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Lawrence W. C. Lai, Stephen N. G. Davies and Frank T. Lorne

The political economy of Coase's lighthouse in history (Part II)

Lighthouse development along the coast of China

As a sequel to a critical discussion of the debate on the question of public goods in connection with Coase's historical analysis of the lighthouses in Britain (published in *TPR* 79.4), this case study concerns the provision of a Chinese lighthouse, Gap Rock Light, by a British Crown Colony, Hong Kong. The study is informed by the precise meanings of key economic concepts of public goods and a free market, the reality of levying light dues on the basis of tonnage, and the changing nature of the lighthouse due to technological advances in shipping.

Preamble

In a Hong Kong criminal appeal¹ under ss. 62, 64 and 78 of the Merchant Shipping Ordinance, 1953, the plaintiff was acquitted of all charges as they were nullities. One such charge was that the accused did not pay 'light dues' after *entering* the port of Hong Kong. This charge, prosecuted under s.78, was found a nullity because the correct interpretation of s.78 of the law was that a failure to pay dues was wrongful only when a ship *departed* or *attempted to depart* without having paid light dues.

This solitary common law case on light dues in a British Crown Colony, rarely of any interest to law students in Hong Kong, is, however, an excellent example for an economic treatise on a famous paper by a Nobel laureate, 'The lighthouse in economics' (Coase, 1974). A light due is charged for the use of a lighthouse.

Theoretical context

In our previous article (Lai et al., 2008), we explained various definitions of a public good as found in the planning and economics literature and then, in light of its significance for planning theory, scrutinised the ongoing debate on 'The lighthouse in economics' (Coase, 1974), which targets Samuelson's (1964) textbook example of

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¹ *Ronald Tasker v The Queen* [1963] HKLR 508.

a public good for which no user fee can be levied due to insurmountable free-riding problems. Nor should any fee be levied, even if technology permitted elimination of free-riding, because the marginal cost of ships' use of the lighthouse's light is zero.

Coase's idea had remained almost unchallenged for almost 20 years when the work of Van Zandt (1993) appeared. Following Van Zandt's (1993) paper, the most important dedicated historical critiques of Coase's lighthouse paper have been in the work of Taylor (2001) and Bertrand (2006). Taylor did not openly attack Coase's work. Instead he argued that its analysis had omitted the institutional issues that led to the concentration of lighthouse supply into a monopoly, Trinity House. In agreement with Van Zandt, Bertrand argued the lighthouse market had not been as *private* as Coase represented, nor were the so-called private lighthouses as *efficient* as Coase suggested (Bertrand, 2006, 309).

Barnett II and Block (2007a, 2007b) reviewed the cases of Van Zandt (1993) and Bertrand (2006) and found both to have erred in their logic, although both were correct in their conclusions. On Van Zandt (1993), Barnett II and Block (2007a) maintained that private lighthouses were indeed historically operational, and Van Zandt actually provided evidence for this claim without recognising it as such.

Regarding Bertrand (2006), Barnett II and Block (2007b) agreed that he had shown Coase to be erroneous on the claim that the lighthouse example undermined the claim that the market undersupplied public goods, but disagreed with his reasoning. Central to the libertarian view of Barnett II and Block was that a free market should not have any element of 'compulsory payment'. This point was in agreement with the observation of Klein (2006), who also emphasised that the lighthouses surveyed by Coase were actually government-granted monopolies rather than free enterprises.

The key theoretical question raised by Barnett II and Block is whether a free enterprise or market (regulated or unregulated) is compatible with mandatory, involuntary or forced payment. In other words, does it matter whether the consumer of the lighthouse throughout history (whether it was funded by indirect tax (toll) or direct tax) had the *choice of not using* the lighthouse service and/or *not paying* any 'spot' charge at the point of consumption or later at the end of the voyage (the Barnett–Block Question)?

If the answer is yes, then Coase would be wrong to claim that there was a 'private lighthouse market' even when there was no government regulation of the supplier, because there was 'compulsory consumption' and/or 'compulsory payment', 'involuntary payment' or 'forced payment'. Alternatively, it can also be argued that that an unregulated provider was, in fact, another form of government. This view would collapse, however, if either of the following theses is established: (1) the consumer has alternatives; or (2) the system itself is actually a product of consumer choice.

Our earlier article (Lai et al., 2008) argued that consumers did have a choice; and furthermore that the actual collection of light dues by way of price discrimination,

hitherto ignored by theorists, addressed the question of inefficiency so paramount in the theory for government regulation. Above all, this case study will show through a real-world example that consumers actually pressurised the state to tax them for lighthouse services despite this possibly benefiting free-riders besides themselves. Our examination of the development of lighthouses in and around colonial Hong Kong along the coast of China is instructive about the questions of technology and institutional arrangements ignored in the debate on Coase's (1974) work, especially because Hong Kong has been well-known as a 'free port'.

Lighthouses: from port markers to maritime highway lights

The Western lighthouses along the coast of China were, as elsewhere in the world, first built to mark entrances to trading ports. Good examples were the Guia Light in Macau for Canton (Guangzhou), and the lights on Tungsha and Woosung for Shanghai. Subsequently, further lighthouses were built, almost entirely by the Imperial Chinese Maritime Customs Service (IMCS), in the intervening distances between ports, due to a shift of foreign trade with Europe from Canton to Hong Kong, which became a British colony in 1842, and the other 'treaty ports' including Shanghai.²

Table 1 shows the history of lighthouse construction along the coast between Shanghai in the north to Macau in the south (during the period 1855–1924) based on the information collected from the authoritative work of Banister (1932).³

Ships arriving off the Pearl River Delta from Singapore made a point landfall. This fitted the traditional model of the mark-a-port entrance lighthouse (as described by Coase for pre-nineteenth century English lighthouses) and explained the construction of the Guia Light. The same logic applies to the Taitan, Tiger Island, Square Island, Tungsha, and Woosung Lights. Built during the 1860s, they marked the ports of Amoy, Hangchow, Ningpo, and Shanghai, respectively.

From a map, we can see that when Hong Kong joined the international trade

2 The Treaty of Nanjing, which ended the First Anglo-Chinese (or Opium) War, specified five ports which were to be open to foreign shipping, thus doing away with the old 'canton system' based exclusively on a single, controlled access point for foreign shipping into China, a system that had prevailed for some two centuries. The five ports were Canton (Guangzhou), Amoy (Xiamen), Foochow (Fuzhou), Ningpo (Ningbo), and Shanghai. Following the Second Anglo-Chinese (Arrow, or Opium) War in 1860, Swatow (Shantou), Hangkow (Hangzhou), Chinkiang (Zhenjiang), Kiukiang (Jiujiang), Chefoo (Yantai), Newchwang (Niuzhuang) and Tientsin were added. By 1896 there were 46 treaty ports, and it follows fairly clearly that the navigational requirements for a rapidly increasing number of lights on China's coast correlate with the increasing number of ports open to foreign-going shipping.

3 T. Roger Banister was Deputy Commissioner of Customs in China. The Chinese Government recently published a lighthouse album (Maritime Safety Administration of the People's Republic of China, 2006).

Table 1 Major lighthouses constructed by the Chinese Government, Hong Kong Government and Macau Government between Shanghai and Macau, 1855–1923

Lighthouse (order of construction)	Year of construction	Port(s) served (north to south)
Tungsha Light Vessel (1)	1855	Shanghai
Wwoosung (3)	1865	Shanghai
Kiutoan Small Beacon (4)	1868	Shanghai
Yangtze Entrance Light-boat (4)	1868	Shanghai
Shaweishan (7)	1871	Shanghai
Kiutoan Light Vessel (13)	1878	Shanghai
Square Island (3)	1865	Hangchow and Ningpo
Tiger Island (3)	1865	Hangchow and Ningpo
Gutzlaff (5)	1869	Hangchow and Ningpo
North Saddle (6)	1870	Hangchow and Ningpo
West Volcano (8)	1872	Hangchow and Ningpo
Bonham Island (16)	1883	Hangchow and Ningpo
Steep Island (16)	1883	Hangchow and Ningpo
Loka Island (17)	1890	Hangchow and Ningpo
Peiyushan (20)	1895	Hangchow and Ningpo
Button Rock (21)	1904	Hangchow and Ningpo
South-West Horn (23)	1907	Hangchow and Ningpo
Tongting (23)	1907	Hangchow and Ningpo
Elgar Island (26)	1912	Hangchow and Ningpo
Shroud Island (24)	1908	Wenchow
Incog Island (24)	1908	Wenchow
Tungyung (21)	1904	Santuaao
Spider Island (24)	1908	Santuaao
Middle Dog (8)	1872	Foochow
Turnabout (9)	1873	Foochow
Ockseu (10)	1874	Foochow
Taitan Island (2)	1863	Amoy
Chapel Island (7)	1871	Amoy
Tsingseu Island (11)	1875	Amoy
Dodd Island (15)	1882	Amoy
Lamocks (10)	1874	Swatow
Sugar Loaf (14)	1880	Swatow
Cape of Good Hope (14)	1880	Swatow
Breaker Point (14)	1880	Swatow
Chilang (25)	1911	Swatow
Green Island (11)	1875	Hong Kong
Cape D'Aguilar (11)	1875	Hong Kong
Cape Collinson (12)	1876	Hong Kong
Waglan Island (19)	1893	Hong Kong

Lighthouse (order of construction)	Year of construction	Port(s) served (north to south)
Gap Rock (18)	1892	Hong Kong/Macau/Canton
Wangmoon Entrance Beacon (22)	1905	Canton
Sampanchow (27)	1915	Canton
Ki Au Island (28)	1923	Canton
Chain Rock	n.a.	Canton
Wangmoon Beacon	n.a.	Canton
Guia (3)	1865	Canton and Macau

Sources:

1. Banister (1932: 46-48, 50, 51, 56, 61, 66, 71, 79, 84, 89, 95, 99, 105, 110, 114, 120, 124, 128, 129, 137, 141, 143, 148, 150, 153, 155, 159, 167, 175, 176, 178, 179, 189, 190, 193, 194)
2. The Hong Kong Government Gazette on 20 March, 1875, p. 114
3. The Hong Kong Government Gazette on 12 June, 1875, p. 242
4. The Hong Kong Government Gazette on 12 February, 1876, p. 87
5. The Hong Kong Government Gazette on 13 February, 1892, p. 137

Note: the lighthouses built after 1910 were constructed by the Republic of China

scene and Shanghai came into play, a ship making its way up from Singapore⁴ for Hong Kong could make a point arrival entering Hong Kong's Victoria Harbour using Gap Rock⁵ (Figure 1) in Chinese waters and then the Green Island Lighthouse or the Cape D'Aguilar (Figures 2 and 3) and Waglan Island (Figure 4) Lights at either of the two southern entrances to the harbour.⁶

Gap Rock Light was strategically located not only at the crossroads of the ports of Macau, Canton, and nearby Hong Kong, but also the route to all ports further north that go all the way to Shanghai and beyond. Although Gap Rock is some 30 miles outside Hong Kong waters, paying for the light was intended to be met by Hong Kong light dues. However, if not all ships entered Hong Kong (and as we shall see, not all should have been expected to), then to avoid free-riding some arrangement would have had to have been made with the IMCS authorities over a share in their revenues. As it happened, because of the specific position of Hong Kong in the China coast's

4 Horsburgh Lighthouse was erected there in 1851.

5 Now it is called *Wenweizhou* (which means 'Mosquito tail Island') Lighthouse (Maritime Safety Administration of the People's Republic of China, 2006, 170-171).

6 The northwestern entrance for ships from Canton is Ma Wan Channel, near which the Kap Sing (Tang Lung Chau) Light stands. This lighthouse entered service on 29 April 1912, automated in August 1989, and declared a 'historical building', together with Waglan Light, under the Antiquities and Monuments Ordinance on 29 December 2000 (Ha and Waters, 2001, 290; Maritime Safety Administration of the People's Republic of China, 2006, 210). The Green Island Light was declared a 'monument' under the same ordinance on 7 November 2008. Cape D'Aguilar Light was declared a 'historical building' by the same law on 30 December 2005.

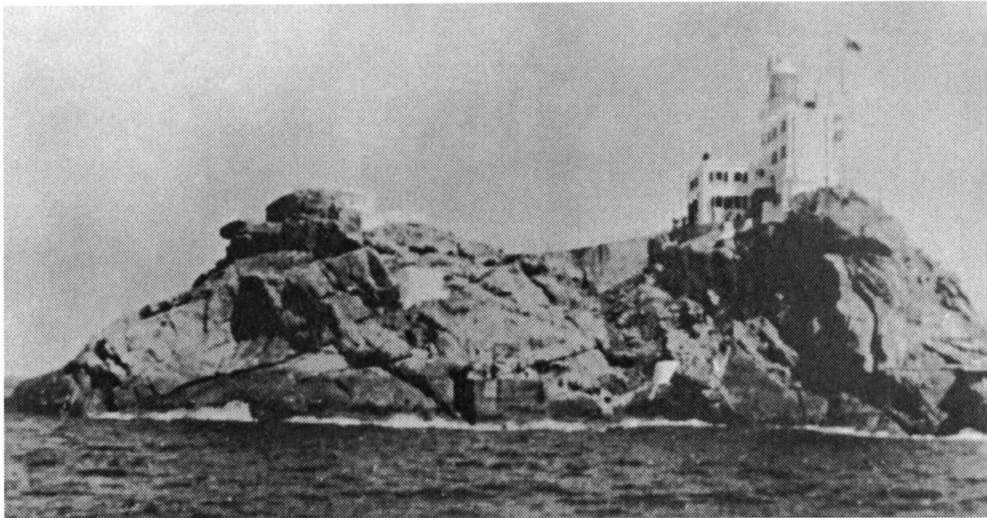


Figure 1 Gap Rock Light (Wenweizhou Lighthouse)

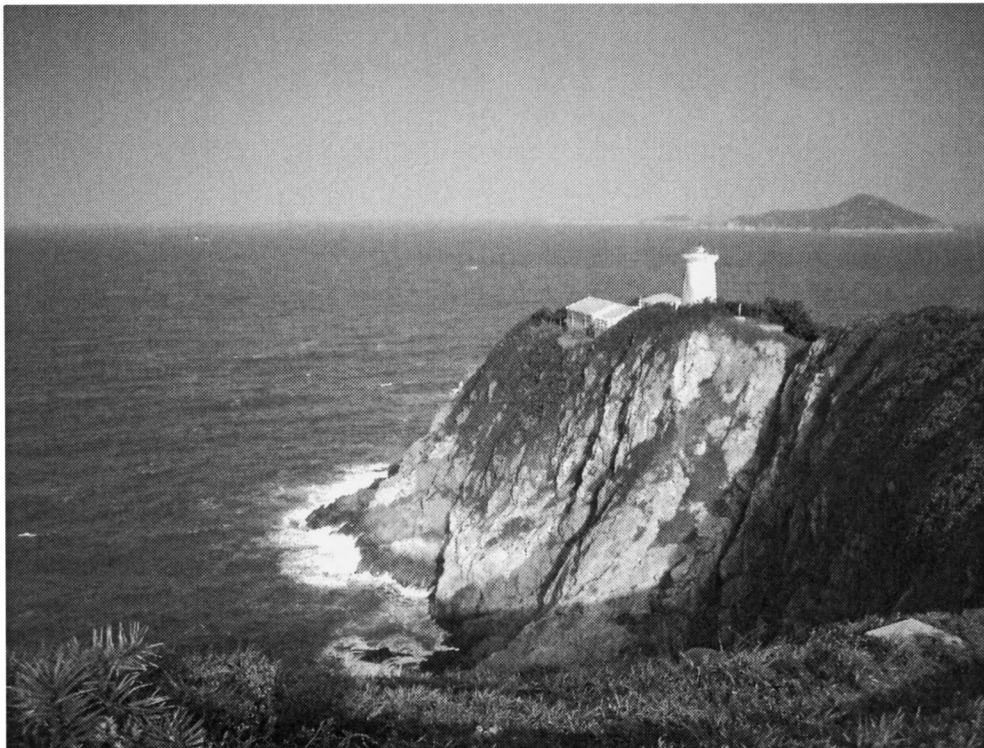


Figure 2 Cape D'Aguilar Light (foreground) and Waglan Island (distant background)



Figure 3 Cape D'Aguilar Light, 2002. Photograph: Mr H. F. Leung



Figure 4 Waglan Island Light

Table 2 Ship money levied by the Imperial Chinese Maritime Customs from custom offices for regions served directly by the lighthouses along the South China Coast between Shanghai and Macau, 1861–1910

Year	Total ship money (x)	Funds for lighthouses and other facilities (y=0.1x)
1861	101,178	10,117.8
1862	135,028	13,502.8
1863	274,237	27,423.7
1864	271,110	27,111.0
1865	254,012	25,401.2
1866	193,809	19,380.9
1867	176,848	17,684.8
1868	174,450	17,445.0
1869	187,757	18,775.7
1870	173,055	17,305.5
1871	176,058	17,605.8
1872	199,266	19,926.6
1873	186,554	18,655.4
1874	179,412	17,941.2
1875	179,744	17,974.4
1876	201,793	20,179.3
1877	181,220	18,122.0
1878	212,912	21,291.2
1879	222,786	22,278.6
1880	204,828	20,482.8
1881	237,563	23,756.3
1882	242,992	24,299.2
1883	254,559	25,455.9
1884	246,452	24,645.2
1885	247,445	24,744.5
1886	290,090	29,009.0
1887	288,430	28,843.0
1888	285,318	28,531.8
1889	257,668	25,766.8
1890	287,866	28,786.6
1891	326,670	32,667.0
1892	325,335	32,533.5
1893	340,431	34,043.1
1894	418,075	41,807.5
1895	438,691	43,869.1
1896	432,948	43,294.8
1897	418,048	41,804.8
1898	452,226	45,222.6
1899	453,362	45,336.2
1900	523,558	52,355.8

Year	Total ship money (x)	Funds for lighthouses and other facilities (y=0.1x)
1901	586,749	58,674.9
1902	730,915	73,091.5
1903	798,026	79,802.6
1904	815,647	81,564.7
1905	865,573	86,557.3
1906	1,054,233	105,423.3
1907	1,110,135	111,013.5
1908	1,046,421	104,642.1
1909	1,062,583	106,258.3
1910	1,069,268	106,926.8
Total sum for all years	19,793,334	1,979,333

Source: Tong (1992, Table 106A, 105–10)

Notes:

1. The custom offices covered the catchments served directly by the lighthouses listed in Table 1.

Unit: (1 tael of silver = 1.5 ounce of silver)

international maritime commerce, the probability is that the number of potentially ‘free-riding’ vessels was actually extremely small. A very high percentage of international shipping either arriving in southern China from the south and southwest, or leaving China to the south and southwest, would have made their first and last calls in Hong Kong. The reason for this is as a result of the chaos in China in the years of the Taiping Rebellion, the destruction of the port of Whampoa (the port for Canton), and especially its ‘mud docks’,⁷ thus leaving Hong Kong, for a crucial few decades, the sole place on the China coast where modern dockyard, coaling and later telegraph facilities could be found.

A larger variant of this problem becomes evident when considering an onward voyage from Hong Kong. Departing Hong Kong for Shanghai, and being economical with the owner’s money by plotting the shortest course, the ship would plot its most economical course along the coast outside all hazards (although it would be tempted to pass inside islands here and there), relying on visual fixing to avoid going aground. For any lights the ship used on the way (and by 1890, as shown in Table 1, 17 had been built⁸), it would evidently not be chargeable by the harbour authority within the limits

7 For the story see Part 1, Chapter 8 of Austin Coates (1980).

8 It is roughly 1100 miles by sea from Hong Kong to Shanghai, so by the 1890s there was a lighthouse every 50–60 miles along the route. This was sufficient for the navigator of a ship with a bridge 10 m above the sea surface looking at a light 30 m above the sea surface not to have a light in sight for only 1–1.5 hours (about 12 miles) between lights, and, supposing the lights to have been sited intelligently, 1–1.5 hours when the ship was in safe, hazard-free water. In short, by the 1890s, a navigator could reliably navigate from Hong Kong to Shanghai along the coast by the shortest course using lights at night.

of whose waters the respective lights may have lain unless it stopped in each and every port. Yet many ships making the coastal passage would not have stopped and would never have been within 10 or 20 miles of the ports proper. On the port dues model, the only lights the ship arriving in Shanghai could be charged for would be those that take the ship into Shanghai itself.

The puzzle of Gap Rock Lighthouse

This narrative of free-riding regarding lighthouses along the China coast, with the possible exception of Gap Rock Light, lends support to the idea that shipping technology (as discussed in the last section of Part I of this article: Lai et al., 2008) converted the lighthouse from a private good that can be easily priced into a Thesis 3 public good. Intuitively, there was a need for a body like the IMCS, headed by Sir Robert Hart, which had an office in every Chinese port. It would, as the IMCS did, build all the lights between ports and pay for them through revenue pooling and sharing from a slice of customs payments. The Samuelson Proposition (Samuelson, 1964) has a good Chinese candidate here. Three critical empirical questions that would verify or refute this proposition are as follows.

- (a) Was there actually a separate item of light dues charged by Chinese Customs?
- (b) Did Gap Rock Light (as a special case) attract specific light dues?
- (c) Was Gap Rock Light financed exclusively by light dues (and not from the general revenue)?

The factual answers to all three questions are affirmative, as revealed in the following section, refuting the Samuelson Proposition. In fact, the rejection of questions (a) and (b) alone was sufficient to destroy Samuelson's Proposition and affirm Coase's Verdict.

Regarding Question (a), Table 2, constructed from facts recorded in Tong (1992), shows the amount of 'ship money' for all ports in China (based on tonnage) between 1861 and 1910. According to subsidiary agreements under the Treaty of Tientsin of 1858, an annual 10 per cent of such dues – changed by Sir Robert Hart to 70 per cent in 1868, thus reflecting the increasing costs of modern lighthouses of the technical quality and number we have commented upon⁹ – were reserved for the purpose of building, manning, and repairing navigation facilities, including lighthouses. Table 2 thus shows both the amount of 'ship money' and the corresponding funds for navigation infrastructure (including lighthouses and light boats) collected by the custom offices from 1861 to 1910¹⁰ in the region covered by the lighthouses listed in Table 1.

9 See Wright, referencing *IG Circular No. 2 of 1868* (Wright, 1936, 26).

10 The Imperial Qing (Dynasty) was replaced by the Republic of China in 1911.

As for Question (b), the fact (to be elaborated on in the following section) was that Gap Rock Light attracted a specific form of light dues. However, more amazingly, not only was the payment of such dues made by ships that called in to Hong Kong, but the financial contribution to the construction of the lighthouse itself was also made by these ships. Indeed, it was the Colonial Hong Kong Government that built and operated this particular lighthouse during the early 1890s, by which time more than 20 lighthouses/boats that illuminated the marine highway all the way to Shanghai were already in place. The pressure to build came from Hong Kong shipping interests.

Regarding Question (c), although there was no law for the announced policy that light dues were to be only used for lighthouses, the governor informed the British Secretary of State that they were (*more than*) adequate to build and run the lighthouses. We shall see the evidence for this in the next section.

The facts about Gap Rock Light and lights in Hong Kong

Requests for the construction of 'Gap Rock Light', which commenced operation on 1 April 1892,¹¹ came from the Hong Kong Chamber of Commerce and shipping interests. These groups were willing to pay an extra light due for this purpose. (Gap Rock Light was located in Chinese waters on the extreme outer southwestern approaches to Hong Kong.) Indeed, the Hong Kong merchants also put pressure on the colonial regime to persuade the IMCS to build another lighthouse on Waglan Island, at the time also in Chinese territory at the southern edge of the eastern approaches to Hong Kong. This light, completed in 1893 (Sayer, 1975) by a Paris company, to start operation on 9 May 1893 (Ha and Waters, 2001, 289), became Hong Kong property on 1 January 1901, or after the New Territories (of which Waglan was a part) was leased to Britain in 1898 for 100 years (Ha and Waters, 2001). Gap Rock Light was built in Chinese waters with the agreement of IMCS, but was paid for by European ships entering Hong Kong waters. On 7 December 1941, one day before the invasion of the colony by the Japanese, 'The Gap Rock Lighthouse about thirty miles S.S.W. of Hong Kong was dismantled' by the British (Kirby, 1957, 118). Since then, there have been no more official Hong Kong statistics about this lighthouse.

As early as 1875, 'light dues' had already been imposed by Hong Kong on European shipping at a rate of one cent per ton. These dues fully financed the construction and running of such lighthouses as 'Cape D'Aguilar Light',¹² 'Cape Collinson Harbour

11 Notice to Mariners, Government Notification, Colonial Secretary's Office, Hong Kong 13 February 1892.

12 Notice, Harbour Department, Hong Kong, 19 March 1875. First shown on 16 April 1875 and downgraded on 1 January 1901 when Waglan Light was taken over from China. The equipment was transferred to Green Island (Endacott, 1973, 163, 275) and declared a historical structure under the Antiquities and Monuments Ordinance on 3 March 2006 (Maritime Safety Administration of the People's Republic of China, 2006, 211).

Light',¹³ and 'Green Island Light'.¹⁴ At the time, it was estimated that 13 years would be needed to pay back the costs of the lights (Endacott, 1973, 163). In 1890, an extra 1.5 cents were levied to fund the erection of the Gap Rock Light.

Appendix D to the pre-war yearly series of Reports of the Harbour Master, Hong Kong Government, and post-war Annual Departmental Report, Marine Department for the lighthouses on Gap Rock, Waglan and Green island from 1910 to, respectively, 1939, 1977 and 1949 show some statistics on the services of the lighthouses in Hong Kong.¹⁵ Statistics collected included the number of vessels passed; the number of vessels passed reported (by Morse lamp); the number of times fog signals were fired (hours diaphone fog signals sounded); the number of telegraphic messages sent (received) for the Royal Observatory; and the number of delays in relief (number of days) for lighthouse keepers. These provide evidence for our assertion that the marginal cost (MC) of the lighthouse in serving an extra ship is more than zero, as captured in Figures 3a and 3b in Part I of this article (Lai et al., 2008).¹⁶ A major observation is that one principal function of the lighthouse was the monitoring of ship movements, which certainly could have served a metering purpose. Details of ships, such as names, length, height, and tonnage, were reported and recorded by lighthouse keepers. Whether this in fact had a revenue intent is, however, a moot point.¹⁷ With the automation of the Tat Hong Lighthouse on Tung Lung Island in 1993,¹⁸ all lighthouses in Hong Kong ceased to be manned, but the monitoring function has been taken up by the Vessel Traffic Control System operated by radar and CCTV systems on shore-based locations, monitored by the Vessel Traffic Centre in Shun Tak Centre overlooking Victoria Harbour.

13 Notice, Harbour Department, Hong Kong 12 February 1876. It was first shown on 1 March 1877.

14 Notice, Harbour Department, Hong Kong, 10 June 1875. It was first shown 1 July 1875, and the equipment was transferred to Cape Collinson when the equipment from Cape D'Aguiar arrived in 1901.

15 Figures for specific services ceased to be reported by the Marine Department as early as 1977. As far as meteorological monitoring was concerned, before December 1952 and from 1964 onwards, lighthouse staff on Waglan Island took weather observations. Staff at the Royal Observatory operated from 1952 to 1963, but withdrew to the Cape Collinson Lighthouse area on Hong Kong Island in 1964 (Ha and Waters, 2001, 294). This withdrawal was probably due to the very harsh conditions on Waglan.

16 Waglan Island had an establishment of nine people, including a principal lighthouse keeper (Ha and Waters, 2001, 295). This was corroborated by Banham (2005, 71): 'APV *Frosty* is ordered to bring the lighthouse keeper and eight of his staff from Waglan Island to Aberdeen' at 10:30 on 13 December 1941 during a general evacuation to Hong Kong Island after the fall of the Shing Mun Redoubt.

17 Lighthouses were staffed and manned as ships. Ships have logbooks in which they record all incidents including the name, number and any particulars of every vessel met at sea. The governing idea in the operation of early lighthouse services was that if ships have logbooks, so should lighthouses. Whilst there was unlikely to have been any revenue-raising intent initially, which was the business of a quite separate part of the maritime bureaucracy, this is not to deny that the data may subsequently have been used in some kind of auditing function.

18 Ha and Waters (2001, 309 n. 27). This happened about six years before the automation of the last manned lighthouse, the North Foreland Lighthouse, in the UK on 26 November 1998.

The operation of the Hong Kong lighthouse system was, in many ways, shaped by Trinity House. To run the new lighthouses in the colony, Archibald Baird was recruited from England. Before taking up his post as Principal Light Keeper for Cape D'Aguilar in 1874, he received training at Trinity House in London (Ha and Waters, 2001, 287). The equipment of the lighthouses in and near Hong Kong was based on the latest Trinity House innovations.

In the latter part of the year Matthews Trinity House vaporising oil burner, on the 'Kiston system', was installed at Gap Rock, Waglan Island and Green Island Lighthouses, replacing the Trinity wick burners. It is the latest Trinity House improvement in Lighthouse illumination, thus bringing our three leading lights up to a high state of efficiency, and comparing favourably with any modern light¹⁹

In terms of governance, the Hong Kong model itself was identical to the Trinity House system at the time in England, save for the existence of a government department (the Harbour Department, now Marine Department) in lieu of a charity. This department has collected light dues since 1875.²⁰ There was simply no equivalent medieval charity running lighthouses in Hong Kong. As financing was accomplished by a user-pays system (indirect taxation), not direct taxation or general revenue, this Hong Kong model could be considered Coasian, as it was in line with Coase's (1974) criticism of Samuelson. In addition, the Hong Kong model had a feature that was more satisfactory than the post-1836 Trinity House model in terms of the Barnett–Block Question. The Hong Kong government did not pass any law precluding private lighthouses. Thus, one could speculate that private lights might have been erected in or near Hong Kong.

An inspection of British Admiralty (BA) charts 1459 of 1883 and 1466 of 1910 give some evidence of this. On the 1880 BA1459 there are only two lights in Victoria Harbour, both serving to identify the two most important passenger piers – on Murray Pier on Hong Kong Island, the main military landing place; and on the pier on Kowloon Point, the main landing place for vessels carrying people across the harbour. Neither seems to have been officially notified to the BA since they do not appear in the List of Lights for 1885. However, in 1910 on BA1466 there are 11 such lights, all marking the end of private commercial piers and labelled as such. Whilst it may thus be true that major navigational lights were in fact built and managed by public authorities, where lower-cost private lights were needed, there was no impediment to

19 Report of the Harbour Master, Hong Kong Government, 1911, p. 17. Bathurst (2005) recorded the consultancy journeys made by one of the later nineteenth-century Stevensons to Japan to advise on light construction there. Some Far East lights were of pre-fabricated cast iron tower construction brought out from Europe and assembled in place.

20 The applicable law for the collection of light dues is Schedule 13 of the Shipping and Port Control Regulation, Chapter 313A, Laws of Hong Kong.

a private company installing one. The Admiralty List of Lights for 1895 indicates the same was true within the IMCS jurisdiction, for an occasional light is listed (416a) for Tamsui Harbour on Taiwan (Formosa), just before the island's annexation by Japan following China's defeat in the 1895 Sino-Japanese War.

After it was completed, funding for Gap Rock Light triggered a political debate between local business interests and the government. Acting contrary to the petition of local shipping interests, the Governor of Hong Kong, William Robinson, refused to take off the extra light dues of 1.5 cents, invoking the idea that lighthouse charges did not make Hong Kong less a 'free port', as there were still 'no customs duties'. Robinson's argument was unreasonable, as the name 'light dues' did not alter the reality that it was an indirect tax on shipping – although neither directly nor exclusively on goods since ships in ballast paid light dues, as did ships carrying cargo or passengers, in relation to their net tonnage. In defending his position, Robinson employed an interesting argument used by the overwhelming majority of the appointed advisory Legislative Councillors that light dues could be regarded as harbour dues.²¹

6. In this connection with one exception, all the Unofficial Members of the Legislative Council, to whom I referred the matter, do not concur (with the petitioner's prayer), being of the opinion that shipping should not be entirely exempt from *taxation* as petitioners desire, and they maintain that if the present 2½ cents a ton are continued not as *light dues* but *harbour dues* there will be no infringement of the freedom of a port – a *free port* being one at which *no customs duties* are levied, and there is no intention to charge customs dues at Hong Kong.²² (authors' italics)

While the government's meaning of 'free port' would probably not have satisfied Barnett II and Block, as compulsory payments are levied, the re-interpretation of light dues as harbour dues fits the idea that the user charges metered in terms of the net tonnage of a ship could be regarded as a charge towards maintaining the general port infrastructure.²³ Cerin's (2006) idea of a tie-in-sale bundling together the use of lighthouses and other port facilities (but not bundling use of lighthouses with ship cargo) seems to have historical roots.

Note that the firm position of the colonial government in breaking an implied promise to lower light dues after the construction of Gap Rock Light eventually paid off, which suggested that the marginal cost of running lighthouses was positive and the volume of trade had expanded, thereby fitting our falling MC model with price

21 'Hong Kong; Papers on the Subject of the Light Dues' Governor of Hong Kong to Secretary of State, was presented before the Legislative Council, 18 January 1897.

22 Interestingly, this view foreshadowed that of libertarian economist Goldin (1977).

23 Interestingly, then as now, these dues are *only* paid by commercial trading vessels leaving territory waters. Resident vessels are not charged a specific or targeted light due. Presumably their contribution to the aids to navigation is simply part of their vessel licence fee.

discrimination (charging according to tonnage, not ship) depicted in Figure 3a in Part I of this article (Lai et al., 2008):

8. With respect to the fear expressed by petitioners that ships will be deterred from coming to Hong Kong if a charge of 2½ cents a ton is imposed the following figures show that the entry of European shipping into Hongkong has steadily increased since light dues were first levied. In 1875, when the dues were first levied the European tonnage entering the port was 1,951,855 tons. In 1880 it had increased to 2,535,587 tons and in 1885 to 3,866,709 tons. In 1890 light dues were increased from one cent to 2½ cents. In that year the tonnage entering Hong Kong amounted to 4,893,733 tons and in 1895 it reached 5,772,298 tons.²⁴

Governor Robinson also provided evidence that there was no need for the lighthouses in Hong Kong territory and on Gap Rock to rely on cross-subsidies from other taxpayers:

4. So far as light dues are concerned I agree with the petitioners that the revenue derived from them should be applied to the purpose for which it was raised, viz., the upkeep and maintenance of the lighthouses; and it is true that the charge of one cent a ton is *sufficient to cover all present expenditure incurred on that account*.²⁵ [authors' italics]

Indeed, the light dues in Hong Kong were *more than adequate* to cover lighthouses, and it was argued that the surplus should be employed to cross-subsidise other port facilities:

9. It will be observed that petitioners admit that shipping should pay for the lighthouses which are established and maintained for its benefit. If this principle be extended there appears to be *no reason why shipping should not contribute towards other services* which are maintained either directly or indirectly on its account such as the Harbour Department, *Water Police*, etc., the cost of which *exceeds* the amount raised from the dues of 2½ cents a ton imposed on shipping. [authors' italics]

Table 3 presents the amount of light dues collected and their rates in Hong Kong from 1875 to 1974. (After 1975, the Marine Department no longer published in their annual reports the amount of light dues levied, but in reality, the charge has survived. Table 4 was constructed according to statistics for the fiscal years 1984/1985 to 2005/2006 provided by the Marine Department.²⁶) Interestingly, we can see that the light dues

²⁴ See note 21.

²⁵ See note 21.

²⁶ The data from 1975 to 1983/84 could not be retrieved. The term 'port facilities and light dues' appears in Schedule 13 of the Shipping and Port Control Regulation, Chapter 313A, Laws of Hong Kong of 2 January 2007. (Before this amendment, there were separate heads for 'port dues' and 'light dues', as can be found in the 2005 version of the law.)

Table 3 Light dues levied by the Colonial Hong Kong Government, 1875–1974

Year (regime)	Light dues regime	Total fees collected (\$)
1875 (1)	\$0.01 per ton (steamers of the Hong Kong, Canton and Macau Steam-Boat Company Limited, as enter the Waters of the Colony by day, and all Chinese Junks, be exempted from payment of light dues) and \$0.0033 per ton for every ship plying daily or every other day between Hong Kong, Canton and Macau, and entering Hong Kong by night	10,781.90
1876 (1)	Ditto	15,741.18
1877 (1)	Ditto	14,984.33
1878 (1)	Ditto	17,494.28
1879 (1)	Ditto	15,438.31
1880 (1)	Ditto	18,095.07
1881 (1)	Ditto	20,755.14
1882 (1)	Ditto	23,371.33
1883 (1)	Ditto	24,714.32
1884 (1)	Ditto	24,356.17
1885 (1)	Ditto	26,032.67
1886 (1)	Ditto	32,953.16
1887 (1)	Ditto	NIL
1888 (1)	Ditto	32,056.28
1889 (1)	Ditto	31,898.46
1890 (1)	Ditto	72,028.83
1891 (2)	\$0.025 per ton for ocean vessels and \$0.0066 (night) per ton for river steamers	89,656.69
1892 (2)	Ditto	92,309.62
1893 (2)	Ditto	96,064.09
1894 (2)	Ditto	92,909.31
1895 (2)	Ditto	107,315.91
1896 (2)	Ditto	117,314.45
1897 (2)	Ditto	114,176.41
1898 (2)	Ditto	51,645.16
1899 (3)	\$0.01 per ton for ocean vessels, \$0.0033 per ton for river steamers (night) and \$0.0033 per ton for launches plying exclusively to Macau and West River by night	52,406.93
1900 (3)	Ditto	55,379.38
1901 (3)	Ditto	58,375.98
1902 (3)	Ditto	66,106.52
1903 (3)	Ditto	74,960.00
1904 (3)	Ditto	72,330.16
1905 (3)	Ditto	74,233.45
1906 (3)	Ditto	77,722.04
1907 (3)	Ditto	80,389.00
1908 (3)	Ditto	79,975.68
1909 (3)	Ditto	82,472.37

Year (regime)	Light dues regime	Total fees collected (\$)
1910 (3)	Ditto	86,157.20
1911 (3)	Ditto	82,578.09
1912 (3)	Ditto	87,454.95
1913 (3)	Ditto	93,649.44
1914 (3)	Ditto	90,397.87
1915 (3)	Ditto	75,475.75
1916 (3)	Ditto	75,031.83
1917 (3)	Ditto	68,656.82
1918 (3)	Ditto	52,816.92
1919 (3)	Ditto	74,545.18
1920 (3)	Ditto	94,225.44
1921 (3)	Ditto	106,417.09
1922 (3)	Ditto	115,979.56
1923 (3)	Ditto	137,455.61
1924 (3)	Ditto	150,689.01
1925 (3)	Ditto	127,113.64
1926 (3)	Ditto	110,543.80
1927 (3)	Ditto	132,379.31
1928 (3)	Ditto	138,550.02
1929 (3)	Ditto	144,962.52
1930 (4)	\$0.01 per ton for ocean vessels, \$0.01 per ton for steam-launches and \$0.005 (night) and \$0.0083 (day) per ton for river steamers	149,956.38
1931 (4)	Ditto	654,350.26
1932 (4)	Ditto	649,147.55
1933 (4)	Ditto	524,435.40
1934 (4)	Ditto	431,359.65
1935 (4)	Ditto	348,728.24
1936 (5)	\$0.024 per ton for ocean vessels, \$0.024 per ton for steam-launches and \$0.0009 per ton for river steamers	518,928.39
1937 (5)	Ditto	498,776.20
1938 (5)	Ditto	402,358.00
1939 (5)	Ditto	405,231.44
1940	No record	No record
1941	No record (Japanese occupation from December)	No record
1942	No record (Japanese occupation)	No record
1943	No record (Japanese occupation)	No record
1944	No record (Japanese occupation)	No record
1945	No record (Japanese occupation until August)	No record
1946 (6)	\$0.05 per ton for ocean vessels, \$0.02 per ton for river steamers, British and foreign warships and vessels of less than 20 tons are exempted	323,653.81
1947 (6)	Ditto	456,582.30

Year (regime)	Light dues regime	Total fees collected (\$)
1948	No record	No record
1949 (7)	\$0.05 per ton for ocean vessels, \$0.02 per ton for river steamers, British and foreign warships and vessels of less than 20 tons are exempted	585,419.40
1950 (7)	Ditto	532,748.36
1951 (7)	Ditto	483,922.54
1952 (7)	Ditto	514,281.20
1953 (7)	Ditto	578,009.64
1954 (7)	Ditto	607,511.50
1955 (7)	Ditto	619,852.95
1956 (7)	Ditto	627,120.95
1957 (7)	Ditto	714,962.81
1958 (7)	Ditto	798,652.52
1959 (7)	Ditto	856,953.55
1960 (7)	Ditto	914,631.10
1961 (7)	Ditto	988,058.74
1962 (7)	Ditto	1,084,522.38
1963 (7)	Ditto	1,225,464.68
1964 (7)	Ditto	1,214,791.35
1965 (7)	Ditto	1,402,375.09
1966 (8)	\$0.08 per ton for ocean vessels, \$0.03 per ton for river steamers and water tankers, British and foreign warships and vessels of less than 20 tons are exempted	2,087,747.76
1967 (8)	Ditto	1,950,537.44
1968 (8)	Ditto	1,984,424.53
1969 (8)	Ditto	2,038,051.01
1970 (9)	\$0.09 per ton for ocean vessels, \$0.03 per ton for river steamers and water tankers, British and foreign warships and vessels of less than 20 tons are exempted	2,202,792.27
1971 (9)	Ditto	2,483,510.66
1972 (9)	Ditto	2,857,342.64
1973 (10)	\$0.1 per ton for ocean vessels, \$0.03 per ton for river steamers and water tankers, British and foreign warships and vessels of less than 20 tons are exempted	3,219,657.77
1974 (10)	Ditto	3,514,653.22

Sources: Appendix D: Report of the Harbour Master, Hong Kong Government, various years; Annual Departmental Report, Marine Department, various years (up to 1974); and Statistical Tables, Marine Department, various years.

Notes: 1. From 1975 onwards, there was no separated breakdown for the amount of light dues. The government reports only showed the total amounts of 'port and light dues'. Thus 1974 is the end year here. 2. The light due figures from 1910 to 1931 were net of 'special assessment'.

Table 4 Port and light dues levied by Marine Department 1984/85–2005/06

Fiscal year	'Port & light dues' collected (HK Dollar)
1984–85	9,933,000
1985–86	19,980,000
1986–87	24,668,000
1987–88	26,076,000
1988–89	27,727,000
1989–90	33,345,000
1990–91	48,580,000
1991–92	50,261,000
1992–93	61,969,000
1993–94	79,570,000
1994–95	94,282,000
1995–96	111,416,000
1996–97	121,696,000
1997–98	136,611,000
1998–99	137,881,000
1999–2000	141,993,000
2000–01	159,803,000
2001–02	186,124,000
2002–03	192,660,000
2003–04	203,754,000
2004–05	209,497,000
2005–06	228,249,000

Sources: The 'port and light dues' figures for 1984/85–2005/2006 were provided to the authors by the Marine Department on special request. Marine Department could not trace records for the years 1975–1983.

fell back to one cent in 1899, and this rate was maintained until 1930. Governor Robinson's idea to keep the due at 2.5 cents was opposed by the Secretary of State. It is a moot point whether or not light dues in Hong Kong eventually became insufficient for maintaining lighthouses.²⁷ The fact was that at least during one moment in time, we had another example, outside England, where lighthouses were adequately financed by user charges. That the provider might 'overcharge' them by taking away some consumer surplus as per the model shown in Figure 2b of Part I of this article (Lai et al., 2008) is a separate issue.

27 It is likely that it did since, by the 1980s, almost every headland, pass, isolated rock or reef and small pier throughout the territory had been equipped with a light: in total, some 115 in 2007. Whilst, with the withdrawal of the last keepers in the late 1990s, all of these lights were unmanned and most were solar-powered, they all still had to be maintained.

In this context, Gap Rock Light was particularly enigmatic, as it was a positive externality because its construction and operation were funded by the commercial users of Hong Kong's port not only for their own benefit, but also for that of northward-bound navigators. There was an element of compulsion in the genesis not on the user, but on the provider. The colonial government did not want to honour its promise to lower its dues upon its completion. However, it had to cut light dues back to 1 cent due to objections from London. Also, there was no legal exclusion of private lighthouses. Ships that passed Hong Kong on their way to Shanghai and beyond could free-ride on this lighthouse. However, from a global point of view, the windfall gains by 'free riders' could theoretically be captured by 'ship dues' in other ports along the coast of China, which were payable to IMCS. The Hong Kong model indeed also shed light on the argument of 'free enterprise' advanced by Barnett II and Block, as the ships had many choices, including possibly the evasion of lighthouse charges, for example if they called at no point in China, but were headed for Korea or Japan.²⁸

From various Reports of the Harbour Master, Hong Kong Government, we can detect a percentage of ships that did not report to lighthouses in Hong Kong or on Gap Rock before 1924, 1925 and 1928, respectively. The official explanation was that there were some 'telegraphic problems', but in reality it might well be that some problems were economic (like dues evasion) rather than technical. Indeed, lighthouses were often in key strategic positions. The Guia Light in Macau is located inside a fort, and there were stories of lighthouses in China attacked by pirates (Wallace, 2004). Lighthouses in Colonial Hong Kong were manned by non-Chinese until 1956 (Ha and Waters, 2001),²⁹ and there were military quarters³⁰ and a Royal Navy radar station³¹ on Waglan Island. There were air raid shelters on both Gap Rock and Waglan. During the Second World War, both were bombed.³²

Thus, the findings of our survey of the lighthouses in Imperial China and Colonial Hong Kong corroborate those of Coase about lights in England: they were funded by user charges or indirect taxation with an element of price discrimination. The terminology 'ship dues', 'light dues', or 'harbour dues' did not really matter insofar as

28 In fact, this would have been an extremely unlikely eventuality given the patterns of late nineteenth- and early twentieth-century shipping trade, but that it did not actually happen does not obviate the argument that it could have done so.

29 All recruitment notices for lighthouse staff were in English, although maintenance tenders were in both Chinese and English. However, the historicity of this as a general statement needs further research. The Harbour Master's report on January 1913 by Commander Basil Taylor mentioned, at para. 27, p. D-20, problems due to 'the inexperience on the part of the Chinese lightkeepers' for the newly built 'Kap Sing Light'.

30 Ha and Waters (2001, 296-297).

31 'About Waglan Lighthouse' is an unpublished manuscript by an anonymous retired Marine Department employee supplied to the first author by the Marine Department. The biography of Ha and Waters (2001, 312) states that the author was Mr H.C. Lee.

32 Ha and Waters (2001, 296).

lighthouses were not funded from direct taxation or general tax revenue, as envisaged in the Samuelson Proposition.

Discussion

Good empirical examples of public goods are lamentably rare. Coase's example of the lighthouse is a case in point. Critics made some interesting observations about the lighthouse market described by Coase (one important question was whether the market is really free), but they should not have assumed that Coase erred in his analysis. Critics complained that Coase found a real-world example of private lighthouses that were regulated, less than efficient, and far from being free enterprises. In so doing, critics ignored what Coase intended narrowly to achieve with his 1974 paper, and criticised not the inner logic of Coase's paper, but his brand of economics as it applied to their own preferences.

One curious point about the attack on and support for Coase's lighthouse example is that no detail of the actual relationship between a ship and a lighthouse, or of the tolls of lighthouses within and without England, has ever been addressed. This article has offered information on lighthouse supply, which takes into account the technology of navigation, pricing methods (levying light dues on the basis of tonnage, thus price discrimination) and growth in maritime trade. Further evidence in support of Coase's criticism of Samuelson's proposition that the lighthouse had to be funded *exclusively* from direct taxation or general revenue is provided by reference to the light dues levied on shipping entering Hong Kong.

Another critical point about Coase's paper is not its purpose and inner logic, but a question he did not ask: why was there a change in the institutional arrangements in lighthouse provision in England? This question should also be raised for examples of user-pays lighthouses elsewhere in the world. While this question is beyond the scope of Coase and this article, it remains a first-order question for any inquiry into a possible public good. Historical research is indispensable for answering this question. The hints offered by this article are that the impact of technology could be decisive, although in the Hong Kong case it was not, for converting a private good into a genuinely public one. A possible additional clue may be provided by the fact that, in an era when the strategy of seapower was of growing and eventually supreme importance in political and military thinking, military vessels of all nations were exempt from paying light dues. In that sense, of course, the free riders were the public authorities themselves!³³

33 Throughout the long lighthouse tale, naval vessels of all nations (i.e. French vessels in English waters, English in German, Japanese in Hong Kong, Chinese in Japan) have always been exempt from light dues! For the relevant present-day Hong Kong law on port dues and remissions, broadly similar to most other jurisdictions, see s.52 *Shipping and Port Ordinance*, Cap 131, Laws of Hong Kong (version 30 June 1997).

At Cordouan, in Bordeaux, France, there has stood a beacon since AD 880. A 48-foot lighthouse structure was built there when it was an English province under King Edward's son the Black Prince, and was manned by a hermit. Each passing boat was charged two groats (a kind of silver coin) (Hart-Davis and Troscianko, 2002, 101). In 1695, having lost several ships on the Eddystone Rock 14 miles south of Plymouth, Henry Winstanley obtained leave from the Trinity House to build a lighthouse, which took four years. His permission was to charge dues of one penny per ton outward bound and one penny per ton inward bound, excepting coasters, to pay 12d for each passing (Hart-Davis and Troscianko, 2002, 119). In colonial Hong Kong, an increased lighthouse duty of 2.5 cents per ton was imposed in 1890 on European ships that entered Victoria Harbour for the benefit of not only these ships using the Gap Rock Light, but also for coasters that went to Macau, Canton, Swatow, Amoy, Hangchow, Ningpo, and Shanghai instead of calling at Hong Kong. This form of light dues survived Hong Kong's handover to China. Its present rate (for a bundled port facilities and light dues) is 54 cents (HK\$0.54) per 100 net ton of a vessel not classified as river trade or fishing vessel. Paul Samuelson's economics text, however, has not been revised to accept that the lighthouse is a good that can be funded by a toll.

However, participants in the debate over Coase's lighthouse have ignored the point that Coase's English case study has achieved less a novel theoretical criticism of Samuelson's 'arm chair' textbook example than a twentieth-century demonstration of a nineteenth-century French theoretical solution to the imagined trouble for a zero marginal cost public work. This solution is price discrimination. The French example used was not maritime but riparian: it was the bridge. Samuelson's mistake was not that he recalled Mill (1965), Sidgwick (1901) and Pigou (1932), but that he did not read Dupuit, whose 1844 work became available in English as early as 1952.³⁴ On the other hand, it is interesting to note that while Coase (1946) pointed out that 'multi-part pricing', citing Dupuit's work of 1844 (1952), is a way to overcome the problem of marginal pricing for a falling average cost public utility, he did not discuss the merit of light dues based on tonnage as a kind of zero marginal cost-relevant solution.

A planner's epilogue

Other than putting Coase's less than accurate historical inquiry into proper context, how does our discussion on the lighthouse illuminate the road to planning for the provision of public goods for the common good? The answer is that the Gap Rock Light example offers another slant on the fallacy of analysing the problem of public goods using a simple private enterprise/public sector dichotomy. That the provision of a lighthouse in Chinese waters by Hong Kong was not initiated by the state but private

34 An instance of a textbook reference to Dupuit can be found in Koplin (1971, 169).

enterprises, who were willing to be taxed more heavily (at least initially) for something that might benefit not just themselves but 'free-riders', is particularly instructive. This historical fact challenges 'received views' in either the libertarian-Coasian and interventionist-Pigovian camp. Issues of inefficiency due to zero marginal cost pricing did not arise; as elsewhere, there was price discrimination. Issues of non-rival consumption and free-riding were overcome by voluntary taxation. The colonial Hong Kong story calls for a non-static view of the provision of public goods (or, more precisely, Category 1 goods; see Lai et al., 2008, 404) by government.

For planning researchers won over by the concept of 'shirking', this case study may be highly provoking. The problem of 'shirking' by any member of a team can be seen as free-riding and hence as analogous to, if not an example of, a public good contractual issue. The 'shirking' problem is usually contained by some monitoring process inherent in the team's psycho-social dynamic. This accepts the obvious fact that no human being has an iron will. But the truth of that observation should point to the source of the 'shirking' problem as lying outside teamwork.

The psycho-social source is applicable to any individual seeking to counter a personal tendency to take the easy route. That is why movie stars hire personal coaches to help them do enough exercise. In short, 'shirking' is not essentially only a team problem.

It follows that because 'shirking' is an endemic and well-understood human inclination, team members, like individuals, may voluntarily hire outsiders to ensure full team contribution to the joint effort. To make fun of the principal-agent theorists who always find instances of 'shirking' in team work, economist Steven Cheung was fond of referring to the example of barge pullers in China hiring people to whip them so that they worked hard enough to drag the barge up stream. The enforcer was actually the agent, while the persons who were apparently being slave-driven or 'monitored' were in fact the principal.

The promotion of the construction and financing of the Gap Rock Light by Hong Kong shipping interests is therefore a case in point. In effect, these interests were aware that whatever their needs for a light on Gap Rock, political considerations and the actual foci of their daily business made a collective or individual effort to build one unlikely. There was thus a real public good problem calling for government involvement. They therefore followed the example of the barge pullers and got the government to build the light and exact light dues from them for the funding of this public facility. In fact as we noted above (Taylor, 2001), a similar route had been pioneered in England, when 60 years previously ship owners had forced the British Parliament to transform Trinity House into a monopoly to replace the existing competitive lighthouse market, and thereafter for it to levy light dues on them.

This example of private parties demanding and paying for the production of a public good by the state for public use must accordingly not be seen from the stance of

the private–public dichotomy. That dichotomy too greatly simplifies reality as either a matter of private enterprise seeking to free itself from the bondage of the state, or one of public intervention crowding out private entrepreneurship. Gap Rock is instead a typical instantiation of how real life goes on, whether war and peace, colonisation and independence, or any other example, where ‘the race is not to the swift, nor the battle to the strong, neither yet bread to the wise, nor yet riches to men of understanding, nor yet favour to men of skill; but time and chance happeneth to them all’,³⁵ and is best summarised by the term ‘political economy’.

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35 Ecclesiastes, 9:11.

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