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A SYSTEMATIC LITERATURE REVIEW OF *SHANZHAI*: AN ALTERNATIVE APPROACH TO WESTERN-CENTRIC CONCEPTIONS OF INNOVATION AND MAKING?

Master's thesis

Programme Technology Governance and Digital Transformation

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Tallinn 2021

I hereby declare that I have compiled the thesis independently
and all works, important standpoints and data by other authors
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The document length is 11,970 words from the introduction to the end of conclusion.

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ABSTRACT

Shanzhai refers to pirated products and imitations of brand name consumer electronics. Originating in a folk story, the term translates as "mountain stronghold," and refers to bandits who evaded the authorities. More recently, *shanzhai* has been appropriated by a community of small-scale consumer electronics manufacturers in Shenzhen, China. By building on pirated and open-source designs, these manufacturers are able to swiftly innovate their production processes. In this sense, *shanzhai* resembles the open-source hardware and maker movement which exists in the global North. In this thesis, I examine the literature that approaches *shanzhai* as an alternative innovation phenomenon. More specifically, my investigation leads me to examine the intersections between *shanzhai* and the predominantly Western maker movement, considering their commonalities and differences. Therefore, I ask: In what ways does *shanzhai* challenge the Western-centric conception of innovation and to what extent can it enrich our understandings of making?

In response, I show how *shanzhai* is a unique innovation phenomenon which emerged from below and was subtly co-opted and then promoted by the state. Then I depict how shanzhai contributes to the plurality of understandings that constitute making. My argument follows two key lines: firstly, that *shanzhai* challenges the Western-centric concept of innovation and secondly, that it evolved from a user-driven form of innovation to a state-led form of innovation.

Keywords: Shanzhai, innovation, maker culture, postcolonialism, intellectual property, China

1. INTRODUCTION

The term *shanzhai* initially gained popularity in 2008 as a description for forgeries of brand name mobile phones or "bandit cell phones" (Cui 2012, 399). In modern Chinese, the term developed into a neologism for counterfeit products or any process in which the original is imitated (de Kloet, Yiu 2016, 229). *Shanzhai* translates into mountain stronghold, a term that derives from a Chinese folk story in which it refers to outlaws who strove for autonomy, escaping the influence of authorities. Therefore, *shanzhai* must be understood as a cultural reference that was appropriated by small-scale manufacturers to identify themselves as a community in opposition to government regulations.

In the West, products manufactured by the *shanzhai* community are frequently referred to with pejorative terms such as "copycat," "facsimile," "fake" or "counterfeit" because they violate intellectual property rights or at the very least, exhibit remarkably similar design features to those of brand name products (de Kloet, Yiu 2016, 230). However, in ancient Chinese art practice, the learning process takes place precisely through copying. Thus, a student shows her admiration of an artwork by studying, praising, and copying it, which practice is considered a sign of respect towards the teacher and creator. In the West, where copying is thought of as stealing or 'faking,' a replica or a modification of the original is rarely understood as innovative or creative (Han 2017).

Authors Zhu and Shi (2010) identify *shanzhai* as an indigenous innovation phenomenon, with a distinct chain of value creation and collaboration practices. *Shanzhai* has been further described as "grassroots cultural production" (Cui 2012, 400), a process stimulating creativity and innovation through grassroots organization, while at the same time challenging contemporary imaginaries of originality and creation. By imitating brand name products through constant modification, *shanzhai* poses a challenge to economic power from below, constituting a practice that combines subversion and manufacturing. Thriving through open processes of sharing design materials and BOMs (bill of materials), the *shanzhai* community challenges commonplace practices of intellectual property protection, proprietary rights, and competition, thereby making the case for creative empowerment in the absence of copyright enforcement. Thus, Fernandez et

al (2016, 36-38) suggest that *shanzhai* constitutes an "open innovation paradigm" which relies on open-source practices and hence converges with the Western maker movement, although it differs from it in terms of its values.

The objective of this thesis is to understand the linkages and differences between *shanzhai* and the Western concept of making. In order to do so, I identify core issues related to innovation processes and value production, and outline emerging debates, conflicts, and contradictions in the literature regarding design, manufacturing, creativity, and ownership. My research question is the following:

In what ways does *shanzhai* challenge the Western-centric concept of innovation and to what extent can it enrich our understandings of making?
In responding, I show how *shanzhai* is a unique innovation phenomenon which emerged from below and was subtly co-opted and then promoted by the state. My argument follows two key lines: firstly, that *shanzhai* challenges the Western-centric concept of innovation and secondly, that it evolved from being a form of user-driven innovation to becoming a form of state-led innovation.

The introduction is followed by a section describing the methodology I used in my systematic review of the literature. The section also defines my research design and strategy, as well as the choice of databases, primary and secondary keywords and criteria for inclusion and quality assessment. The third section, I discuss my findings, beginning with a presentation of the data that was extracted and synthesized. By grouping them according to key themes, I survey emerging patterns and prevalent debates in the selected literature. Based on the key themes identified in the review, I go on to investigate the initial research question. Finally, I highlight knowledge gaps in the literature. In the fourth and concluding section, I present a summary of my thesis before closing with a number of suggestions for further research.

2. METHODS

I conducted a systematic review to identify literature and themes that connected *shanzhai* with innovation and the maker movement. In doing so, I followed the specific protocol for systematic literature reviews defined by Xiao and Watson (2019). The review is organized in three stages which consist in the planning, conducting, and reporting of the review. Defining a research question was the critical first step in planning the review, as it shaped my research aims and approach. The next step involved the development of a review protocol in which I specified the criteria according to which the review would be conducted. This marked the second stage of my review.

Next, I determined the search engines and databases that I would use to search the literature. To widen the search and increase my chances of finding relevant literature, I chose four different electronic databases: SCOPUS, ProQuest, Web of Science and ESBCOhost. These were selected as they are the major search engines for locating peer-reviewed articles and books in the social sciences. In addition, in recognition of the fact that Google Scholar is a powerful although limited academic search engine, I considered the first 50 results of a Google search with the literature identified through the other four electronic databases.

The keywords I used in my searches derived from the research question. After conducting some initial searches to get a broad overview of the field, I determined that *shanzhai* would be my main keyword. The variable secondary keywords were subsequently chosen. They were determined as innov* (to include variations on the stem such as innovation OR innovative OR innovate OR innovativeness), copy* OR counterfeit OR piracy (to include variations and deviations such as copy OR copying OR copycat OR copyright) and maker* OR making OR manufactur* (to include variations and deviations such as maker OR makerspace). Combined with the first main keyword, searches were always conducted as: *shanzhai* AND innov* / *shanzhai* AND copy* OR counterfeit OR piracy / *shanzhai* AND maker* OR making OR manufactur*.

Using the Boolean operators "AND" and "OR," I was able to include synonyms and to construct more complex search strings. The keywords were chosen deliberately in order to include only English language literature, excluding literature in Mandarin (Chinese). This decision was based on the limited scope of the review. The range of publication dates to be included was set for the years 2000-2021. As noted, the origin of the term *shanzhai* lies in a popular Chinese folk story. Therefore, this date limitation was established to exclude potential earlier publications referring to the story in some way. The term *shanzhai* first appeared in connection with mobile phone manufacturing in the middle of the first decade of the 21st century. Therefore, the selected date range would not exclude any relevant literature from the search. My search was confined to peer-reviewed resources. The keyword searches listed above were restricted to the title, abstract and keywords of the literature in the databases. Conference proceedings were excluded from the search as it was not possible to determine the consistency of their quality. My search provided me with a total of 175 results: 59 from SCOPUS, 54 from Web of Science, 34 from ESBCOhost and 28 from ProQuest.

During the following step, I used pre-set criteria for inclusion and exclusion to screen the results, reviewing each resource's title and abstract. Criteria for inclusion were based on relevance to the research question, with the overall aim being to assemble a manageable body of literature for the review. As such, the criteria restricted my choice for inclusion to specific fields related to *shanzhai*. Thus, I included literature that considered *shanzhai* in relation to innovation in the field of mobile phone manufacturing. Also included was any literature on *shanzhai* and the field of making, the maker movement and maker culture. Additionally, I included a resource if it discussed *shanzhai* with respect to issues such as copyright, intellectual property, and piracy. Resources were excluded if they did not comply with any of the above criteria, or when they were not relevant to the research question. I also applied the forward and backward searching method which did not, however, provide me with any further relevant literature.

The initial screening of titles and abstracts was followed by a last step in which I assessed the quality of the resources. At this stage, I read the full-text articles to fine tune the final body of literature by excluding resources deemed relevant until then. The quality assessment procedure was carried out with reference to a checklist I had drawn up earlier which was based on the criteria for inclusion. As a result of the screening procedure, I included 25 pieces from SCOPUS, 3 from ESBCOhost and 1 from ProQuest. Pieces form the Web of Science are not listed, as every article in it is also included in SCOPUS. An additional 4 results were included from the search

results of the Google Scholar database. Thus, from the initial 175 results, a total of 33 resources were selected for the review. I then extracted, analysed, and synthesized the data. Data extraction was performed through a process of coding. The coding scheme was made up of various themes and concepts derived from the research question. The subsequent analysis and synthesis of the data was conducted with the help of the open-source mind mapping application *Minder*. Data, themes, and concepts were organized, colour coded and logically linked up. The third stage involved reporting the review, in which findings were presented in the form of themes. Thus, the data that had been gathered, organized, and grouped was written-up in the form of key themes emerging from the selected literature.

3. FINDINGS

The 33 papers were examined against the main research question: In what ways does *shanzhai* challenge the Western-centric concept of innovation and to what extent can it enrich our understandings of making? The main themes were identified according to their relevance and significance to *shanzhai*.

3.1. The emergence of *shanzhai*

The emergence of the *shanzhai* phenomenon is a fundamental theme as it informs the study of the underlying socio-economic conditions that produced the phenomenon.

In 2007, the Chinese mobile phone sector's restructuring was accompanied by a liberalization of licensing regulation which lowered entry barriers and thus opened the market to new entrepreneurs (Chen *et al* 2013). Further, the MTK chip and MTK business models which allowed for modularization and low entry barriers into the field of mobile phone manufacturing marked a turning point that enabled *shanzhai* entrepreneurship (Zhou *et al* 2013) to develop.

A significant factor which propelled *shanzhai* into the sphere of popular culture was its adoption by social media communities on the Chinese internet. The internet has been identified by Chubb (2015, 271) as the home of *shanzhai* cultural production as it produces online popular culture under the auspices of a state-led cultural order.

3.2. The role of the state and media in the development of the *shanzhai* phenomenon

In 2006, as part of its transition to a knowledge-based service economy, Hu Jintao, then President, pledged to transform China into an "innovation-oriented country". It was in the context of a restructuring of the economy that the state took up the idea of innovation. Rather than depending on developed countries, the policy envisioned the promotion of "indigenous innovation" (*zizhu chuangxin*), which entailed the domestic generation of innovation capacities

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to develop "core network technologies and standards" (Keane, Zhao 2012, 218). With the deregulation of mobile phone manufacturing in 2007, the Chinese state promoted a policy of "innovation with Chinese characteristics" (Yu, Kwan 2019, 312). By drawing on the concept of "institutional entrepreneurship," Lee and Hung (2014, 17) interpret this policy as a form of active state support for the nascent *shanzhai* economy.

In the thirteenth Five-Year Plan of 2015, the government announced "Made in China 2025." This was a strategic plan to further develop the manufacturing sector by promoting R&D initiatives, nurturing high-tech industries, and boosting innovation capabilities in a general sense (Fernandez *et al* 2016, 33). Keane and Zhao (2012, 217) describe these aspirations as evidence of a nationwide desire, on the part of the state and the society to move away from the stereotypical "made in China" towards a modernized "created in China".

Yang (2016) draws attention to representations of *shanzhai* in state media, arguing that the state apparatus is using its media organs to reclaim *shanzhai* as a brand for the nation. Through its coverage of the topic, the state reconstructs its authority by both realigning itself with 'the people' and reinstating itself as their protector. The aim of this media strategy, writes Yang, is "the subsumption of *shanzhai*'s culturally productive force into a developmentalist project:" namely "from made in China to created in China."

Through its ideological framework of the 'Chinese Dream,' the state is remodelling *shanzhai* to fit its narrative of China as a growing "global cultural power through creativity and innovation" (Liao 2017, 425). Thus, the state is implementing a top-down campaign to promote cultural power and increase innovation capacities by appropriating popular grassroots activities.

It is through these techniques of co-opting grassroots discourse and controlling grassroots cultural production which are then re-framed through the media, that the government is building cultural hegemony (Liao 2017). Thus, the former 'bandit cell phone industry,' which had been thought of as a working-class ICT (Information and Communication Technology) or a folk-oriented IT (Information Technology) got subsumed through co-optation into the state narrative. In this way, what had once been a politically subversive aspect of popular culture became depoliticized through its absorption by mass media (Cui 2012, 402).

Goxe (2012) identifies *shanzhai* as an ethnocentric construct created by the state and media, developed within a particular political context in order to manufacture and reflect 'Chinese' values such as creativity and folk wisdom. The author further argues that the engineering of these values may contribute positively to business innovation.

3.3. The culture and identity of the *shanzhai* movement

Recurring throughout the literature are discussions of *shanzhai* culture (Xu 2017), identity (Liboriussen 2016; Chubb 2015) and ethos (Keane, Zhao 2012). Indeed, that which has shaped the "cultural myth" (Zhang, Fung 2013, 402) constituting the phenomenon is the folk story from which the term originates. Chubb (2015, 273) observes that "popular discourses surrounding the origin and spirit behind *shanzhai* things are rich in historical referents and may be more important to the *shanzhai* identity than the actual spaces and processes themselves." The original folk tale, named 'The Water Margin' or 'Outlaws of the Marsh' (*shuihu zhuan*), tells the story of a group of 108 outlaws who hide out in the mountains to evade the authorities and resist the central state's influence. Expressing a rogue spirit which is often compared to that of Robin Hood (Liboriussen 2016, 326; Chubb 2015, 273), the story serves as a kind of ideological framework. As such, it connotes the notion of the grassroots and of that which emerges from the people, but also, of independence and distance from authority.

The '*shanzhai* generation' refers to people born in the 1980s and 1990s, those who identify most with *shanzhai* culture and who are "known for being anti-authority, anti-monopoly and anti-elite" (Keane, Zhao 2012, 225). *Shanzhai* is, furthermore, a means by which they mock mainstream culture as well as a manifestation of their pursuit of individuality. The identity represented by *shanzhai* is "the quality of Chineseness" (Chubb 2015, 273) or "intimately linked to Chineseness" (Liboriussen 2016, 325). While *shanzhai* supporters take pride in the "Chinese ingenuity" embodied in products and some have even developed a form of "techno-nationalism" (Chubb 2015, 273), *shanzhai* also contains a humorous side as its products are always seen as 'funny' because they resemble, but are not in fact originals.

In addition, the group of 108 in the 'Outlaws of the Marsh' also live according to a moral code (Hennessey 2012, 615). In the modern version of *shanzhai,* this translates into the rules of social trust between ethnic groups that recognize each other, and upon which the *shanzhai* manufacturing ecosystem is built. Confidence in their own homogeneous ethnic group makes entrepreneurs in the informal economy more inclined to cooperate effectively because it assures them legitimacy. Thus, despite their differences, *shanzhai* entrepreneurs are united through a mutual responsibility toward each other, and the sharing of a common moral outlook (Keane, Zhao 2012).

3.4. Geographies of *shanzhai*

The design and manufacture of *shanzhai* mobile phones is geographically concentrated in the city of Shenzhen in the Pearl River Delta. Shenzhen's modern history begins in 1979. With its designation as China's first Special Economic Zone (SEZ), the city became an experimental area with considerable autonomy in managerial and fiscal matters, which it was granted so that it could attract foreign investment to China (Keane, Zhao 2012, 219). Moreover, its proximity to Hong Kong, "the gate of China" (Zhu, Shi 2010, 36), provided Shenzhen with access to investment, marketing information and technology.

Shenzhen's early years were marked by large movements of migration into the city which, in furnishing a large pool of skilled and unskilled labour, resulted in low production costs. By 2015, Shenzhen was host to more than 1,000 registered phone manufacturers and 18,000 phone stalls which were concentrated around Huaqiangbei, the city's technology district (Yu, Kwan 2019, 313). This dense network of retailers and wholesalers is referred to by Fernandez et al (2016, 32) as a "suppliers cluster", while Yu and Kwan (2019, 313) use the term "industrial cluster" to describe the fertile soil from which *shanzhai* emerged. Keane and Zhao (2012, 217), writing about the geographic and temporal conditions that gave rise to *shanzhai*, characterize the city as an "innovative milieu."

3.5. The economy of *shanzhai* and *shanzhai* as entrepreneurship

The literature review brings to light certain narratives which both describe *shanzhai* as a unique economic phenomenon and refer to it in terms of entrepreneurship.

At its inception, Chen and Chen (2020, 777) argue, *shanzhai* was a "typical informal economy: unregulated by government, it grew steadily through black markets for unauthorized, hidden, and underground production." With the absence of formal institutions and regulating bodies, informal economies and informal entrepreneurs depend on their legitimacy within their network. Therefore, social trust, which refers to the various unwritten rules and laws that lubricate social interactions in the informal economy, is of vital importance for the informal entrepreneurs of the *shanzhai* ecosystem: it mediates the terms of cooperation and competition between the different actors involved in the manufacturing process (Chen, Chen 2020). This is what Lee and Hung (2014, 23) call a "shared belief of cooperation and competition" and Fernandez et al (2016, 28) simply name "coopetition". In a more general sense, Zhu and Shi (2010, 46) present the system

of loosely affiliated groups of firms in which each specializes in different activities as an "enabling network". As a result of the above, the *shanzhai* network produces certain unique characteristics such as a profit-sharing mode, shorter time-to-market development, and an overall increase in collaborative efficiency. Additionally, *shanzhai* firms rely on personal relationships when it comes to soliciting financial support, unlike traditional firms which look to the banking sector for help (Rong *et al* 2011, 187).

It was low production costs that initially enabled Chinese manufacturers to produce either imitations or replicas of foreign mobile phone brands. The practice of strategic imitation, by which the success of others is exploited in order to develop innovative ideas, also played a role in the growth of *shanzhai*. Further, in the face of ever-changing market conditions due to political uncertainty, entrepreneurs had to stay alert in order to maintain their capacities to search for and discover new opportunities. Yu and Kwan (2019, 310) label these two key strategies, "strategic imitation" and "alertness to opportunities" of *shanzhai* entrepreneurs as "adaptive entrepreneurship."

Shay et al (2020) identify technological modularization as a key characteristic of the *shanzhai* economy. It is modularization that enables *shanzhai* firms to be flexible enough to change and adopt both new and different technologies. Further, modularization lowers the technological barriers to market entry for small and new firms.

Even though *shanzhai* is often framed as subversive and anti-mainstream, Chubb (2015) notes that *shanzhai* is deeply embedded in the global capitalist system. Driven by capitalist entrepreneurship, *shanzhai* manufacturing is focused primarily on growth and profits. Indeed, major players such as Xiaomi and ZTE emerged to dominate domestic and international markets from precisely the global capitalist paradigm of mass mobile communication technologies that underpins *shanzhai*. Given this background, it is argued that *shanzhai* offers little resistance to the political status quo as it displays a symbiotic relationship with power.

3.6. *Shanzhai* **products' customers**

In 2018, Qin et al published the results of their investigation into consumer motives for purchasing *shanzhai* products. For their research, they looked at social, individual, functional and financial factors as drivers for customer purchases of *shanzhai* mobile phones. They found that *shanzhai* products have a social value because they look almost identical to the original and

thus provide consumers with social status while satisfying their need to preserve reputation. Novelty and materialism are identified as significant individual values for those consumers who buy *shanzhai* products. The study found that consumers also cared about product quality and functional value. However, it was financial value, which addresses the question of price, that was noted as the most attractive feature of *shanzhai* products.

Other scholars also observe that "cheap but functional *shanzhai* phones appeal to price-sensitive customers" (Keane, Zhao 2012, 224). In economic terms, the low-end of the market is called the "bottom of the pyramid" (BoP). Dong (2015) has identified consumer demand at the BoP as a robust growth engine for the wider market. The "information have-less" is another relevant term which was employed by Yang (2016, 596) and Keane and Zhao (2012, 227) to designate the group of *shanzhai* consumers. As a social, economic, and political category, it encompasses laid-off workers, rural-to-urban migrants, retirees, and students from low-income families. However, price is not the only decisive argument for buyers. Distinctive features of *shanzhai* mobile phones, such as their multiple SIM-card slots, extra long-lasting batteries or strong flashlights provide those with limited access to resources with additional crucial functions. access (Chubb 2015). For these reasons, the *shanzhai* ecosystem is characterized as "a prototypical working-class ICT" (Yang 2016, 596).

The fact that *shanzhai* caters to the unique needs of the domestic and international BoP market is the result of its reciprocal and participatory design process. While mainstream manufacturers overlook the demands of BoP users, *shanzhai* manufacturers include users in their feedback loop, as part of helping them coordinate the design process (Dong 2015), which fact has the potential to generate "entrepreneurial innovation of the masses" (Chen *et al* 2013, 9).

It should, however be mentioned that the study by Qin et al (2018) found that *shanzhai* phones are not chosen exclusively by low-income consumers. Middle-class and high-end consumers may also choose them for their additional and innovative features.

3.7. Challenging the Western-centric concept of innovation

This section contains several sub-themes which I have identified in connection with innovation. Starting from the assumption that innovation is a concept shaped by Western scholars and intellectuals, I investigate *shanzhai* as an alternative approach to innovation. As *shanzhai*

disputes the idea that invention and the valuing of intellectual property rights are Western constructs, I examine its potential to challenge established conceptualizations of innovation.

3.7.1. Innovation with Chinese characteristics

In October 2007, at the 17th National Congress of the Communist Party of China, Hu Jintao announced the ambition that China become an "innovation society" (Paradise 2013, 313). With this shift in direction, innovation was to be placed at the core of China's development strategy, which implied that more resources would be allocated to developing key technologies. With its 2007 policy of deregulating mobile phone manufacturing licenses, the Chinese government began to stimulate conditions for "innovation with Chinese characteristics" (Yu, Kwan 2019, 312), as many local phone manufacturers moved to Shenzhen's high-tech district to profit from its highly incentivized business environment.

In this context, Fernandez et al (2016, 28) comment on how differing economic and social realities are determined by locality, and propose the idea of a "geography of innovation." Similarly, Liefner and Kroll (2019, 169) discuss the disparities in China's regional innovation systems, finding that they vary according to geography because of neglected "market-related and mindset-related factors." In their article, market-related factors denote innovation opportunities presented by income levels, such as innovations for the less affluent, which constitute a major source of income for many Chinese firms. Mindset-related factors play a key role in shaping geographical differences by enabling or obstructing the emergence of regional innovation pathways. Thus, local political policies and regionally shared perceptions may support or restrain industrial development and hence innovation trajectories. Finally, Fernandez et al (2016) argue that the *shanzhai* model for innovation in the field of hardware is intrinsically bound to the territory from which it emerged. As a highly localized phenomenon, it cannot simply be reproduced elsewhere.

3.7.2. Indigenous innovation

To meet the demands of the low-income market, *shanzhai* manufacturers continually modify their models "through imitation, learning and experimentation" (Yu, Kwan 2019, 316). Over time, these phone models come to exhibit indigenous innovation features that serve both domestic and foreign markets. These modified designs cater to market niches which are usually disregarded by brand name manufacturers. An example for the domestic Chinese market is the *shanzhai* multiple SIM-card model. This targets the millions of migrant workers who must pass

through different areas of mobile network coverage on their journeys from rural areas to the city. Depending on their location, this model allows them to switch to a local card thereby enjoying lower network costs. *Shanzhai* models with built-in flashlights are aimed at low-income markets in Africa, especially areas with unreliable electricity supply. In Indonesia and the Middle East, special phone models with built-in prayer alarms are being distributed. Because these phones are customized to the needs of poor people, especially in the countryside, *shanzhai* phones are regarded as "benefiting the wider society" (Lee, Hung 2014, 25).

Chen et al (2013, 3-7) have shown that the *shanzhai* approach to indigenous innovation in the mobile phone sector constitutes a "bottom-up approach to innovation." *Shanzhai* firms focus on "demands from the grassroots," aspiring to "good-enough innovation." This contrasts with brand name firms that seek to lure wealthy customers with exuberant features and specifications. Thus, the authors argue that uneven development in China in "both spatial and social terms" has an impact on the promotion of innovation.

However, some researchers question the notion of "indigenous innovation" and assert that the Chinese innovation model must be understood from a political and strategic perspective, rather than being discussed merely as a cultural phenomenon. Such positive culturalist approaches, they contend, can obscure analysis of the government's geopolitical agenda, failing to consider that it a "strategic ploy for the development of Chinese companies against foreign ones" (Goxe 2012, 156).

3.7.3. Innovation in non-Western contexts

When examining *shanzhai* from a non-Western perspective, one must pay attention to the fact that much of the literature measures China's capacity to innovate against an idealized benchmark that derives from Silicon Valley. Examples of this kind of text are "A second Silicon Valley" (Liefner, Kroll 2019, 173), "Silicon Valley for hardware" (Lindtner et al 2015, 2; Fernandez et al 2016, 30), "Silicon Valley model of development" (Chen et al 2013, 16) and "Silicon Valley-like innovation hubs" (Paradise 2013, 321). The Silicon Valley bias is often accompanied by another perception which views innovation exclusively in terms of the creation of new technologies and products, what Keane and Zhao (2012, 223) call the "western techno-fetishism of novelty." The Western definition of innovation should be expanded beyond these narrow confines to encompass a broader understanding of innovation.

Dong and Flowers (2016) explore *shanzhai* as a distinct system of innovation in an emerging economy context. They find that *shanzhai* is an unconventional innovation system in which

diverse local actors contribute to the design, fabrication and distribution of products that target the medium to low-end market with low cost and fast-to-market solutions. S*hanzhai*, they maintain, must be understood in its non-Western context, as it is based on relationships and knowledge which come from connections rather than from research.

In their research, Chung and Tan (2017) also provide evidence in support of the significance of relationships. They do so through a consideration of the *guanxi* phenomenon (Chinese term for good connections with individuals or organisations) as a key factor affecting innovation capabilities in the *shanzhai* manufacturing ecosystem. *Guanxi* can have a significant impact for *shanzhai* firms in terms of the acquisition of new knowledge and of capital funds. This phenomenon resembles the social trust described by Chen and Chen (2020) as facilitating collaborative efficiency while reducing opportunism and ensuring predictable transactions between actors in the *shanzhai* ecosystem. Chung and Tan's 2017 study further discusses the unique phases of Chinese innovation in relation to the comparable neighbouring economies of Japan and South Korea. Based on their *shanzhai* case study, they identify three distinct phases of Chinese innovation, thereby refuting the oversimplified "from imitation to innovation" process described by many others (Page 2019, 195; Liu et al 2015, 276; Ren et al 2016, 57). In this regard, one should mention the distinction made by Qin et al (2018, 231) between "noninnovative and innovative" *shanzhai* firms, as it categorizes companies into those focused on mere imitation and those that innovate based on imitation. Innovative *shanzhai* firms follow an "imitation-plus-innovation" strategy, as discussed by Xu (2017, 251).

By assessing the growth paths of *shanzhai* firms, Shay et al (2020) show that the distinguishing feature that separates *shanzhai* firms from counterfeiters is their ability to build up their own core capabilities, through which they then explore further business opportunities and exploit new markets. The term "imitative entrepreneurship" is employed by Dong (2015, 48) to describe the process by which imitation in product design is paired with innovation in the supply network. Dong argues that imitative entrepreneurial behaviours as seen in *shanzhai* manufacturing are simultaneously imitative and innovative. According to Page (2019, 185), *shanzhai* marks "a transition from imitation to innovation economy" in China.

Chung and Tan (2017) point to the advantages for Chinese firms of advances in internet technology which allow them to gain sufficient knowledge through universities and research organisations to support new product development. The authors assert that the result is more than a simple form of duplicative imitation. Rather, *shanzhai* firms apply an imitation strategy to reduce the risk of failure in product innovation and to accumulate funds and knowledge for more

efficient product innovation in the future. The unique Chinese innovation pathway they describe consists of three distinct phases. In the process of product innovation, *yin* depicts the initial development stage. In Chinese, *yin* means to adopt others' knowledge in order to achieve better results. The second phase that follows the development stage of product innovation is described with the term *tiao*, which in Chinese means adjusting and improving an existing process or product. S*hanzhai* firms view *tiao* as a transitional stage between imitation and innovation. Lastly, the innovation stage is defined as *chuang*, the Chinese word for modifying an original and creating something new.

The unique innovation pathway employed by *shanzhai* firms, as depicted by Chung and Tan (2017), is also reflected in the process of "catch-down innovation" identified by Dong (2015, 49). This term defines the process by which *shanzhai* firms move in the opposite direction to that of brand name and technology leader firms. After accumulating production capacity, firms focus on mature technologies and then head down the technology spectrum towards the low end. In this way, they harness the value of existing technologies, learn how to better manage mature technologies, and build their research and development based upon the integration of both. As a result, *shanzhai* firms avoid investing in the R&D of cutting-edge technologies, which fact reduces the price of their final products. In this way, they are incentivized to innovate in areas other than cost saving and can focus on meeting the unique demands of the BoP market.

The term "second generation innovation" was used by Keane and Zhao (2012, 218) to describe these practices of coupling mature technologies and products to produce novel solutions, while rolling out innovative steps incrementally. Moreover, the authors contend that *shanzhai* promotes "social innovation for the people and by the people," as it provides innovation opportunities to "the information have-less." Impacting technological development, *shanzhai* fosters new modes of production and new forms of innovative entrepreneurship. The emerging *shanzhai* culture also impacts cultural participation and has the potential to introduce a new stage of open-source innovation.

The *shanzhai* innovation model evolved based on the mobile phone chip solution developed by the Taiwanese company MediaTek. Thanks to this chip, mobile phone manufacturers were able to lower their costs for R&D while accelerating the production cycle (Keane, Zhao 2012). The integrated MediaTek chip emerged as a "turnkey model" (Rong et al 2011, 188) which cut down technology entry barriers and triggered downstream innovation by local small and medium-sized firms. The company provided an "all-in-one mobile phone chipset" (Chubb 2015, 264) which suddenly allowed small firms to develop basing themselves on the chip, in the process triggering

a wave of "technological modularization" (Shay *et al* 2020, 32). Modularization gave entrepreneurs the flexibility to change and to adopt different technologies, as well as to adapt to the latest technological developments.

3.8. *Shanzhai* and making: continuities, commonalities, and contradictions

Shanzhai, as I have indicated so far, has many commonalities with the maker movement. In this section I outline and examine several parallels between these two seemingly disparate phenomena.

3.8.1. Small scale production

The ability of firms to flexibly manufacture new models according to need and in small batches, has been identified as a core competency of the *shanzhai* industry (Yu, Kwan 2019). This flexibility in the organization of the industry chain of mobile phone production resulted in an asset-light business model, through which *shanzhai* manufacturers could orient themselves as integrators. It is this condition that enables *shanzhai* manufacturers to launch various products without building factories, but rather, by simply integrating external resources (Zhou et al 2013).

The *shanzhai* network consists of thousands of small firms that are based in the same region and is enabled through its dynamic capabilities for "quick response manufacturing" (Rong et al 2011, 189). It is also, however, an example of rapid prototyping (Keane, Zhao 2012, 216). The frugal solutions for mobile phones produced by the *shanzhai* manufacturing network act as an enabling platform through which firms encourage their business partners' participation. Such a platform aims at removing entry barriers while at the same time promoting interaction (Rong et al 2011). Zhu and Shi (2010, 46) summarized this feature of *shanzhai* aptly when they described its characteristics thus: "If you can think it, you can make it."

3.8.2. The community dimension

In describing the *shanzhai* community, Lee and Hung (2014, 21) introduce the Taoist concept of *jianghu* which denotes a philosophy or even an ideology that is followed by people living beyond the state's control. According to the authors, *shanzhai*'s success must be considered through the lens of *jianghu*. From this perspective, *shanzhai* was the outcome of a collective mobilization of actors in the informal economy who defied, ignored, and influenced state regulation in order to advance their niche industry.

Lee and Hung (2014, 23) list three strategies employed by *shanzhai* entrepreneurs to build their collective identity and spur collective action: "framing, aggregating and bridging." By framing, they mean the act of rebranding as *shanzhai* that which was previously stigmatized as illegal 'black' mobile phones. *Shanzhai*, by contrast, is a term associated with creativity, adaptability, and grassroots resistance. Aggregating refers to how, based on their cohesive collective identity, a group of informal entrepreneurs, mostly from Chaozhou, carved out an additional territory in Shenzhen's Huaqiangbei district to establish a *shanzhai* stronghold. The third strategy of bridging enables *shanzhai* firms to network with actors outside their immediate industry in order to introduce resources and innovation. Here the researchers are discussing entrepreneurs of similar geographic origins, whose networks extend nationwide and even, in some cases, worldwide. The shared background of these groups ensures social cohesion in the shape of social trust (Chen, Chen 2020, 778) between them, which helps in "lubricating economic exchange."

With respect to their distribution channels, *shanzhai* manufacturers established a sales agent network that was built on trust among certain named ethnic groups (Zhou *et al* 2013). In this way, manufacturers successfully incorporated BoP groups into a network node for product distribution. They profited directly from the existing networks and social capital of the BoP community by incentivizing word-of-mouth advocacy in the BoP community, while also giving away part of their profits.

In their study on the relationship between maker culture and the *shanzhai* manufacturing industry, the authors Lindtner et al (2015, 15) highlight the "culture of sharing" inside the *shanzhai* industry's informal social networks. Even though this trait has been identified as one that is shared with the maker movement, the authors note that in *shanzhai*, this culture is motivated by necessity rather than countercultural ideals. In summary, one can return to Zhu and Shi (2010, 46) in order to characterize this aspect of *shanzhai*: "community not corporation" and "grassroots not top-down."

3.8.3. Open-source practices

In their investigation, Lindtner et al (2015) point to certain elements at the core of *shanzhai* that they compare to open-source hardware platforms such as Arduino. *Gongban* can be translated from Chinese as 'public board.' It refers to the production-ready boards for end-consumer electronics that lie at the heart of every *shanzhai* device. These boards are not sold to producers by the design houses who make them. Instead, producers distribute them for free to manufacturers, along with a list of compatible components and a design schematic. The design

house only makes money by selling the components that match the boards. Thus, because they also serve as a bridge with manufacturing, the *gongban* public boards constitute an advanced version of the Arduino open-source hardware platform.

Another aspect at the core of *shanzhai* which exhibits similarities with open-source practices is the sharing of common knowledge (Zhou *et al* 2013). For example, chip manufacturer MediaTek (MTK) explain their reasons for sharing common knowledge: since each manufacturing company implementing the MTK chip into their products confronts unique problems, the company gathers information about the issues, tries to provide solutions and then passes aggregated knowledge and experiences down to other firms. In this way, one can avoid the repetition of similar problems and the whole industry profits from their open standards.

The study by Fernandez et al (2016) examines the convergences and differences between the *shanzhai* community and the emerging maker movement in China. The authors find that both are based on an open innovation paradigm but differ in the values they put forth. They point to the fact that there is hardly any interaction between the Chinese maker scene and the *shanzhai* community, although they identify *shanzhai*'s open innovation characteristics as a catalyst for the rapid development of a distributed manufacturing industry. Furthermore, they argue, this model of many small firms specializing in different manufacturing processes along the value chain served not only as a growth motor for a whole industry. Rather, it also echoes in many ways, the 'Fab City' project. Other authors assert that *shanzhai* is a harbinger for "a new stage of open-source innovation" (Keane, Zhao 2012, 226). However, Keane and Zhao also argue that the *shanzhai* manufacturing industry is witnessing a transition towards a "post-*shanzhai* era." After a period of "emergence, development and stabilization," they anticipate a decline in the informal growth path, followed by the emergence of new pathways of potentially novel activities. These novel activities may, they suggest, herald the advent of a distinctive model of innovative nation, where open standards and sharing constitute the foundations of social transformation.

As in maker culture, Yu and Kwan (2019) argue that in *shanzhai,* experimenting through imitation is a deliberate form of learning. Imitation is therefore not mere copying, but involves creativity and "insightful investment" by the imitator. Through the process of imitation, certain attributes are added to the product in such a way that it comes to differ slightly from the original. For these researchers, this process of learning and experimenting through imitation is key to innovation.

3.8.4. Counterculture

Certain authors assert that there are commonalities between *shanzhai* and contemporary hacker culture (Keane, Zhao 2012; Liboriussen, 2016). Hennessey (2012) describes how hackers believe in learning essential lessons about things and their place in the world by taking them apart and seeing how they work. They then use the knowledge acquired through this practice in order to create new and more interesting things. Keane and Zhao (2012) detect within *shanzhai* several rules that echo the ethos of hacker culture. The first one, to never build anything from scratch, but instead to build upon what others have already done, has also been identified by Lindtner et al (2015) as a value proposed by the *shanzhai* community. The second is to innovate the production process; the third, to openly share information with others so that it is easy for them to add value to your process. The fourth rule is to not manufacture or produce anything until you already have a buyer while the last is to act responsibly within the supply chain.

However, Lindtner et al (2015, 17) also refer to the polarities in the discussion about *shanzhai* as counterculture, stating that "*shanzhai* is neither straightforward counterculture nor pro-system." It is their contention that even though the industry has its roots in ongoing practices of piracy and open sharing, it remains deeply embedded in contemporary modes of capitalist production. That said, the authors do nonetheless touch upon the ideas of autonomy, independence, and outlaw status in relation to *shanzhai*, arguing that, in diverse ways, these ideas are also at play in the industry.

Shanzhai is also portrayed as "subversive of the global economy's regimes of authenticity and exclusivity" (Chubb 2015, 278), most prominently, in relation to its defiance of intellectual property laws. With its roots in ancient Chinese folk tales, *shanzhai* expresses a rogue spirit, often referred to by Western scholars as "Robin Hoodism" (Hennessey 2012, 635; Yang 2016, 590; Lindtner *et al* 2015, 16; Zhang, Fung 2013, 404). The outlaws from the Chinese tale are known to originate from among the people and stand for independence and marginalization from authority. In Wang and Zhang's opinion (2020, 756), *shanzhai* represents a relentless struggle and interaction between "the powerful and the powerless" and "the mainstream and the subcultural." The core of *shanzhai*'s politically subversive power is thus built upon an "initiative to emerge and participate in official political, economic or cultural spheres."

3.9. Postcolonialism and non-Western perspectives on *shanzhai*

So far, large efforts to theorize *shanzhai* have been taken up by Anglo-American scholars. Wang and Zhang (2020, 741) consider the asymmetric power relation between East and West, which impacts the "geopolitics of knowledge production." In this section, I highlight postcolonial concepts that have been employed by scholars to conceptualize *shanzhai*. I describe non-Western perspectives on the phenomenon that can support me in my effort to deconstruct the hegemonic tropes that dominate Anglo-American scholarship on *shanzhai*.

3.9.1. Postcolonial theories

Wang and Zhang (2020, 742) apply the theoretical concept of "mimicry", as elaborated by postcolonial scholar Homi Bhabha, to *shanzhai*. The term describes the colonized's mimicking of the colonizer, through which process a similarity between mimic and model is achieved. At the same time, the mimic draws advantage from the process and even self-elevation. Because it narrows the distinction between model and mimic, mimicry is seen as a strategic form of adoption and as an "evolutionary rebellion by the unauthorized." By being "almost the same, but not quite," mimicry is "disruptive of systems of domination" (Chubb 2015) and poses an immediate threat to authority through mockery. The phenomenon is best captured in the words of Homi Bhabha, in a passage in which he writes that the colonized "gladly received Bibles, not to read and follow, but to use as wrapping paper." (Wang, Zhang 2020, 745)

Writing about knowledge production and its appropriation from colonizers, Lu Xun coined the term "grabism." In an article from 1934, the writer urged other Chinese intellectuals to strive for greater subjectivity and autonomy by engaging in a "proactive and selective choosing and assessing" of knowledge. Following his concept of grabism, Chinese intellectuals have various options at their disposal: to "either use it, leave it, or destroy it" (Wang, Zhang 2020, 742). Grabism therefore describes subordinate groups' selective appropriation of knowledge from the dominant culture.

Homi Bhabha's conceptualization of culture and identity in a postcolonial context follows the writings of Lu Xun on grabism. Through the theory of "hybridity," Bhabha examines the "blurred boundaries between purportedly separate cultures" (Chubb 2015, 262). More specifically, grabism describes contact zones in which subordinate groups encounter the dominant culture and engage in selective appropriation. In the contemporary context of *shanzhai* manufacturing, two contact zones have been identified: First, Shenzhen as a spatial and

economic frontier between China and the world, and second, the Chinese internet which is also a national and global network in which *shanzhai* cultural production takes place.

3.9.2. Confucianism

Paradise's article (2013) examines the environment of intellectual property rights in China, and reports that intellectual property rights have no tradition there partly due to the cultural influence of Confucianism. Confucian ideas around copying and imitating still play a significant role in education traditions in China. Tam (2014, 87) makes the connection between the tradition of forgery in traditional Chinese painting and the contemporary *shanzhai* phenomenon, referencing the "forger's manual" which is made up of four traditional Chinese methods of copying study: "*mu* (to trace), *lin* (to copy), *fang* (to imitate), and *tsao* (to invent)." According to Tam, because it follows in these steps, *shanzhai* can not only lead towards innovation and creativity, but can also become a method of "resistance, subversion, and critique." It is through appropriation that producers and consumers criticize and subvert the original purpose of brands and their respective products. While it can be understood as resistance through theft and the subversion of technology, *shanzhai* can also be seen as an act of resistance to economic market imperialism. In this respect, Paradise (2013, 323) further notes that socialist ideas have converged with Confucianism, resulting in a perception shared by both about the communal nature of property in Chinese society. Thus, the notion that "it is impossible to separate the inventor's activity from the society of which the inventor is a part" reflects the socialist paradigm which is still present in contemporary Chinese society.

3.10. *Shanzhai* and the global system of Intellectual Property (IP) rights

The admission of China to the WTO (World Trade Organization) in 2001 marked a significant moment for the country in economic terms. At the same time, it also meant that China was required to comply with the global IP rights regime (de Kloet, Yiu 2016).

On the one hand, dominant perceptions of the *shanzhai* network view it as a violator of IP rights (Hennessey 2012; Yang 2016; Page 2019; Paradise 2013). On the other hand, the absence of IP rights enforcement and the general disregard for IP rights in China has been identified as an enabling force for the original emergence of *shanzhai* (Chubb 2015; de Kloet, Yiu 2016; Lindtner *et al* 2015; Chen, Chen 2020).

The Western conception of property, which serves as the foundation of IP rights, is based on the individual and as such differs from the Chinese collectivist approach (Yang 2016, 603). Page (2019, 187) goes further and argues that it is a responsibility of people in "collectivist cultures" to share their knowledge for the benefit of the society in which they live in. As a result, collective duties are placed above individual rights and there is no perceived need to protect IP rights.

Examining the factors determining IP rights protection and enforcement in China, Paradise (2013) points to the historical impacts of Confucianism and Socialism which have worked as countervailing forces to the protection of IP rights. Writing in favour of the IP rights regime, the author envisions a bright future for China as it becomes a larger producer of IP: in its quest to become an innovation-oriented society, new incentives for IP protection will produce a wave of creativity in the country.

According to de Kloet and Yiu (2016, 230), the IP rights regime is deeply rooted in the belief in individual ownership and creativity. The authors recognize the global IP regime as a "capitalist ideology" which was invented for protecting entities with capital investments rather than individuals. Taking up the term piracy to display their opposition to IP rights, the authors end up turning the debate into a moral one, seeking "to distinguish good from bad." Hennessey (2012) brings attention to the government's role in deliberately undermining property rights. However, piracy is not just a result of the lax enforcement of IP rights, instead, real incentives promoting it are built into the structure of the Chinese economy.

Hegemonic Western ideas related to creativity and originality determine much of the scholarly discourse on *shanzhai* (de Kloet, Yiu 2016). Keane and Zhao (2012) advocate for an expansion of the notion of creativity, one which must be non-Western and inclusive of all forms of creativity. For their part, Lindtner et al (2015) bring our attention to hypocrisy in considerations of *shanzhai*. They note that while hacking is celebrated in the West as a future innovation enabler, the open manufacturing processes evident in *shanzhai* are denounced for their lack of principles and observance of norms such as IP rights. This specific discourse about the lack of IP rights protection in *shanzhai* can be found in the articles by Page (2019), Qin et al (2018), Qin et al (2019) and Paradise (2013).

3.11. Philosophical question(s): Real or fake

The preceding discussion around originality and intellectual property protection is embedded within the much broader philosophical question about what constitutes the real versus fake. Ai Weiwei is among those who have entered the debate about authenticity and originality, approaching the *shanzhai* topic from the perspective of an artist with his work 'Sunflower Seeds' (Tam 2014, 101). For this artwork, Ai had millions of sunflower seeds handmade in the village of Jingdezhen in China, which is renowned for its porcelain artisanships. When after the exhibition the same porcelain sunflower seeds appeared online for sale, the question arose as to whether they had been made by the same artisans who had previously worked for Ai. Were these seeds a fake version of Ai's original Sunflower Seeds project? And indeed, *could* they be fake if they had been produced by the same people? Further, do the seeds lose their meaning and value if taken out of the original context? Tam extrapolates the question from the artworld to the Chinese manufacturing sector, thus evoking a similar debate among those who contemplate *shanzhai*'s products.

3.12. The health and safety of *shanzhai* products

In China, where consumers come across fake products daily, the question of real or fake is not just a matter of appreciation, but indeed one of health and safety. For consumers in China the uncertainty around what is real versus fake has become a pervasive anxiety as scandals around fake medicines or food, such as powder milk for babies, have revealed severe health hazards. Health risks apply also to workers in those workplaces which fail to enforce adequate safety standards. For example, through 'ghost shifts,' factories are kept running over night with workers having to work overtime (Tam 2014). Therefore, some researchers see a danger in romanticizing the labour involved in the informal sector of copied and imitated products. They point to the many accidents that have occurred in workplaces, as well as those inflicted on customers as they handle the finished product (de Kloet, Yiu 2016).

3.13. Gendering the *shanzhai* phenomenon

Only one author discusses the gendered nature of *shanzhai* (Liao 2017). In the masculine technological space, it is men who pursue their dreams while women are excluded from both this

space and the 'Chinese Dream' in general. The author highlights women who are striving for autonomy in *shanzhai* fashion but are unacknowledged and marginalized by both conventional *shanzhai* discourse and the state. *Shanzhai* fashion produced by women is neither considered creative, as are *shanzhai* mobile phones, nor does it receive the same attention. Thus, women designers in *shanzhai* fashion are also not celebrated as symbols of creativity and grassroots resistance, and their work is not recognized as establishing a new form of cultural production. The author argues that cultural production in China is controlled by state ideology and that therefore, the freedom to create and produce is embedded within a tight system of regulation and control.

4. DISCUSSION

In this section, I return to the main research question, which I discuss with the aid of the key themes developed above. Thus I ask: In what ways does *shanzhai* challenge the Western-centric concept of innovation and to what extent can it enrich our understandings of making? It was hypothesised that the *shanzhai* phenomenon offers us tools with which to critically rethink and reconceptualize the notion of innovation from a non-Western perspective. Therefore, the research was framed in such a way as to identify specific aspects of *shanzhai* that can broaden our understanding of making. The second part of the research question enquires into our concept of making, challenging the preconception that making emerged out of a Western context. In doing so, I highlight cultural and socio-economic aspects of making that are neglected within dominant scholarship, but which may be at play in non-Western contexts. It is within this perspective that I discussed some of the ways in which postcolonial theory, as articulated by Homi Bhabha and Lu Xun, have been applied in the literature to shanzhai.

4.1. Challenging Schumpeter

To clarify what is meant by a Western-centric concept of innovation it is important to look at the main thinkers in innovation theory, those whose definitions have shaped the concept over time. In an acknowledgement of the fact that the prevailing asymmetry in knowledge production today is shaped by the history of colonization, the discussion is motivated by a desire to decolonize the term innovation in the context of *shanzhai*. This work of decolonization will enable me to develop my argument about shanzhai and Western conceptions of innovation below.

Much of our contemporary knowledge about innovation is shaped by Schumpeter's concept of creative destruction. Schumpeter built his argument on the idea that countries must develop technological innovation, and that if they fail to do so, they fall behind. It is based on their ability to innovate that Schumpeter classifies some economies as more advanced than others. According to his theory, different waves of technological innovation characterize societies and indicate their level of development. In this sense, innovation is simply a driver of economic growth and

progress which translates into development. Jimenez and Roberts (2019) problematize the fact that such models of innovation which were created in the context of the global North, get applied uncritically to the global South. According to Schumpeter, innovation is depicted as a key instrument that nation-states use to stimulate social and economic development. However, Schumpeter's conception disregards local, indigenous knowledge, cultural values, and ways of knowing. Building on these critiques of Schumpeter, the discussion below offers a refutation of the core notion of "Western techno-fetishism of novelty" (Keane, Zhao 2012, 223) which sees innovation exclusively as the introduction of new technologies and products, with Silicon Valley held up as a pathfinder.

In the early 2000s, the Chinese state implemented a range of economic policies aimed at turning the country into an "innovation-society" (Paradise 2013, 313). Aligning itself with Western-centric views on economic development, the state stimulated the creation of innovation capacities in order to achieve economic growth. As a result of these state-led policies, a phenomenon emerged which did indeed create innovation capacities, eventually leading to economic growth. However, when examined more closely, the *shanzhai* phenomenon demonstrates features of social and user-driven innovation.

Indigenous knowledge plays a crucial part in *shanzhai*'s "bottom-up approach to innovation" (Chen *et al* 2013, 7). The literature shows that *shanzhai* follows a unique innovation path with cultural and spatial characteristics. A main cultural pillar supporting the *shanzhai* ecosystem is "social trust" (Chen, Chen 2020, 777), based on which informal economies in China mediate professional business relationships, build crucial social networks, and support structures. In addition, knowledge is not gained through R&D activities conducted by *shanzhai* firms, but acquired from connections to other firms and individuals. Further, *shanzhai* builds upon mature tech, triggering a 'catch-down innovation' process to meet the demands of the BoP market. As such, the primary concern of *shanzhai* innovation is not to create technological overshooting and serve the economically wealthy part of society.

Shanzhai's innovation pathway has been compared to China's neighbouring economies, Japan, and South Korea (Chung, Tan 2017). Imitation, as the earliest innovation stage, was found to resemble those countries' innovation pathways. However, the authors identified three stages of product innovation development (*yin, tiao, chuang*) which they found to be unique for China and the *shanzhai* phenomenon. *Yin* refers to the adoption of someone else's knowledge. *Tiao* means the adjustment or improvement of something that already exists, and *chuang* describes the process of altering the original design and creating a new product. By elaborating on Chinese

linguistic concepts to distinguish the three stages of innovation in the country, the authors refute the simplified 'from imitation to innovation' paradigm.

An additional factor that is unique to the Chinese innovation model is the role of Confucianism (Hennessey 2012, 645). A core value of Confucianism is "learned mastery" which elevates the process of copying and imitation while discouraging creativity. However, it is not clear if China's disregard for intellectual property is culturally rooted in Confucianism. The author argues, that the Chinese government consciously undermines intellectual property rights in order to retain control over the economy and ownership.

In combination with the deregulation of mobile phone licensing and the geographic advantages provided by Shenzhen, the state created the 'perfect storm' for *shanzhai* to emerge and flourish. When the phenomenon started spreading through online internet communities, *shanzhai* developed the characteristics of a subculture. *Shanzhai* centred on the language of resistance, with words like "subversion" and "rebellion" at its core (Chubb 2015, 276). The phenomenon was therefore identified by the Chinese state as a popular cultural concept with controversial elements. Thus, in an attempt to neutralize its controversial elements, *shanzhai* was co-opted and subsequently promoted through state media. With the co-optation of *shanzhai*'s grassroots discourse, the phenomenon was depoliticized and subsumed into the broader narrative of increasing innovation capacities and branding the nation. From that point onwards, state media reworked *shanzhai* into an ethnocentric construct (Goxe 2012) inside the framework of the 'Chinese Dream,' the Chinese equivalent to the American Dream (Liao 2017). The ideological construct of the Chinese Dream allowed the state to frame *shanzhai* as representative of Chinese values and "the quality of Chineseness" (Chubb 2015, 273), with a focus on specific elements such as "folk wisdom and creativity" (Goxe 2012, 8). The portrayal of *shanzhai* in state media worked to realign the state with the common people, re-establish itself as their protector and leader of the nation (Yang 2016). As a result, *shanzhai*'s culturally productive force, with all its subversive elements, was subsumed into a developmentalist project, whose objective was to transform the paradigm "From Made in China" into "Created in China" (Keane, Zhao 2012, 227).

4.2. Critically rethinking making

In this section I focus on the common ground between *shanzhai* and the maker movement. In a manifesto entitled *The Maker Movement*, Dougherty (2012) reflects on the discussion about its emergence in the global North, presenting it as a Western phenomenon. I bring Browder et al's work (2019) into the discussion as it usefully highlights the features that set the maker movement apart from those involved in the conventional making of artefacts. Through a consideration of three dimensions – the social, knowledge, and technology – they chart the maker movement's relationship to entrepreneurship. With these key aspects of the maker movement in mind, I go on to review these key texts on the phenomenon, demonstrating that while *shanzhai* intersects with specific values and objectives that it shares with the maker movement, there are nonetheless some significant differences between the two phenomena. My main argument is that there are critical lessons to be learnt from *shanzhai*. These have the potential to enrich our understanding of making and to expand Western perceptions of it, generating a more comprehensive conceptualization of it. As evidenced above, I support the assertion that we can learn from making in different, non-Western contexts by drawing on postcolonial theory from scholars such as Homi Bhabha and the writings of Chinese intellectual Lu Xun.

The first distinctive feature of the maker movement is its "high level of social exchange and collaboration among diverse actors" (Browder *et al* 2019, 459). It is their "interconnectedness" (Jimenez, Roberts 2019, 182) that has helped makers to build a movement. People are connected in online and offline communities through their enthusiasm and passion for engineering and crafts. While it is the case that, as Mauroner (2017) notes, monetary incentives are not the primary forces that drive makers, *shanzhai* entrepreneurs have a strong focus on economic success and competition, as they are motivated by economic necessity. A significant convergence between the maker movement and *shanzhai* can, however, be observed in the levels of social exchange and collaboration. In *shanzhai*, firms that are in competition with each other are also at the same time cooperating; thus *shanzhai* is a system of "coopetition" (Fernandez *et al* 2016, 28).

The second and most distinctive feature of the maker movement is "enhanced knowledge creation and sharing in physical or virtual spaces" (Browder *et al* 2019). The "culture of sharing" (Lindtner *et al* 2015) inside the informal networks of the *shanzhai* industry is highlighted as a commonality with the maker movement. However, researchers note that the sharing culture in *shanzhai* is motivated by necessity rather than countercultural ideals as is the case in the maker

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movement. That said, open-source hardware practices can be found at the core of *shanzhai*. *Gongban* (Chinese: public boards) are Arduino-like open-source hardware platforms that are given out for free to manufacturers and work as a bridge to manufacturing. The sharing of knowledge is another prevalent feature of *shanzhai*. As an enabler of the *shanzhai* industry, the chip manufacturer MediaTek collects and shares the knowledge they accumulate on common issues with the industry. *Shanzhai* firms profit from MediaTek's open standards, as the shared knowledge helps them to avoid future problems. Fernandez et al (2016) found that both *shanzhai* and the maker movement are based on an open innovation paradigm. In this respect, they compare *shanzhai*, with its many small and specialized firms along the value chain, to the 'Fab City' project.

The third feature of the maker movement is "the production of material artefacts using technological resources previously restricted to corporate research and development (R&D) facilities" (Browder *et al* 2019, 459). In a practice that resembles those which prevail in the maker movement, *shanzhai* firms build their products on existing mature technologies rather than investing in in-house research and development. This gives them several advantages, such as the ability to lower costs while at the same time fostering "catch-down innovation" (Dong 2015, 49). The introduction of the MediaTek chip offered a previously unavailable "turnkey model" (Rong *et al* 2011, 188) that enabled technological modularization in the *shanzhai* industry. Technological modularization lowers the entry barriers into the industry for small firms and equips them with the flexibility to change and to adopt new technological developments (Shay *et al* 2020). In relation to technological modularization, one can discern further commonalities between *shanzhai* and the maker movement, such as rapid prototyping and small-scale manufacturing (Yu, Kwan 2019).

The literature review brought to light some significant differences between *shanzhai* and the maker movement, to which I now turn. Liu et al (2015) note that the *shanzhai* industry is driven by the actual needs of its BoP customers, while the maker movement is more focused on those processes relating to education and self-actualization that underpin making (Jimenez, Roberts 2019). Further, *shanzhai* firms are involved in a constant market feedback loop in order to meet the requirements of their BoP customers (Rong *et al* 2011). In contrast to this is the maker movement, which motivates people to tinker. While tinkering may lead to the production of technologically feasible artefacts, these may not actually be needed by anyone. In this respect *shanzhai* follows the simple rule "don't make it unless you have a buyer" (Keane, Zhao 2012).

Nonetheless, it is my contention that *shanzhai* may still be considered an example for other emerging economies that are aspiring to articulate their own unique conceptualization of making.

Therefore, I argue that other subordinated cultures, individuals, or groups who are subject to asymmetrical power relations could benefit from deploying mimicry. Doing so, they might bolster their efforts to rupture established forms of subordination and ongoing postcolonial structures. I further argue that the use of grabism can provide other subordinate groups with the instruments needed for creating indigenous forms of making. Thus, the selective assessment and choice of knowledge that has the potential for subsequent appropriation can equip subordinate groups with the ability to subvert power structures.

4.3. Knowledge gaps

The critical review of the literature exposed certain gaps and under-researched topics, which I elaborate on here.

4.3.1. Literature focused on growth

Much of the literature examines *shanzhai* as an entrepreneurial phenomenon. As such, attention is focused on economic success and growth. The fact that *shanzhai* is deeply embedded within the capitalist system is noted by only one author (Chubb 2015). The rest of the literature lacks a critical discussion of *shanzhai* and its inherent ties to capitalist entrepreneurship. As a result, absent from the literature is an examination of *shanzhai* as a more sustainable approach to manufacturing.

4.3.2. Chinese philosophy and scholars

Wang and Zhang (2020) discuss the geopolitics of knowledge production in relation to *shanzhai*. They point out that the hegemonic status of Anglo-American scholarship is a part of an ongoing process of knowledge accumulation and production. During political processes like imperialism, colonialism and war, indigenous knowledge systems were devalued while power hierarchies were reinforced.

4.3.3. Workers

By placing entrepreneurs and their firms at the fore, the literature glosses over workers and their rights and demands in the *shanzhai* industry. Thus, the element of class is missing from the literature. Although Fernandez et al (2016) mention the precarious working conditions in which workers manufacture *shanzhai* products, little else is revealed about them.

4.3.4. Gender in technological *shanzhai*

As discussed by Liao (2017), the *shanzhai* mobile phone manufacturing industry is predominantly male. However, this explicit gender imbalance is a topic that has not been touched on by any other author. Inquiries into patriarchal structures in the contemporary Chinese technological space are therefore absent. Apart from one investigation into *shanzhai* and fashion, which reveals the unequal representation and treatment of women in *shanzhai*, the reviewed body of literature is silent on the topic of gender.

4.3.5. Waste and planned obsolescence

According to Fernandez et al (2016), mobile phones manufactured by the *shanzhai* industry have a short life cycle of up to only 3 months. The lack of reference to the waste which is produced by the *shanzhai* industry due to the short life cycles of their products is a further gap that I identify in the literature. To address this oversight, *shanzhai* would also have to be examined as a mode of producing objects that builds in their planned obsolescence.

5. CONCLUSION

Through a systematic review of the literature, this paper has explored the intersections between *shanzhai,* innovation and making. Its objective was to identify dominant themes in the literature regarding innovation processes to understand the *shanzhai* phenomenon in a non-Western context. In addition, the paper aimed to map commonalities and divergences between *shanzhai* and the Western concept of making. With respect to the notions of creativity, ownership and manufacturing, the paper drew attention to debates, conflicts and contradictions that emerged from the literature. A final goal was to highlight gaps in the literature and suggest directions for further research.

Following an introduction to the topic, the paper's approach to conducting its literature review, based on Xiao and Watson (2019), was described. The model adopted consisted of three main stages with eight subordinate steps. In the first stage, the review was planned by first formulating the research problem and defining the research question; next, a review protocol was elaborated. During the second stage, the review was conducted; following pre-set keywords, a total of 175 resources were collected. These resources were then screened for inclusion and their quality was assessed based on predetermined criteria. As a result, a total of 33 resources was selected for the review. The extraction, analysis and synthesis of the data was followed by the third stage, the reporting of the review. Subsequently, the extracted data was synthesized, grouped, and presented as key themes emerging from the literature. As a result, 14 key themes were identified and presented with reference to the literature.

After presenting the key themes, I returned to the original research question which was based on the working assumption that *shanzhai* offers us the opportunity of reconceptualizing the concept of innovation within a non-Western context. I noted how key scholars in innovation theory are from the global North, which fact motivated me to attempt a decolonization of the term innovation in the context of *shanzhai*. My two-pronged argument was that *shanzhai* initially emerged from the grassroots and challenged the Western-centric concept of innovation but was

then subtly subsumed by the state. Therefore, I found that *shanzhai* evolved from being a user-driven form of innovation to one directed by the state.

In the second part of the discussion, various commonalities, and parallels between *shanzhai* and the maker movement were sketched. Overall, my contention was that the lessons learnt from *shanzhai* have the potential not only to enrich Western understandings of making, but also to support maker cultures in different, non-Western contexts. In this respect, the concepts of mimicry and hybridity, as articulated by postcolonial scholar Homi Bhabha, along with the concept of grabism by Chinese scholar Lu Xun, deserved special attention as they have the potential to be employed as instruments for rupturing prevailing colonial tropes.

Through this systematic literature review, I have engaged in an in-depth investigation of the *shanzhai* phenomenon. Further, the review also brought to light a number of areas that remain under-researched, among them, the potential diversity of *shanzhai* practices (due to the narrow focus on just a few firms), the role of gender and working conditions, and struggles in the industry.

I close my thesis by pointing to some areas for future research with regards to the *shanzhai* phenomenon. Keane and Zhao (2012) have argued that *shanzhai*'s grassroots culture has the potential to serve as a commons. Future research could follow-up on this lead and investigate the convergences between *shanzhai* and the principles of the commons movement. Another important aspect of *shanzhai* that should be explored is the question of whether and how it relates to degrowth. S*hanzhai*'s user-driven innovation processes could be viewed as instruments for convivial technologies, thus one ought to assess its potential value for the degrowth movement.

Looking ahead, I see this thesis as laying some of the groundwork for the PhD I plan to undertake. Having identified *shanzhai* as an innovation phenomenon with postcolonial traits, I will research other non-Western innovation phenomena. My intention in so doing is to formulate a decolonized conceptualization of innovation that can speak to a diverse and globalized world.

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