤), “Mortgage Insurance Programme” (MIP 新按揭 aka 林鄭Plan), and incentivised developers to partner with financial institutes in lowering entry costs (呼吸Plan).^{92,93} These financial measures have been quite effective in assisting the quantitative side of housing, but not qualitative aspects. For instance, there has been an increase in the supply of nano-flats, some of them are less than 200 ft², which often does not have enough intrinsic value and demands to give a good return as a “starter home” (上車盤).⁹⁴ This is a result of the market responding to complement the mortgage programmes in attracting first-time homebuyers.

3.2.4 Facility vs Habitat? A Hybrid Domesticity

With efforts in promoting tertiary education, the income gap has been narrowing and gross enrolment ratio increased 11.3–81% from 1983 to 2019; nonetheless, youths’ abilities in home ownership decreased.^{95,96} There is

⁸⁴ HKMA, “Residential Mortgage Survey Results for May 2021.”

⁸⁵ Lui and Liu, *An Overview of the Household Debt Situation in Hong Kong*.

⁸⁶ HKSAR, “Social Mobility in Hong Kong.”

⁸⁷ Textor, “Hong Kong: GDP Share by Sector.”

⁸⁸ Tung, 一九九八年施政報告 *Policy Address 1998*.

⁸⁹ HKU, “董建華已經辭任特首，你認為董建華對香港既整體發展功績多定過失多? CH Tung Has Resigned as the Chief Executive. Would You Say He Has Accrued More Merits or Faults in the Development of Hong Kong?”

⁹⁰ HKSAR, “The Four Key Industries and Other Selected Industries.”

⁹¹ Li, “Precarious Work and Labor Market Segmentation.”

⁹² HKMCL, “Mortgage Insurance Programme.”

⁹³ Junto, “【9成按揭2023】財爺/波叔plan、林鄭plan(新按揭)、呼吸plan、舊按揭保險點樣? = [90% Mortgage 2022] Caiye/Uncle Bo Plan, Lam Cheng Plan (New Mortgage Insurance), Breathing Plan, Old Mortgage Insurance?”

⁹⁴ HKSAR, “Regulation on Minimum Home Size in London.”

⁹⁵ Knoema, “Hong Kong Gross Enrolment Ratio in Tertiary Education, 1970-2022.”

⁹⁶ ChinaDaily, “Fixing Social Ladder for Hong Kong Youth.”

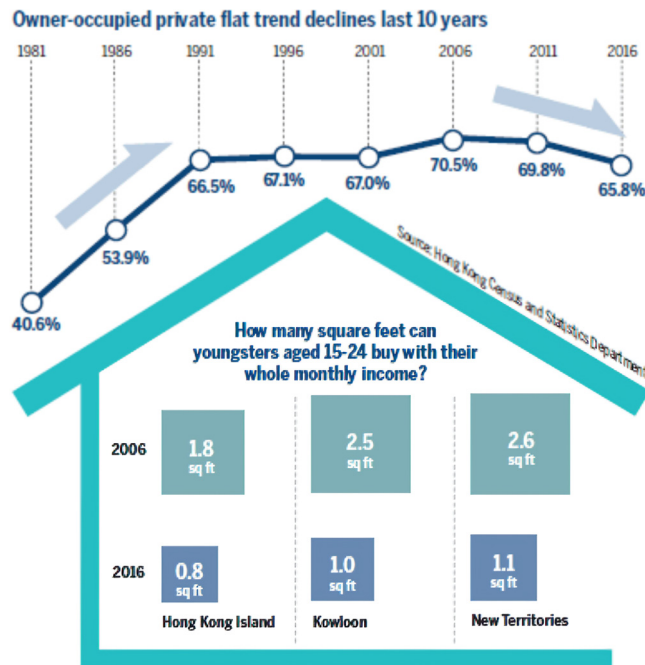


Figure 10: While education level increases and income gap narrows in the past decade, ownership capacities of youth decrease. Image: ChinaDaily.

a general “mismatch of the traditional tertiary education structure to the job market [and a lack] of a start-up culture for innovation and entrepreneurship.”⁹⁷ Also, within the 50% home ownership rate, ~40% aged 60+, with less than 8% aged under 35⁹⁸ (Figure 10).

The binary option of public housing for the lower incomes or private housing for the higher incomes reproduce the class segregation problem that the policy was designed to tackle, causing their respective domesticity to be highly influenced and constrained by the material reality. Housing strategies demand innovation that are more socially targeted and creative in serving demographics in need, especially the young generation. Perhaps housing can be understood as both tangible and intangible objects for different age groups and at various time-scales – as habitats for social stability, as facilities for social mobility.

“Habitat” may be understood as a home with supporting ecology and the array of resources that sustain diversity in longer terms, whereas “facility” may be understood as a temporary home with the set of amenities provided for a particular purpose. With a hybrid strategy of ownership and rental and a focus on innovation beyond the dichotomy of public–private, habitats may be built within industrial, innovation, and cultural parks to socially mobilise its inhabitants, and facilities may be integrated with educational modules to empower residents in actively contributing to social innovation within the community, rather than passively receiving architectural services. A Hong Kong version of co-housing may be centralised in development for its high-rise typology but decentralised in social ladders and social innovation – a collective housing that collectivises individual efforts and promotes a sense of belonging. To contextualise, as Hong Kong develops its Lantau Tomorrow and Greater Bay Area inter-regional collaboration, housing may be more integrated in the effort to diversify industrial structure, so that social ladders may also be tailored to individual needs. Section 4 further discusses how p2p technology may act as a socio-economic driver in processes of housing innovation.

⁹⁷ Siu, “The Strategic Policies in Promoting Youth Social Mobility in Hong Kong by Adopting National Development Initiatives.”

⁹⁸ LegCo, “Socioeconomic Implications of Home Ownership for Hong Kong.”

4 p2p: Asset Commoning Or Authorship Decoupling?

Co-housing practices show prospects in cooperative ownership and stakeholder-driven models for housing, but these models might encounter scalability challenges in cities as densely populated as Hong Kong. The idea originated from Northern Europe in the 1960s; although it may take different forms within various jurisdictions, co-housing generally refers to “a group of homes that include some shared facilities” to enhance affordability and livability.⁹⁹ European examples of co-housing projects generally have a size of 20–40 households, whereas in Hong Kong, an average private residential tower ranges from 200 to 400 units, while public housing is expected to reach at least 500 units per estate.¹⁰⁰ To tackle the scalability challenge, complex information management around the design and planning of large-scale housing must be structured to promote citizens’ participation.¹⁰¹ At the intersection of social design and technology transfer, p2p economies show novelty in executing crowd governance at scale; for instance, DAO utilises blockchain technology for scalable crowdfunding and crowdsourcing, which has potential applications in co-housing, but may also produce new risks. This section studies the case of DAO to understand opportunities in large-scale crowd governance and implementation challenges from various point of views: the concerns and perceivable risks from the perspectives of governance, planning, financing, and design. From this, it reflects upon the idea of digital citizenry and suggests ways to think about these challenges.

4.1 Scaling p2p System with DAO

The idea of blockchain emerged in 2008; it was also the year of the Global Financial Crisis – the most serious economic crisis since the Great Depression, during which there was an overall loss of trust in governance, institutions, and third-party intermediaries.¹⁰² The idea that people can decentrally govern their own finances as a collective without centralised banking institutes emerged as a means to collectivise informal communities that create economic value – blockchain arose as a tool to execute self-governance.^{103,104} Nonetheless, whether such processes are collectivising or de-collectivising in nature cannot be so simply defined (Figure 11).

Blockchain is a distributed ledger technology (DLT) for p2p transactions, aimed at solving the double-spending problem of digital currency (that the same virtual coin cannot be spent twice). The idea was first put forward by Satoshi Nakamoto’s bitcoin white paper, which introduced a p2p electronic cash system “without relying on trust” – a trustless economy.¹⁰⁵ The bitcoin white paper had four main focuses: 1) p2p transactions (a chain of digital signatures hashes transactions immutably through cryptography and timestamps), 2) p2p consensus mechanism (reward contributions as incentives for honesty, i.e. proof-of-work and bitcoin mining), 3) p2p optimisation (reclaim disk space, simplify payment verification, and split/merge value at a more granular scale), and 4) p2p verification (keep all transactions public but identities private). The prevention of malicious attacks and bad behaviours is set on the presumption that honest nodes are the majority, who would vote with their CPU power to validate data blocks.

DAO expanded on such p2p explorations, with objectives to secure minority rights in crowdfunding and preventing bad behaviours through explicit rules as codes. In the following analysis, “DAO” refers to the ideologies conceptualised in the white paper, and “The DAO” is the 2016 venture capital fund.

⁹⁹ Cambridge Dictionary

¹⁰⁰ McCamant, “Cohousing Pricing and the Residential Market.”

¹⁰¹ van Ameijde, “Data-Driven Urban Design.”

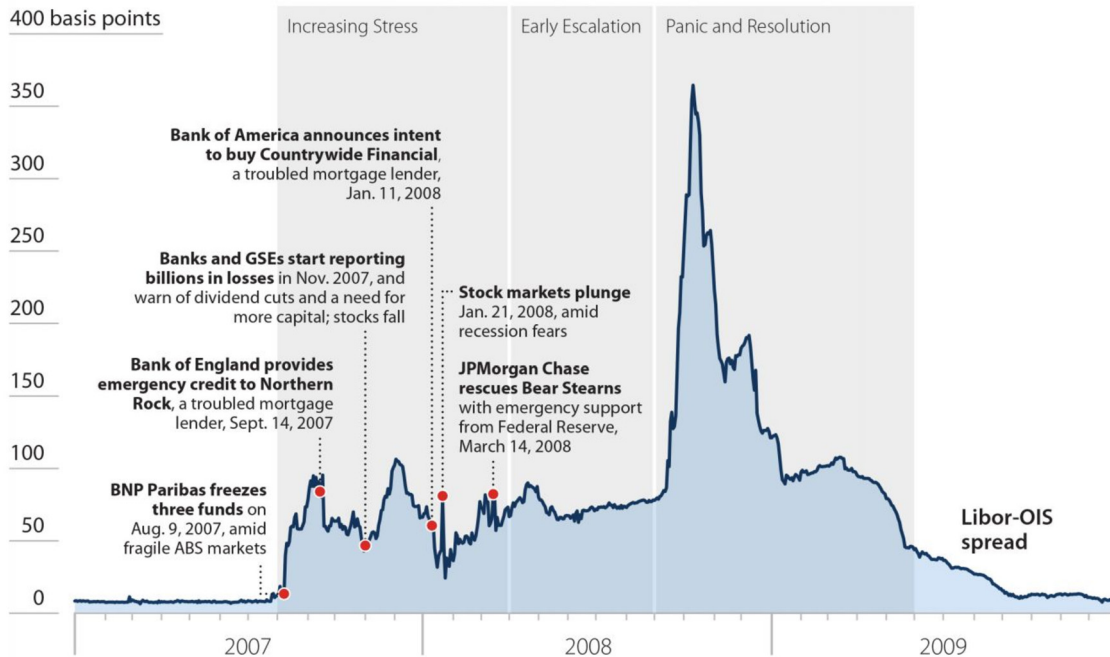
¹⁰² Buttigieg, “Strengthening the Governance of National Financial Supervision in the EU.”

¹⁰³ Conway et al., “The Internet of Impact.”

¹⁰⁴ Lam, “Grameen Bank Micro Loans Feasibility Study for Hong Kong.”

¹⁰⁵ Nakamoto, “Bitcoin: A Peer-to-Peer Electronic Cash System.”

Libor-OIS Spread and Selected Events



Note: GSEs are government-sponsored enterprises; Libor-OIS is a common measure of banks' counterparty credit risk.
Source: Bloomberg Finance L.P.

Copyright © 2020 Hutchins Center at the Brookings Institution and Yale Program on Financial Stability, www.som.yale.edu/financialcrisischarts

Figure 11: Visualising the 2008 Global Financial Crisis; the public lost confidence in institutional solvency, contributed to larger discussions on peer-to-peer economic systems. Image: Yale School of Management.

4.1.1 DAO: The White Paper and Its Ideology

Using bitcoin as a base model, DAO was coined by Christoph Jentzsch in a white paper to automate “organisational governance and decision-making” for both collaborative individuals or registered corporate entities¹⁰⁶:

First a DAO's Creation Phase and basic functionality are described. Then minority owner rights are discussed and a solution to the “Majority Robbing the Minority Attack” problem is proposed: the “DAO split.” The smart contract code is then explored in detail, and conclude with an explanation and detailed specification of the “DAO split.” – Christoph Jentzsch (2016)¹⁰⁷

The white paper had three objectives: 1) describe DAO structure, creation, and voting, 2) propose a solution to “robbing the minority” attack vector, and 3) provide a practical implementation using smart contracts.¹⁰⁸ It problematised the use of rules, contracts, and law in corporate governance, with an emphasis on preventing bad behaviours. It aimed at bringing small and big entities together by aligning their financial interests, during which minority rights might be at stake during crowdfunding because they “lack power to identify problems, participate in governance decisions, or to easily recover their investment.”¹⁰⁹ DAO tries to secure minority rights through better exit terms – individuals may fork into a different chain and/or withdraw at any time. In the spirit of “rule as code,” it proposed to implement a Turing complete program language with smart

¹⁰⁶ Jentzsch, “Decentralized Autonomous Organization to Automate Governance.”

¹⁰⁷ Ibid.

¹⁰⁸ Ibid., 1.

¹⁰⁹ Ibid.

contracts so that “participants maintain direct real-time control of contributed funds and governance rules are formalised, automated and enforced using software.”¹¹⁰

Three main types of users were being identified: Curator, Stakeholder, and Contractor. A Curator would oversee the system. Stakeholders can vote to nominate or remove Curators, and may fork into a new chain to make themselves a Curator. The system was planned to function like cell division and multiplication – there can be many DAOs as a response to scalability and consensus challenges within distributed systems. Stakeholders are essentially investors of computational power or monetary value; their stake would be represented by tokens. Contractors are those who receive funds with their project proposal. Thus, DAO is a socio-technological infrastructure that is technically distributed, but socially decentralised, and centrality is directed by the amount of tokens, which represent the amount of stakes that accounts for the money or work an individual contributes to the system.

The white paper also accounted for potential problems. First, its legal definition is not clear, whether it is a piece of code independent of any legal system, or that it must be owned by humans. Second, how DAO is contextualised – how, where, and who uses the DAO code. Third, DAO only stores and transmits tokens based on code, “it does not do much else” – “it cannot build a product, write code or develop hardware. It requires a ‘Contractor’ to accomplish these and other goals.”¹¹¹ And finally, the paper identified and provided a response to the direct or representative democracy problem – apathy – those who vote on their feet, unaware and failed to act, and non-actions. Generally, “a quorum of 20% of all tokens is required for any proposal to pass.” This percentage is the general quorum requirement for shareholder and board meetings in some Western states, like France, that “an ordinary general meeting may validly deliberate when first convened only if the shareholders present or represented hold at least 1/5 of the voting shares.”¹¹² Take the 2016 US presidential election as another example, Trump won 304 electoral votes out of 538 (~57%), which represented 62 million amongst 323 million of the total population – ~19%.¹¹³

In a sense, the DAO ideology is a simplified version of western democratic system: “there is no continuity in the development of a democratic ideal, and we have to remember that this ideal is not by any means shared by everybody today.”¹¹⁴

4.1.2 The DAO: Reality of the Crowdfunded Venture Capital Fund

In 2016, The DAO realised the promises of the white paper into an entirely stakeholder-driven, crowdfunded venture capital fund, with over ETH 11.5 million (~US\$150 million) and 18,000 stakeholders.¹¹⁵ The DAO exemplifies the scale threshold and social challenges to which a p2p, self-governing system must address. First, tackling consensus challenges in crowdfunding and crowdsourcing. Second, synthesising top-down and bottom-up governance with stake as centrality. Third, formalising informal economies.

In terms of risks, The DAO tried to prevent information overload and spam to accumulate in the system by proposing a minimal deposit, which would be refunded to Contractors if the proposals pass. It also considered the possibility of malicious attack, where an attacker may propose a malicious proposal that drains the fund. In this case, an individual who suspects the authenticity or intention of any proposal may initiate a split, “allowing anyone to retrieve their funds before a potentially malicious proposal goes through. There is no quorum requirement, so that every token holder has the ability to split into their own DAO.”¹¹⁶ It tries to tackle system stagnation by setting reward incentives and a maximum debate period for actions to take place.

¹¹⁰ Ibid.

¹¹¹ Ibid., 2.

¹¹² DLA, “Quorum Requirements for Shareholder and Board Meetings in France - DLA Piper Guide to Going Global.”

¹¹³ Mockaitis, “The Crisis of American Democracy.”

¹¹⁴ Thorley, *Athenian Democracy*.

¹¹⁵ Simonite, “The ‘Autonomous Corporation’ Called the DAO Is Not a Good Way to Spend \$130 Million.”

¹¹⁶ Jentzsch, “Decentralized Autonomous Organization to Automate Governance,” 3.

Unfortunately, such considerations did not prevent The DAO from falling into the same traps it tried to prevent itself from. The DAO community eventually voted for a scam proposal that drained one-third of its fund (~US\$50 million), the event was called The DAO Hack. In fact, this was not a singular case as the system was flooded with proposals that promised speculatively high returns within 6–12 months, it is unclear how many of such proposals are swindles, and the system was susceptible to high probability of frauds; such risks were recently demonstrated again by BuildFinance DAO in a hostile takeover¹¹⁷ (Chohan, 2017). At the same time, the community had divided opinions about the hack, which led to slow reaction time in obstructing the event. The DAO appealed to individuals but undermined certain macroscopic and legitimacy concerns: although its p2p model simplified bureaucratic procedures that are often complex and time consuming, it led to a form of pseudo governance that amplified risks for all individuals in the system, such as ensuring authenticity of Contractors and good intention of proposals. On the other hand, The DAO emphasised financial interests as the common good, where investment = stake = system centrality, which attracted speculative investors, who may not have the time and expertise to safeguard and study each proposal, mistaking speculative financing as a form of collectivity.

4.1.3 How Can Social Housing Learn From DAOs?

There are valuable lessons to be learnt from DAO and The DAO in their system design, the intellectual context, and potential risks. In terms of system design, the crowdfunding was based on crowdsourcing on three levels: the open source code that governs rules of the system, innovative projects proposed to the system, and the decision-making process by which stakeholders come to consensus on projects to invest in. These may contribute to three aspects within a stakeholder-driven housing model. First, a consensus mechanism based on the amount of work done or investment by an individual, which can be translated into the amount of stake an individual has in establishing a system of rules or codes of conduct that govern the cooperative, where minority rights may be secured through withdrawal assurance and protection. Second, the cooperative may crowdsource innovative architectural designs, with immutable smart contracts and digital signatures to secure collaboration in an open and transparent manner. Third, a debate and voting period to which stakeholders may come together to make decisions. The intention of The DAO was to align the financial interests of both small and big actors, where the crowdfunding operation may lower market entry costs for individuals to participate and invest, while assisting big actors in securing cash flows. Public authorities and enterprises may also be taken as actors in the system – synthesising top-down and bottom-up initiatives.

Perhaps, the biggest contribution is not to take a literal translation of the system protocols, and fall where it had, but how it may help us to reflect on the discipline of design and the production of housing. In terms of intellectual potentials, p2p ownership models may provoke innovative housing strategies in two main ways: design authorship and asset commoning. The former is concerned with the phases before a housing is built, whereas the latter is concerned with the phases after.

Design authorship may be decentralised by p2p ownership, where a design outcome represents the consensus of collective decision-making and a direct manifestation of inhabitant needs. Housing becomes the outcome of negotiating conflicting values rather than the decision of a single architect. This would require participatory processes within design stages where designers work together with inhabitants to arrive at a satisfactory housing design. As such, inhabitants must be identified before the project is built. This is not possible within mainstream speculative development models, to which “an occupier is not sought until the building has been completed.”¹¹⁸ DAO provoked alternative forms of client–contractor relationship that may bring together putative, potential, and future users by automating transactions, proposed a model to help build up internal competition to incentivise social innovation, and open a platform for users to discuss and evaluate

¹¹⁷ Chohan, “The Decentralized Autonomous Organization and Governance Issues.”

¹¹⁸ Wilkinson and Reed, *Property Development*.

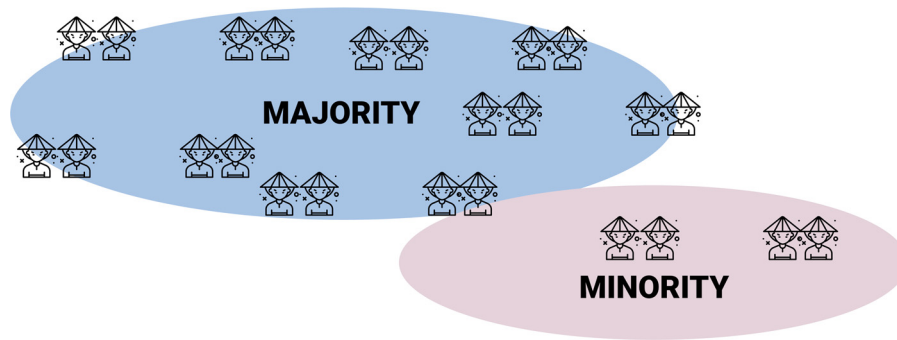


Figure 12: The majority–minority dynamic is a debate not exclusive to the discussion of blockchain but a fundamental question in the history of collective governance.

proposals, but it did not do much else in terms of developing, implementing, and securing the actual programme – just as the white paper had warned.

Common assets are “those having value which no single person or entity can take credit for creating ... Common Assets Trusts (CATs) would create common property rights to public trust resources, capture rent for their use, distribute dividends to the public, and enforce common provision of non-rival resources[...].”¹¹⁹ The management of shared amenities may be commonly provisioned and operated with payoffs divided to stakeholders (e.g. rental of common spaces to outsiders when not in use, etc.). In such processes, spaces become parcels of shares, where an immutable transparent ledger, like blockchain, may be useful in handling transactions.

In terms of risks, social responsibility, social fractionalisation, and social security are at the forefront. In terms of social responsibility, the network should have the capacity to consult experts on specialised knowledge and validity of proposals, and central actors should provide for the system, especially in assessing and preventing risks. For instance, proposals on blood-testing machines should consult biochemists; proposals on social housing should consult social workers, architects, and engineers alongside citizens – both expert intelligence and general intelligence has to be comprehended. Within the context of social housing, it is in question whether ownership and authorship should be decoupled to prevent monopoly by investors.

Fractional privatisation and decentralisation may be easily mistaken for one another. The DAO demonstrated risks for the former – withdrawing investment as an insurance for minority rights promoted fractionalisation. Most importantly, the withdrawal mechanism – any individual can withdraw without the consensus of other stakeholders – was the tool that the attacker used to drain the fund. Communication and collaboration within a community to collectively overcome conflicts imply trust. In this sense, semantics must not be discarded in a social information system; it is important to understand consensus mechanisms, like Proof-of-Work, beyond mathematical and computational domains (Figure 12).

In terms of social security, the original bitcoin white paper presumed that honest nodes must be the majority for a network to be secured. Arguably, it takes more than “honesty” to secure a network, for instance, honest speculative investors as the majority may still lead to undesirable, monotonous outcomes, undermining equity, diversity, and inclusivity, and the network may fall prey to the promises of high financial returns. The DAO simulated potential social risks and highlighted aspects of expertise, centrality, social complexity, and most importantly, trust in digital citizenry. Novel socio-economic principles should promote diverse forms of collaboration and competition, collective and communicative practices, executing network centrality through a variety of consensus mechanisms that harness both trust and trustless systems.

Contextualised in social housing, contracting in a trust economy depends on cultivating relationships and reputations.¹²⁰ While most of us may not wish to deal with our neighbours from stages of cooperative design to

¹¹⁹ UVM, “Common Assets.”

¹²⁰ Matouschek, “The Limits of Contracting and Trust.”

building management, constrained by all forms of social contract and social order, and submitting to the decision of a majority or cultural mainstream, on the other hand, a community based entirely on trustless exchanges may have misinterpreted the spirit of social housing. Social realities are best to be dealt with than escaped; technologies may help to mitigate the social pressure of inhabitants in managing their surrounding environment, but it alone cannot secure domesticity – the quality of being at home.

5 Discussions: Blockchain as a New Form of Digital Citizenry?

When the development of blockchain is situated in the history of collectivisation, its novelty is being put into question. One begins to ask whether blockchain is part of a structuralist development or a form of evolutionism within collective economic governance. During a conversation, I was reminded by Prof. Tat LAM of the Chinese University of Hong Kong that a structuralist thinking would imply the study of economy from an anthropological understanding, that the function of money or financial credit has always been dependent on the use of ledgers since the beginning of human history. In ancient times, humans tied knots as a form of accounting, and the tribe and its leaders kept the accounting profile of all transactions as a collective. Today, knot tying has been transcended with electronic products, but its spirit of collective governance remains. Evolutionary thinking highlights the constant changes and progress throughout history, taking the advancements of technological tools as radical knowledge of dynamic evolutions. When evolution is contextualised in cultural economy, it implies a definitive start and a definitive end – that cultural development is lineage, and easily puts one on the verge of colonial thinking (Figure 13).

The collectivisation–decollectivise debate problematised asset commoning and ownership–authorship connection in blockchain practices. What resources or services should be seen as a common asset? Should ownership imply authorship in collective decision-making within the public domain? These questions challenge the public–private relationship in the production of collective systems. If the individual homeowner becomes the ultimate decision-maker in a p2p system, it puts scalability and risk allocation to test. For any form of real estate, which generally involves large sums of upfront payment and thus significant risks, withdrawal as a democratic practice points to challenges and loopholes. The security of minority rights that DAOs set out to investigate became its own loophole and revealed the incapability of current blockchain initiatives to mitigate risks and compensate for the needs of the many with a better, more secured distribution of resources. With these thoughts in mind, one might be tempted to side with the socialist in decoupling ownership and authorship so as to secure the rights of those who are economically vulnerable, and as much as we would like to settle on a position, society is a dynamic construct and social innovation needs hybridised strategies that are inclusive, not exclusive.

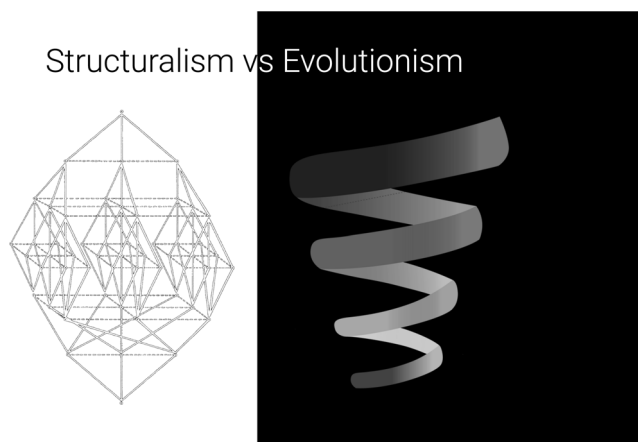


Figure 13: The orientation of blockchain has to be questioned, and such questioning may be situated within the historical debate of structuralism vs evolutionism within collective governance and economic history.

To consolidate all such thinking into the debate of domesticity, it puts on the table questions of collectivity and trust, the relationship between ownership and home, and the distribution of resources, especially in the rise of digital p2p economies. In this sense, digital citizenry should be interrogated by articulating it to specific historical, cultural, and geographical contexts. What circumstances or scale does p2p systems work better in – rural contexts of farming villages or high-density urban contexts like Hong Kong? The DAO revealed fundamental problems in collectivity that are deeply rooted in the history of cities – the socio-political reality of the world for development and in development. The conscious orientation of the technology defines the culture of blockchain and how it may be jurisdictionally regulated to work with existing systems – as a form of governance, currency, financial instrument, commodity/asset, collective investment, or business.

Finally, if p2p is a design ideology – the collectivisation of mini designs and individual efforts – it enters the territory of open-sourcing and crowdsourcing. Here, domesticity may be redefined through a digital citizenry of participation. Mistaking fractionalisation as distribution and defining consensus mechanisms reductively (be it money or vote) undermine trust, social interactions, collaborations, and collective problem-solving. At the core of the problem is the building of communities around missions and initiatives, which demands a social approach to understand communities that are served and serving, both local and adjacent, tying issues of cultural and behavioural with the economical and the regulatory.

6 Conclusion

This article looked at domesticity in terms of housing and its planning culture as tangible and intangible social instances and resources, so as to challenge the culture of domesticity as normative and the democratic production of housing as universal.

The case study of Hong Kong highlights the planning of housing as an interdisciplinary challenge – industrial structure, taxation, education system, macroeconomy, and urban development. Public housing should not be taken as a site of charity, but an integral part of the industrial and economic structure, physically manifesting itself as the heart of a city. An evolution in housing inevitably causes a redistribution of resources; at the same time, innovation may help to secure the productive capacity of the full population, narrowing the gap between value of real estate properties and financial credits of citizens. As the Chinese State Council Premier Li Keqiang said, it's easier to touch someone's soul than to touch someone's interests 触动利益比触及灵魂还难; however, as pronounced by Albert Einstein “in the middle of difficulty, lies opportunity” or by the Chinese proverb 危机就是转机, housing may be a chance for us to synthesise conflicting values into new modes of domesticity via social innovation, but first the orientation of the socio-technical infrastructure has to be questioned.

This brought the discussion to methods in collective decision-making. The DAO, as a blockchain-based, stakeholder-driven, crowdfunding, and crowdsourcing system, promised to deliver social innovation through p2p processes, bringing public and private sectors and individuals together. Such systems are simultaneously collectivising and fractionalising, which, arguably, cannot escape fundamental questions in asset commoning and ownership–authorship dependence, problematising the debate on digital citizenry. The biggest challenge stated in the DAO white paper was to prevent the minorities from being “robbed” by the majority. It is argued that such a challenge was prompted by the oversimplification and individualisation of governance structure in the system, which gave form to boundaries of conflicts in the first place. Looking back at the Chinese history of rites and virtues, mutual learning as processes of collective action may prevent the upbringing of such boundaries – to synchronise by communication, not (op)positions.

Reflecting on ancient Confucian thinking, it helped us to understand traditional rites and virtues as processes of collectivity. These processes gave rise to a sense of place that is situated in the Chinese context, one of the oldest agricultural civilisations, which called into question notions of home and frontiers and their physical counterpart – land. The distribution of this heterogeneous finite resource within a “people's republic” brought collectivism and communism under the umbrella of socialism. The three scenarios of collectivisation and de-collectivisation demonstrated how the concept of “a household” is not a constant variable to be

quantified, and such mathematical questions contributed to challenges of Land Reform. Also, the idea of scale had been problematised: the “small common” and “big common” cascaded from local households, village governments, to higher level governments. China’s rural marketisation from land reform to economic reform entangled issues of rural with urban, and questioned the relationship between ownership and domesticity.

In today’s ultra high-density contexts, the four perspectives on housing (social mobility vs social stability, assets vs rights, property vs owner, facility vs habitat) add complexity to what constitutes, facilitates, and defines domesticity – values that shape people’s understanding of what constitutes a home. A comparative analysis of housing in Hong Kong and Singapore in their post-colonial era called into question the thin line between collectivisation and privatisation, especially in reaction to consecutive global financial crises. This article proposed an integrated approach to social mobility and social stability, where housing is defined as both a facility and a habitat to diversify social ladders for varying ambitions and abilities so as to accommodate individuals’ sense of belonging and motivation. Also, housing should be considered as both a financial asset and a basic right by utilising hybrid strategies of public and private ownership and rental. Concurrently, social housing should include participatory methods, taking citizens not merely as passive consumers of architectural services, but active contributors in synthesising conflicting values – the idea that co-housing may be centrally developed for high-density, high-rise typologies but socially decentralised. In this respect, it is crucial to build up local capacity and critical literacy by bringing together learning and living; the home is not simply a space of refuge for labourers, but a place to support the nation in advancing collectively.

With these thoughts in mind, five points of reflections on p2p systems as new digital citizenry are being put forth. First, fractionalisation in a decentralised system poses governance challenges, especially in achieving consensus during an emergency. Second, withdrawal being taken as a form of insurance undermines aspects of trust and collaboration within a social infrastructure. Third, financial interests and high returns can be easily mistaken as a form of collectivity, just as how technological advancements may be confused as effective social innovation. Fourth, consensus mechanisms like Proof-of-Work marginalises individuals who are digitally illiterate and economically volatile. Finally, social responsibility and social security – if a system lacks the role of those working, not for individual interest, but for the common good and those with specialties to safeguard, it would be difficult to secure.

To conclude, the history of collectivity can be traced back thousands of years, and collectivisation for at least a century; therefore, it is important to situate the debate of digital citizenry and domesticity within fundamental questions in socio-economic organisations. The applications of information technology cannot be decoupled with concerns of locality, contexts, and semantics. Although technological tools may help us to make collective decisions, it should not hinder collective actions. From land reform, economic reform, to a social change through digital transition, we should not forget that it is the rites and virtues which helped our ancestors to define civility and humanity on the governance of our home and land 大學之道 在明明德 在親民 在止於至善。

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