

# Politics of smell: Constructing animal waste governmentality and good farming subjectivities in colonial Hong Kong

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EPC: Politics and Space  
0(0) 1–20

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DOI: 10.1177/2399654420914320  
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## Abstract

This paper examines the governmentality of colonial Hong Kong throughout the 1980s and 1990s, focusing on the implementation of the Livestock Waste Control Scheme (1987–1997), the production of normative waste treatment knowledge, the spatial control of farming practices and the resulting subjectivity in the construction of the ‘environmentally friendly farmer’ identity. These themes are examined by analysing archival materials and conducting in-depth interviews with two Pig Farmers Association representatives and 19 pig farmers. This paper argues that the colonial government of Hong Kong relied on environmental ordinances and zoning regulations, livestock waste demonstration projects and socially constructed perceptions of olfactory acceptability as major technologies of governance in the creation of ‘environmentally friendly’ pig farmers. Through being exposed to these technologies, pig farmers learned and internalised a particular concept of what constitutes appropriate animal waste management and treatment. This paper shows how the concept of being ‘environmentally friendly’ contributes to the creation and use of ‘good farming’ subjectivities when modernising pig farmers’ waste management practices.

## Keywords

Governmentality, space, pigs, good farming subjectivity, environmentally friendly practices, colonial Hong Kong

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## Introduction

The aim of this paper is to examine the governmentality of colonial Hong Kong (HK) by focusing on the production of ‘environmentally friendly farmers’ through the Livestock Waste Control Scheme (LWCS). To pursue this analysis, this paper elucidates how the colonial<sup>1</sup> government of HK (hereafter referred to as the ‘Colonial Government’) relied on environmental ordinances, zoning regulations, livestock waste treatment demonstration projects and socially constructed perceptions of personal odour as major governing technologies for the production of ‘environmentally friendly farmers’. This study contributes to the governmentality literatures in three major ways: (1) it provides a new angle from which to examine how animal waste governmentality produced environmental knowledge and technologies to transform farmers’ behaviours in a colonial context; (2) it demonstrates how the concept of ‘environmental friendliness’ contributes to the production of ‘good farming’ subjectivities, particularly in the practices of waste management, odour reduction and daily monitoring of animal waste treatment facilities; (3) it considers smell within space and politics which brings a new empirical analysis of how farmers self-regulate their bodies’ scent and how pig odour impacts the perceptions of moral degeneracy in HK. The intent of this paper is not to theorise smell; rather, the author attempts to extend the analysis of the ‘role of smell’ in producing self-regulating behaviours from a governmentality perspective.

The intensification of pig farming consistently causes water pollution, odour, and zoonotic diseases, which transgress environmental standards and result in sanitary concerns for cities (Neo and Emel, 2017). Environmental standards, sanitary perceptions and aesthetic understandings of urban pig farming differ with political systems and temporality (Holloway and Morris, 2014; Serpell, 2004). For instance, during the Mao era (between 1949 and 1978) Chinese farmers and politicians valued the utility of pigs primarily as ‘fertiliser factories’ rather than for their meat production (Schneider, 2018: 236). Yet, industrialised pig raising during the post 1978 Market Reform period in China was perceived as ‘filthy’, ‘stinky’ and ‘polluted’ (Chan and Enticott, 2019). Phillips (2007) and Stibbe (2003) have elucidated how perceptions of pigs changed over time and space, coming to be constructed negatively as ‘dangerous’ and ‘filthy’ after a previously enjoying a relatively ‘close’ relationship with humans. Significantly, images of pigs have been constructed (materially and discursively) to inform the societal norms of urbanity, determining whether pigs are included or excluded in the city (Cresswell, 1996; Mcneur, 2014; Philo, 1995). For example, pig farmers in different parts of the world frequently encounter the derogatory and erroneous preconceptions of outsiders to the farming community, perceiving it as low-skilled and pig farmers as lack[ing] credibility and intelligence (Classen et al., 2002). Especially during the outbreaks of animal–human transmitted diseases such as H1N1 and Avian Flu (Davis, 2006; Perdue and Swayne, 2005), pigs came to be perceived as the ‘hosts of pathogens’ which led governing institutions to develop a set of practices to increase biosecurity measures by separating ‘diseased pig bodies’ from ‘healthy human life’ (Hinchliffe et al., 2013).

The study of urban pig farming in HK is a suitable case for numerous reasons. Currently, there are 43 pig farms<sup>2</sup> still operating their businesses in the New Territories (NT),<sup>3</sup> HK. The majority of farmers have been raising pigs for more than 16 years and are aged over 50 (LCFC, 2006: 3). Pig farms’ operations are family-based, as well as industrialised and privately-owned. These family pig farms are small and pig farmers keep 2000 to 6000 pigs in fewer than three hectares of land per pig farm. Urban pig farming in HK is characterised by a system of high-intensity farming, providing a useful lens to understand social dynamics and aesthetic judgements found in other parts of China. Specifically, concerns about ‘public health and pollution’ related to pig farms led to a stricter regulation of animal waste in HK,

resulting in a significant decrease in pig farming (LCFC, 2006: 2). However, there is a lack of attention towards the individual-level effects of the Colonial Government's regulation and transformation of farmers' farming behaviours (Airriess, 2005; Chan and Miller, 2015), particularly with regard to waste management practices and the self-regulation of body scent. Throughout the 1970s and 1980s, urban pig raising was not only a danger to water safety and sanitation in HK, but also produced strong odours which upset citizens who lived in the urban areas (Binnie and Partners, 1974). Consequently, the Colonial Government took the decision to implement the LWCS (1987–1997): to quell disorder and eliminate 'unruly' farming practices (i.e. the indiscriminate discharging of pig waste into streams) causing sanitary risks and dysfunction for city development in HK (Ng, 2011). Since the enforcement of the LWCS in the 1980s, 1090 pig farms were outright banned, while 1620 pig farms needed to install appropriate waste treatment facilities in the 1980s (KAAA, 1986: 1). This paper asks: what are the technologies that the Colonial Government deployed to transform pig farmers' animal waste treatment behaviours? How were new forms of environmental knowledge produced to problematise pig farming production and construct new types of 'good farming' practices?

To answer these questions, this paper harnesses the concept of governmentality as a tool to examine the Colonial Government's territory-wide animal waste control project: the LWCS (1987–1997). The LWCS transformed pig farming space and produced normative waste treatment knowledge amongst pig farmers, while sculpting farmers' understanding of what it means to be 'environmentally friendly' through waste treatment demonstration projects. This paper draws on empirical research conducted between 2009 and 2015 where the author undertook in-depth interviews with 19 pig farmers and two Pig Farmers Association leaders based in HK. According to Creswell and Creswell (2017: 278), the focus of in-depth interviews 'is to [understand] participants' perceptions and experiences, and the way they make sense of their lives'. In this sense, conducting in-depth interviews during this research has helped to illuminate how pig farmers describe their perceptions of waste control schemes – as 'persons who have experienced' participation in the waste treatment demonstration projects. Interview questions were semi-structured in order to explore the potential factors that underpin pig farmers' experiences of 'environmentally friendly' practices (Legard et al., 2003: 141). Archival research was also conducted to collect 'extensive information' from the government documents to explore how different 'social contexts' and 'policy ideology and events' influenced pig farmers' behaviours (Cheung et al., 2017). Government documents are collected mainly from the Environmental Protection Department (EPD) and Agriculture and Fisheries Department (AFD) to examine how officials and pig farmers perceived and negotiated waste treatment methods and licensing systems under the LWCS.

Having outlined the main questions of inquiry above, this paper will proceed to elucidate the interrelationship between governmentality, good farming and animal geographies in the existing literature. Following this engagement, the paper proceeds to report on the empirical findings from the 2009–2015 in-depth interviews from a 'governmentality' perspective to demonstrate how the Colonial Government problematised the pig farming industry and employed ordinances and zoning regulations – as well as livestock waste control projects – as major governing technologies. It will become evident from the empirical findings that farmers exposed to these governing technologies did, in fact, learn and internalize the concept of 'environmental friendliness' in their daily life. Ultimately, this paper finds that the social expectations pertaining to 'environmental friendliness' projected by the Colonial Government effectively informed pig farmers' 'good farming' subjectivities, enabling them

to manage animal waste properly, discharge sewage legally and self-regulate their bodies' odour to negate the negative impact on the urban public.

## **Governmentality and politics of smell**

The foundation of this paper is Michel Foucault's idea of 'governmentality', reviewing both the term and its recent discussion. By Foucault's explanation, 'governmentality' is an 'ensemble formed by institutions, procedures, analyses and reflections, the calculations and tactics' that discipline and shape individual life (Foucault et al., 1991: 102). There are two major reasons to harness the governmentality perspective for this study: first, the governmentality approach expands our understanding of how governing institutions deploy different tactics, technologies and discourses to influence the practices of farmers and reproduce pig farming spaces (Lin and Chiu, 2019; Lora-Wainwright et al., 2012; Miller and Rose, 2008). To transform pig farming spaces, governing institutions introduce cultural and scientific logics to define the 'qualities' of farming spaces and governed subjects as inferior, underdeveloped and potentially threatening to public health (Goldman, 2004: 167). Governing institutions generate particular 'problematic techniques' to put pig waste problems into political agenda. The process of problematisation is justified materially (i.e. statistical presentation in the forms of chart, table and verbal description) and discursively (i.e. environmental discourse and waste treatment standard) to shape the behaviour of individual farmers (Lemke, 2001; Rose, 1991; Rutherford, 1999: 113). For instance, Chan and Enticott (2019) elucidate how the idea of personal 'quality' becomes a discursive governing strategy that allows governing institutions to cultivate environmental awareness in Chinese pig farmers. Yeh (2009) also explores how the State problematised grazing practices and transformed the behaviours of pastoralists in Western regions in China. Agrawal (2005) has relatedly examined how the Colonial State engaged citizens in forestry conservation programmes to transform them into 'environmental subjects' who would care for the forest. Li (2007: 5) elucidates how socio-environmental improvement programmes in Indonesia 'educate desire and configure habits, aspirations and beliefs' to construct the milieu for the 'will to improve' such that local people, following their 'own self-interests, will do as they ought'. In this sense, governing institutions problematise environmental issues through statistical evidences and environmental 'values education'; this combined with moral concerns leads to a transformation of farm spaces and to farmers self-regulating their behaviours align with benchmark environmental standards.

Second, the governmentality approach is well suited to understanding how the governing institutions employed regulations, demonstration projects and socially constructed olfactory codes to produce self-regulating subjects (Bray and Jeffreys, 2016; Lemke, 2015). Commentators have pointed out that the governmentality perspective does not confine its analysis to the disciplinary tactics of the government to transform behaviours or subjectivities of the governed. Rather Foucault's definition of government refers to the complex assemblage of 'humans' and 'things' that comprises non-human actants, explaining how relationships between human and nature are affected (Asdal et al., 2016: 13; Foucault, 2012: 96). As Bray and Jeffreys (2016: 2) further elaborate, government is 'about how to conduct the imbrication of people and things, that is the relations of people to territory, wealth, resources and means of substance'. For Lemke (2015), 'The government of things' perspective articulates the relational linkage between the 'matter of government' and the 'government of matter' in the socio-physical entity (e.g. pig farms) over which state extends its power and influence. In another sense, this 'relational' approach aids this paper to take into account the interrelatedness of governing conditions and non-human elements, informing

‘smell politics’ that produce ‘environmental subjects’ within specific milieu (Asdal et al., 2016: 11–12; Smart and Smart, 2017: 44). Understanding smell politics through the lens of governmentality opens up more opportunities to explore the role of ‘smell’ as a technology of self-regulation to mediate social life and produce new forms of subjectivities.

Scent is an indicator for different urban settings (e.g. parks or gardens) and different settings affect people’s sensuous engagement with spaces (Gorman, 2017; Henshaw et al., 2016). The stench of pig farms has been described in some settings as producing nausea and negative mood alteration which creates a ‘moral boundary’ and leads to the pattern of avoidance between urban dwellers and pig farmers (Aspria et al., 2009; Hoover, 2009). Visceral experiences present in the forms of feelings, emotions and olfactory perceptions, which in turn shape individual subjectivities (Clough, 2008; Montsion and Tan, 2016; Pow, 2017). Subjectivity construction is inherently connected to visceral experience and its embodied engagement with material and discursive milieu. ‘Consciousness of meanings and representations infused with visceral experiences’ of one’s body-in-space through socialisation allow a person to become a self-governed subject (Hayes-Conroy and Hayes-Conroy, 2010: 1281; Low, 2006: 608). The governing institutions relevant to this paper deploy both material<sup>4</sup> and discursive<sup>5</sup> devices to shape farmers’ values, norms and morality. The field of governmentality studies until now has been limited in its examination of how smell can become a technology of self-regulation and produce new forms of subjectivities. This research contributes to the field by reflecting on how regulatory mechanisms, demonstration projects and self-regulation of bodies’ scent work to construct the identity of the ‘environmentally-friendly farmer’.

## **Governmentality and constructing ‘good farming’ subjectivities**

The governmentality approach helps us to examine how governing institutions construct the notion of ‘good farming’ through the process of ‘standardisation’ under the animal waste project to produce ‘environmentally friendly practices’. An environmentally friendly ‘practice’ is defined as ‘a set of doings and sayings linked by [farmers’] practical understandings’ of sanitation and waste treatment (Schatzki, 1996: 92). Reckwitz (2002) would explain a pig farmer as a ‘bodily and mental agent’ (or ‘carrier’) of a given ‘environmentally friendly’ practice. In this line of thought, this paper considers an ‘environmentally friendly practice’ to be a specific ensemble of ideas, values and actions, presenting as part of daily life to create and reinforce certain socially constructed subjectivities (Dilley, 2015; Rutherford, 2007). Adhering to ‘environmentally friendly practices’ can be seen as a form of ‘good farming’ – many farmers are keen to adapt their behaviours to attain this label and the accompanying social approval (Darragh and Emery, 2017; Saunders, 2016). According to Burton (2004), the ‘good farmer’ identity is constructed from the different intrinsic (e.g. personal experiences) and extrinsic (e.g. government policies and farming schemes) sociocultural factors that discursively shape farmers’ practices. The subjectivity of the ‘good farmer’ label is also constructed through ‘a set of principles based on value and standards embedded in farming culture’ (Sutherland and Darnhofer, 2012: 232). These principles act like cultural scripts that produce and formulate particular farming norms and values among farmers (Silvasti, 2003; Vanclay and Enticott, 2011). ‘Good farming’ is expressed in the forms of productivity, cleanliness, good record keeping and symbolic values (i.e. the values of environmentally-friendly, tidy farm, and producing healthy animals to show good stockmanship) in the eyes of other farmers. Previous studies have identified that ‘environmentally friendly’ farmers’ practices achieve high husbandry productivity with a clean environment, production of healthy pigs and better manure management (Commandeur, 2006; Saunders, 2016).



The concept of ‘good farming’ is useful in the examination of how governing technologies are deployed to foster societal approval of ‘environmentally friendly’ subjects and develop pig farmers’ environmentally-friendly practices.

## Governmentality and animal geographies

Animal geographies explore the complex nexus of spatial relations between farmers and farm animals and provide different ‘ideas, practices and methodologies’ for understanding farm animals across different spatialities and temporalities (Buller, 2014: 310). Therefore, it is helpful to understand how socially constructed perceptions of animal smell become a ‘governing technology’ of self-regulation to mediate social life and human–animal relationships. Farm animals can be understood as a ‘subject of life’ in how they are exposed to violence, exploitation and slaughtering (Castricano et al., 2016: 261). Different relations of power and positionalities produced the hierarchical relationships between farmers and farm animals (Hovorka, 2017). For instance, Buller and Roe (2018: 4) unravel how different cultural politics, social values and knowledge of science shape farming practice and care strategies of commodified and industrialised farm animals across cultures. Hovorka (2019) further argues that animal geographies address the ‘colonial relations of power’ by examining how non-western farmers’ and animals’ bodies are constructed, transformed and disciplined. The above studies illustrate how an understanding of the institutional rules and regulations mediating the farming practices and cultures of farm animal production is important when deconstructing the self-constituted subjectivity of ‘environmental friendliness’ in the context of colonial HK. The governmentality perspective, when incorporated with animal geographies, generates more resources for examining how institutional arrangement and material orders shape the ‘politics’ and government of ‘human and farm animal life’ (Asdal et al., 2016: 11; Maye et al., 2014: 404).

There are three major reasons that the governmentality approach can enrich our understanding of the governing rules and regulations that apply to the bodies of farmers and pigs. First, the governmentality approach is helpful in understanding how ‘the animal problematises the power relationship’ between governing institutions and farmers (Neo, 2012: 951). For example, Neo (2009) elucidates how the Chinese-dominated pig farming community in Indonesia caused cultural, political and racial tensions, which in turn changed the institutional regulations and pig farming practices. Second, it unravels how formal regulations, knowledge and practice shape the ways in which food animals are produced (Neo and Emel, 2017: 12). For instance, Coppin (2003) addresses how the confinement, architecture and legislation of mega-hog farms seek to discipline both pig farmers and pigs. Pig farm space (e.g. housing and pigsty) becomes a constellation of disciplinary power to transform pig farmers’ practices and transfigure pigs’ behaviours (Bjørkdahla and Druglitrø, 2016). Third, it questions how foul odour and sanitary concerns about animal–human transmitted diseases introduce a boundary in human–pig relationships (Atkins, 2016; Enticott, 2008). The perceptions of pigs and pig farmers are constructed and reconstructed materially and discursively by a multitude of social structures and policies (Buller, 2014). These practices combine to regulate and control animal manures, slaughterhouses and urban animal farms: for example, Atkins (2016) provides a detailed analysis of how animal manures and odour were linked to the spread of diseases and became a symbol of unsanitariness, which drove the London city commissioners to eradicate urban animal farming. The above studies provide the foundations for considering how the pigs and pig farming industry are constructed as undesirable and a threat to human health in HK.

## Problematizing pig farming in HK

Environmental data-gathering and statistical analysis is a governing technique used to problematise stream pollution and visualise spatial affiliations between pig farms and sites affected by pig waste pollution. Pig waste problems can be translated and circulated both materially (i.e. policy documents, maps, charts and data) and discursively (i.e. narratives and pollution classifications; Hull, 2012). The Colonial Government conducted stream research, collected water quality data and produced documents to provide justification for putting pig waste on the political agenda. According to the New Territories Waste Pollution Study (NTWPS), pig farming accounted for 54.2% of the liquid waste in the NT and 80% of pig farmers (out of 13,000) hosed pig waste directly into streams (Binnie and Partners, 1974: 3). The Colonial Government also set up a sampling station in the water catchment area to collect and analyse water samples, conducted field studies and took photographs to show the major sources of pollution from pig farms. For instance, farming activities, number of pigs, and locations of farms were recorded (GRSHK, 1981). After collecting and analysing the animal waste data, the findings of animal waste problems were summarised and presented as lists, tables, diagrams, maps, and written statements as a type of ‘calculative strategy’ – a term employed by Elden (2007: 4). The artefacts – particularly the statistical evidence – became a political tool allowing governing institutions to calculate, explain, and highlight the significance of the pig waste problem (Elden, 2007; Hull, 2012):

The Director of the AFD described the means of collecting evidence to accuse pig farmers of producing stream pollution in HK:

Herewith two tables showing the statistical data on the livestock farms and the quantities of manures produced per day. A map of the area is also enclosed to show the locations of the farms...about 60 percent of the pig manure is indiscriminately discharged into water courses.... (GRSHK, 1981: 2).

The statistics were translated into written statements to paint animal waste as a problem. Yip (2009: 15) argues that the governing institutions developed ‘a sect of vocabularies and perceptions for the colonial officers’ to execute environmental policies. For instance, wording such as ‘indiscriminately discharge’, ‘noxious’, and ‘nauseating’ were used in the government reports. The Environmental Protection Agency (EPA) described the conditions of polluted streams, which had ‘a noxious smell’ and concluded: ‘this is an indication that animal wastes are being hosed down into the river water’ (GRSHK, 1981: 3). Additionally, animal waste problems were visually presented as a map. The map visually demonstrated the spatial connections between stream pollution and the location of pig farms by stressing their interrelationships through points and lines. The map also accentuated the impacts from the pig farms’ radii to the surrounding New Town and urban areas. Both written statements and maps (i.e. ‘visual devices’) became the ‘bureaucratic inscription’ for interpreting stream pollution and regulating the pig waste problem for particular ends (Hull, 2012):

In order to address the stream pollution in N.T. Hong Kong, greatly reducing the number of pig farms was the alternative...the productivity of local pig farming only constituted 15% of the live pig production in H.K. This proportion was merely a very small contribution to the economy; yet, the environmental cost is far more than the economic benefits, (GRSHK, 1981: 3)

The most economical way for the governing institution to deal with the problem of pig waste was to ‘greatly reduce the number of farms’ and reduce the ‘environmental cost’. To do so,

the governing institutions adopted three major technologies including: (1) legal enactment and zoning tools to draw the boundary of exclusion, (2) transforming farmers' practices through waste treatment demonstration projects, and (3) motivating farmers to self-regulate their bodies' scent in order to reduce public nuisances.

### **Technologies: Legal enactment and spatial exclusion for pig farmers and pig odour**

Environmental regulation is a type of governing technology through which institutional control and power is exercised over farming spaces to produce new environmental management orders. The pig farm becomes a spatial category to be calculated, mapped and controlled in order to foster environmentally-friendly practices (Huxley, 2007). Under the Waste Disposal Ordinance, the government spatially designated 'Pig Waste Prohibition Areas', banning pig raising in urban areas (HK Island, New Kowloon and Kowloon) and areas within the New Town boundaries. Through legal enforcement, the EPD delineated the whole of HK in a territory-wide control scheme covering both urban areas and the NT (see Table 1).

The exact boundaries of the respective 'banned' and 'controlled' areas were delineated by the EPD, and pig raising was made illegal in banned areas (including all urban and new town areas). The delineation of the banned and controlled areas in the map constructed the boundary between pig farmers and urban dwellers and accelerated the social exclusion and animal exclusion process (Cresswell, 1996). In urban and new town areas, pig farming was totally banned since it was presumed to cause sanitary and pollution problems. Pig farms became excluded from urban space as Sibley (1995: 76) explains: 'the built environment constitutes a landscape of domination. It is alienating, and action on the part of the relatively powerless will register in the domination vocabulary as deviance, threat or subversion'. In the urban environment, pig raising creates sanitary problems and olfactory nuisance. The boundaries created by this linked the socially constructed idea of 'cleanliness' with that of 'civilisation' and linked the sources of diseases from pig farming to filthy lifestyles (Yip, 2009: 15). Although what constitutes a 'foul odour' resulting from pig farming is less well defined than other types of pollution, odour had a principle role in creating prejudices held by urban dwellers about pig farmers, which tended to be presented in terms of association with moral degeneracy (Aspria et al., 2009, Classen et al., 2002; Low, 2006). 'The smell of manure seems natural in rural area; however, it becomes intolerable in an urban setting. In the countryside more manure represents the growth of animals; in the city it would only mean decay' (Classen et al., 2002: 169–170). Therefore, foul odour from pigs is coded as a nuisance and socially unacceptable in the city or urban fringe.

**Table 1.** Delineation of the pig waste control area in Hong Kong.

Prohibition area (phase 1)	Pig farming is totally banned
Restriction area (phase 2)	New pig keeping is not allowed in this area. Only existing pig farmers should apply for a license from the Director of AFD and farming practices must comply with the Livestock Waste Regulations.
Control area (phase 3)	Any pig keeper must apply for a license from the Director of the AFD and farming practices should comply with the Livestock Waste Regulations.

Note: The information about the delineation of the Livestock Waste Control Areas is with reference to Binnie and Partners (1990), Environmental Protection Department (1997) and Wong (1989).



According to the report of The Kadoorie Aid Association (1986), pig farmers felt uncertain about the future of pig raising and protested strongly against the LWCS, expressing their hardships and sufferings. Sibley (1995: 43) explains ‘moral panics bring boundaries into focus by accentuating the differences between the agitated guardians of mainstream values and excluded others’. In fact, moral panics about pig farmers could be traced to the effects of boundary delineation; pig farmers were delineated as ‘others’ in the urban premises. Panic also came from the expected timeline for banning and controlling pig farming in specific areas. For instance, between 1987 and 1991, 1090 pig farms were eradicated from the Prohibition Area (phase 1), while 1620 pig farms needed to apply for a license and install appropriate waste treatment facilities to continue pig farming within the Restriction Area (phase 2) between 1992 and 1994 (further discussion in next section).

Since the enforcement of the LWCS in 1994, pig farmers who want to raise pigs within the Controlled Area have to apply for Livestock Keeping Licenses (LKL in short) which control the treatment, movement and storage of pig waste and the management of pigs. The LKL system is still operating in 2019. There are two major objectives of the licensing system: (1) To ensure effective control over pig farming and (2) to assist pig farmers to continue to ‘develop in an environmentally acceptable manner (AFCD, 1994: 4)’. In order to acquire this license, pig farmers must install appropriate waste treatment facilities that meet minimum discharge standards. The EPD and AFD inspect all licensed pig farms regularly with the goal of monitoring whether pig farmers illegally discharge pig waste. If pig farmers indiscriminately discharge pig waste into the river, the director of the AFD has the legal power to revoke the pig farmers’ licenses and pig farmers must cease operations. To safeguard the licenses, pig farmers must install appropriate waste treatment facilities and follow the normative waste treatment practices to meet the benchmark animal waste discharge standards.

### **Technologies: The waste treatment demonstration projects**

The Colonial Government attempted to produce normative forms of waste treatment practices and transformed pig farming space through the Waste Treatment Demonstration Projects to foster environmentally friendly practices. The rule of experts and the actualisation of the demonstration projects were facilitated and co-ordinated by the EPD and AFD, while Chinese veterinary surgeons and Pig Farmers Associations representatives worked in-between pig farmers and the Colonial Government. The EPD collaborated with the Livestock Waste Committee members and a consultant firm named ‘Binnie and Partners’ to design, install and operate waste treatment plants on seven private pig farms with the view of demonstrating the technical feasibility of pig waste treatment facilities (Binnie and Partners, 1990: 4–9). The committee members included government officials, Chinese veterinary surgeons and Pig Farmers Association representatives functioning as a body through which the Colonial Government could effectively produce benchmark discharge standards and make LWCS implementable. For instance, the committee established that animal waste discharge should meet a benchmark standard such that Biochemical Oxygen Demand (BOD) and quantity of suspended solids per litre must each remain below 50 mg.

To promote the normative waste treatment method, the committee widely publicised four pig waste treatment methods<sup>6</sup> in the colony and demonstrated in seven private pig farms in NT, HK from June 1988 to August 1990. These four treatment methods were expected to produce ‘major changes in operation practices and restrict farmers to a regular daily routine’ (Binnie and Partners, 1990: 3). The changes transformed pig waste treatment practices and involved rebuilding pig farm structures to fulfil the new order of waste treatment (GSPELB,

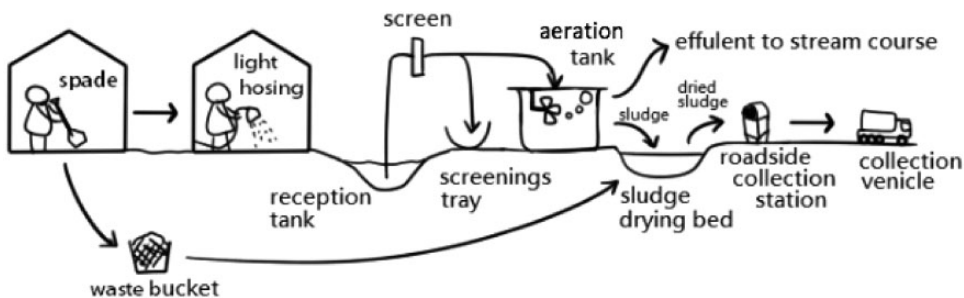
1992: 2). For instance, the Dry and Wet Muck-Out method requires farmers to acquire new waste treatment knowledge and to build a 'Batch-Wise Activated Sludge Treatment System' in their pig farms. This system requires farmers to routinely monitor the amount of pig dung within system's capacity and control the temperature and BOD level in the aeration tank in order to activate the fermentation of pig waste (see Figure 1). The demonstration project's proposed waste treatment methods made farmers aware of the concept of 'environmental-friendliness' which influenced their practices in the spheres of waste management, screening and collection, and discharge control. In order to meet the discharge standards, pig farmers had to either shovel pig waste into waste buckets or hose the waste into reception tanks daily (see Figure 1).

The normality of 'environmental friendliness' is defined by benchmark animal waste discharge standards: pig farmers are judged to be 'legal' or 'illegal', 'good' or 'bad' farmers based on their ability to internalise the learned standard and develop a suitable waste treatment system. All pig farmers must install appropriate waste treatment facilities that meet benchmark waste discharge standards and adhere to the norms of 'good farming'. The EPD inspects all licensed pig farms regularly with the goal of monitoring for illegal discharge of animal waste or nuisances caused by waste treatment facilities to surrounding areas. According to the Chairman of the Livestock Industry Association in HK,

The Colonial Government insisted on farmers implementing the License system wilfully and required treated animal waste water quality to be such that neither the Biological Oxygen Demand (BOD) nor the Suspended Solids (SS) per litre exceed 50 mg. (Interview with a pig farmer who installed animal waste facilities – PF21, 2010)

The enforcement of benchmark waste treatment controls 'is an external method directed at the homogenisation of external [waste management] behaviour regardless of personal psychological quirks' (Hannah, 1997: 348). The Colonial Government aimed to produce farmers who are capable of functioning in an environmentally friendly manner and fulfilling the waste discharge standards as a cultural symbol of 'good farming'. One pig farmer commented that he monitored and checked his waste treatment system daily in order to meet the benchmark waste treatment standards:

If I cannot maintain the quality of the discharged water, my business will be in peril because I will be considered an outlaw. Every day I must come to the waste treatment pool to check whether the wastewater meets the required standards...I treat the wastewater to exceed



**Figure 1.** Schematic of the Dry and Wet Muck-Out Method. Courtesy of Ms. Tsz Ching, Chun.

standards and the smell is not as bad as you think. Look! I put my hand into [waste treatment] pool and you don't feel the smell is bad. (Interview with a pig farmer – PF02, 2010)

To fulfil the normative waste discharge standards, pig farmers not only adopted the Colonial Government's proposed waste treatment methods but also (1) rebuilt their farm buildings and (2) took it upon themselves to design their own waste treatment facilities to fulfil the new order of waste treatment. For instance, pig farmers rebuilt their pig farm structures to include internal pigpens, relocating pig drinking bowls and building concrete drainage ditches in order to manage animal waste effectively (GSPELB, 1992: 2). Pig Farmers Associations also self-organised overseas tours to 'Taiwan, Thailand and Australia to mimic and adopt overseas pig waste treatment methods and reproduce their own animal waste treatment facilities and practices in HK' (Interview with the president of the Federation of Pig Raising Co-operative Societies of HK – PF20, 2010). After a tour, the president of the Federation of Pig Raising Co-operative Societies of HK would draft the blueprints and build a pig waste management system on his own farm accordingly. Once his waste management system was successful, he would distribute the blueprint of his waste management system to the members of the Pig Raising Co-operative and further encourage other pig farmers to adopt his waste treatment blueprint and reproduce the system in their own pig farms (see Figure 2).

### **The production and internalisation of environmentally friendly subjectivities**

Under LKL, pig farmers must follow the licenses' legal animal waste discharge requirements and maintain waste treatment systems 'in a good condition at all times' (LCFC, 2006: 5). Otherwise, licenses can be revoked by the Director of the AFD. According to the EPD's senior environmental officer,

During the day, the EPD deployed staff to inspect pig farms and conduct surprise inspections at night to check whether pig farmers violated the sewage disposal standards. If a farmer's sewage disposal exceeded the legal standard, the EPD would prosecute pig farmers with the maximum fine of HKD\$50,000. (Interview with a pig farmer – PF02, 2010)

Maintaining good conditions and ensuring the proper working of the pig waste treatment system became a normative animal waste treatment routine among pig farmers. Coppin (2003: 607) argues that the working routines and scheduling of pig farms are examples of 'the minute control of activity that is prevalent throughout pork production.' In the LWCS, normative waste treatment practice is a minute control of farmers' waste behaviours and constricts pig farmers to become 'environmentally friendly'. One pig farmer commented:

Every morning I will check the anaerobic and aeration pools first to make sure the process of biodegradation is functioning. Then I will check the collection, sedimentation and sludge storage pool to see if there are any overflow problems. You know...any overflow will instigate serious penalties from the director of the AFD. Finally, I will check the computer system which controls the aeration tank, screening machine and the farm-treated sewage discharge point to learn if the treated water has fulfilled the legal discharge standards...I will do all of these checks before going to bed.... (Interview with a pig farmer – PF03, 2010)

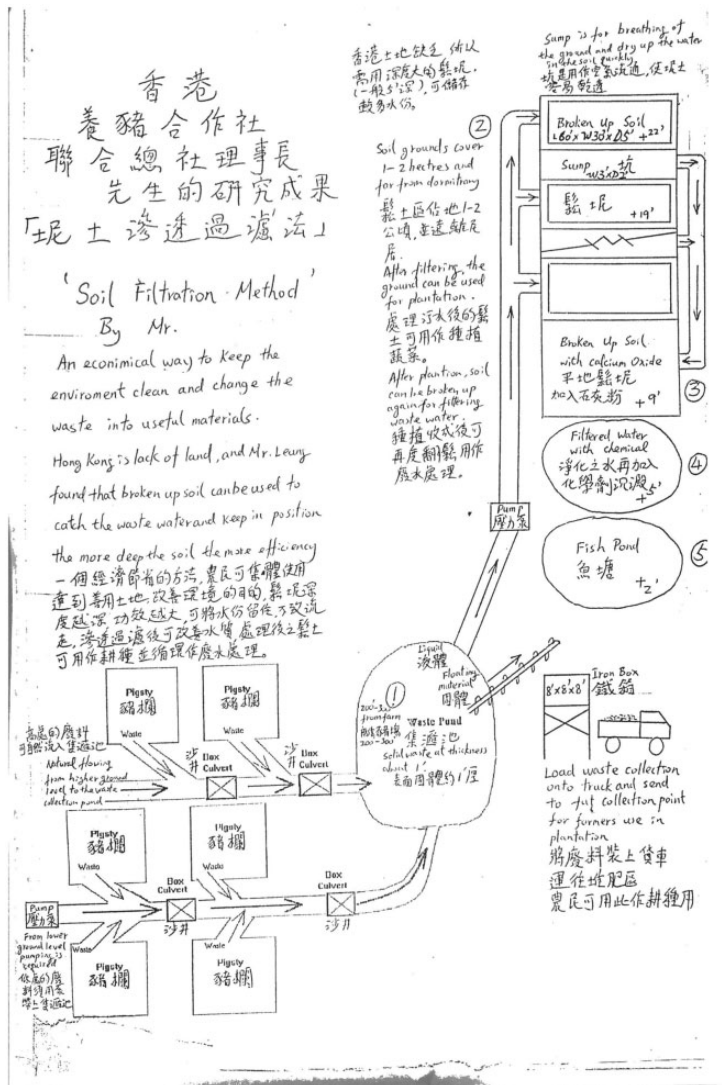


Figure 2. Farmer's design of a pig waste treatment facility. Source: Author's collection.

Animal waste management is a 'form of governmentality that spreads the idea of nuisance regulation as an everyday practical rationality' (Atkins, 2016: 31). The environmentally friendly farmer becomes habituated to and accepts the normalisation of manure management practices undertaken to fulfil sewage discharge standards and also disciplines him or herself in daily waste-treatment practices. Another pig farmer commented:

I would like to call myself an environmentally friendly farmer... you know that the concept of livestock waste management and environmental conservation has been made widespread by the government through the process of brainwashing... if I didn't behave in an environmentally friendly manner, I would be discriminated against for breaching the environmental regulations

by society. To avoid discrimination, I grow lots of trees in my farms to symbolise that I am environmentally friendly. (Interview with a pig farmer – PF08, 2010)

Normative waste treatment practices conceptualise indiscriminate discharge of pig waste as an illegal and deviant behaviour. Pig farmers exposed to the waste treatment demonstration project learned and internalised the concept of ‘environmental friendliness’ and began to install proper waste treatment facilities and grow trees to signify that they are ‘good farmers’.

### **Self-stigmatisation and conduct related to the control of personal odour**

Scent not only produces value and but also constructs symbolic and social differences such as of rural/urban and farmer/non-farmer divisions. The odour of pigs transgresses the norms of urbanity concerning hygiene and aesthetic imagination. Classen et al. (2002) further comment that

The [pig] smell is tolerable for those who are accustomed to it and have a profit to make out of their businesses. For those who are not and do not, however, it can be unbearable. This conflict of interests often arises in areas which are located in urban fringes or both agricultural and residential.

In line with Classen et al.’s (2002) findings, pig farmers in HK were considered intolerable because of pig odour on their bodies, which become an ‘invisible tag’ signifying they are ‘filthy’ and setting them apart from others. The odour of pig farmers is related to stereotyped notions about their moral degeneracy. A female farmer commented that the smell of pigs on her body caused her to be excluded from the public arena:

Whenever I go out I must take shower and spray fragrance on my body so that the fragrance can hide my identity as a pig farmer. I felt disappointed and lose my confidence when people say I smell like pigs’. I want to avoid being looked down upon by others. (Interview with a female pig farmer – PF10, 2011).

A female farmer’s son perceived herself as ‘stinky’ because the smell of pigs often persisted on his clothing:

Our house is located within the pig farm. My son always complained that his uniform was full of stinky pig smell when he went to the secondary school in town. He felt embarrassed when his schoolmate noticed that his uniform was smelly. (Interview with a female pig farmer – PF11, 2011)

Farmers internalise the smell classification and attempt to gain respectability by masking the foul odour on their persons or by self-deprecating. The use of perfume and maintaining environmentally friendly behaviours were to minimise the negative identity foisted on them by the urban values of cleanliness. Pig farmers make efforts to convert their negative identity into a ‘good farmer’ identity through growing trees in their farms, installing waste treatment facilities, purifying the air to dilute the bad smell or by applying fragrance to hide their identities.



Pig odour becomes an ‘invisible tag’ for social differences which constantly reminds farmers that their livelihood is a nuisance to others and proactively self-identify themselves as illegal. The olfactory definition of pig farmers includes words such as ‘stinky’ and ‘stench’ – these words often confer a moral identity upon pig farmers and produce a moral boundary that generates the reaction of public avoidance. In the eyes of governing institutions and urban dwellers, pig odour is not only unhygienic but also can be pathogenic and harmful to human health and therefore must be regulated by governing institutions. According to the National Farmers Union (2013), a good pig farmer can minimise odour through proper manure management and slurry storage. In the eyes of pig farmers, having a clean environment and better manure management counts as being ‘good farmer’ (Commandeur, 2006; Loyon et al., 2016; Saunders, 2016). However, pig farmers in HK did not perceive themselves as ‘good’ because they could not get rid of the odours of pig raising.

The Chairman of the HK Livestock Industry Association commented that

The regulation of smell makes us feel fatigue. If a pig farmer cannot minimise the odour, he or she will be seen as a trouble maker. There was a farmer that reported to me that his pig farm was forced to close down because of its bad smell. His neighbours kept complaining the air was foul and polluted. As a result, the officials from EPD came to his farm and persuaded him to give up his business. Finally, he gave up his business! (Interview with the Chairman who commented on the pig odour – PF21, 2011)

Daily awareness of body smell and animal waste management becomes a condition that structures ‘conduct by conduct’ to produce specific self-regulatory mechanisms in reaction to the urban judgements of sanitariness and cleanliness. Additionally, urban dwellers that cannot tolerate the odour of pig farms become the EPD’s ‘odour detector’ to alert them of when to inspect pig farms for proper management of manure and smell. An urban dweller who lived near to pig farms commented:

Although I lived quite far away from those pig farms, every night around 6 PM to 9 PM dinner time, I could smell the pig stench. It was so disgusting! I felt like I was having dinner near a pile of pig dung! For two years, I had been living in the centre of pig stench, what I worried about was the spread of viruses and bacteria... Therefore I complained of the pig odour problem 10 times. (Direct translation from *Wenwei Po* (newspaper), 2004)

In fact, the EPD has set up a hotline to allow the public to report and make complaints about any pig smell problems. To a large extent, this complaint system acts like ‘the eye and nose’ of the EPD to locate and control deviant pig farms ‘at a distance’ in both day and night times. Within 2004, the EPD conducted regular inspections 2000 times on around 200 pig farms and conducted 40 surprise inspections at night – the department prosecuted 25 pig farms successfully (The HK Legislative Council, 2006). Farmers’ self-regulation of their body scent provides an example of the role of smell in the internalisation of social differences, in classifying ‘good’ or ‘bad’ farmers and in generating the body politics and subjectivities surrounding the identity of the ‘environmentally friendly farmer’.

## Conclusion

Colonial power was exercised in pig farming spaces, using environmental ordinances, zoning regulations, livestock waste demonstration projects and socially constructed perceptions of olfactory acceptability as major governing technologies to produce ‘environmentally friendly’

pig farmers. Statistics, maps, tables and written statements were used by the Colonial Government to visualise and problematise the ecological problems of the indiscriminate discharge of pig waste. The spatial tactics of the LWCS created a system of environmental knowledge and developed parameters against which to measure stream pollution problems (e.g. using surveys to quantify the stream pollution problem), as well as ingraining the concept of environmental friendliness in farmers' mentalities through the waste treatment demonstration project. This study elucidates how an environmental subject is produced and reproduced in particular historical and spatial contexts. The construction of the subjectivity of the environmentally friendly farmer under the LWCS was a specific disciplinary mechanism to eliminate the practices of indiscriminately discharging pig waste into rivers and minimise pig 'stench'. This scheme created benchmark waste treatment practices through the creation of compulsory LKL and imbuing pig farmers with a specific concept of what constitutes 'environmentally friendly' manure management and sewage treatment.

Territory-wide environmental law enactment, livestock-raising licensing systems and the social construct of what is an acceptable or unacceptable odour are the spatial tactics that allow Colonial Government to draw boundaries, informing societal norms of urbanity and determining that pigs should be excluded from urban areas. Pig odours are perceived as filthy, a nuisance and a health threat which has produced a spatial boundary between urban dwellers and pig farmers. In this sense, pig odours provide opportunities and justifications for the Colonial Government to discipline indiscriminate discharge of animal waste and exclude pig farms from the city and urban fringe. Even pig farmers internalise the smell-classification of 'pig stench' as a type of nuisance and moral degeneracy; if they want to gain respectability they have to make effort to convert negative identity into 'good farmer' identity by ensuring their farms and bodies odour adhere to prescribed norm.

Until today, pig farmers still manage their animal waste and sewage, follow the codes of practice in the Livestock Raising Licenses, grow trees and apply fragrance in an attempt to minimise pig odour on a day to day basis. In a broader context, this study unpacks the complex relationships between animals, physical space and the governance of a colonial government, contributing to the governmentality literature in three major ways: (1) it develops a new angle from which to understand how governmentality produces environmental knowledge and technologies that help to create 'environmental subjects' in a colonial context; (2) it extends the governmentality approach to examine how odour creates boundaries, perceptions of moral degeneracy and symbolic differences to exclude certain animals and people from the city; and (3) it shows how the concept of 'environmental friendliness' contributes to the production of best practice subjectivities and promotes behavioural change through the example of 'good farming' and farmers' waste and sewage treatment in farming spaces, odour reduction on farms to reduce public nuisance and daily monitoring of the animal treatment facilities.

### **Acknowledgements**

I wish to thank Henry Buller, Steven Hinchliffe, Gareth Enticott, Byron Miller, Alan Smart, Josephine Smart, Martha Cook, Maria Lam, Isabel Stokes, Matthew Bartlett, and Katie Ledingham for their helpful and insightful comments on earlier drafts of this article. I am also grateful to the editors and reviewers for their careful reading and thoughtful comments of this article.

### **Declaration of conflicting interests**

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

## Funding

The author(s) disclosed receipt of the following financial support for the research, authorship and/or publication of this article: The initial stage of this research is funded by the Geography Excellence Award and Faculty of Graduate Studies Research Scholarship from the University of Calgary in 2010.

## Notes

1. HK became a colony of British Empire after the Nanjing Treaty in 1842. In 1997, the colony of HK officially reverted to Chinese sovereignty, ending 156 years of British rule.
2. In 2006, the government of the Hong Kong SAR launched the License Buy Back scheme to buy back pig farmers' licenses for the pig farming industry. As a result, by 2008, the number of local pig farms was greatly reduced.
3. HK was subdivided into three parts – HK Island, Kowloon, and NT during colonial rule.
4. For material devices, government papers, maps, photographs and pig waste treatment facilities are the agents of intervention to problematise 'deviant' pig farming practices (Hull, 2012).
5. The major discursive devices work to construct the subjectivities of an individual, for example Ghertner (2010) argues that aesthetic value is a form of governing technique which can be more effective and practically implementable than the statistical deployment of 'governmental truths'.
6. These four major pig waste treatment methods include: (1) the 'dry' muck-out method (2) the 'wet' muck-out method (3) the 'litter-bedding' method and (4) the hybrid method, which combines both 'dry' and 'wet' muck-out methods (Binnie and Partners Report, 1990: 4–9).

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