Was industrial technology more a promise or a pitfall to the British Empire? **Discuss with reference to at least three different technologies.**

Popular understandings of the history of the British Empire often unconsciously reflect a belief in the inherent superiority of Western civilisations as the driving force behind the successes of imperialism. 'Modernity' is generally conflated with processes of industrialisation in which machines become "the universal measure of men."[1] Industrial technology is certainly an important factor in the study of the British Empire as; "many of the new industrial technologies of the high imperial era not only had the capacity to help create and sustain European empires where none had previously existed, but also greatly to strengthen and extend European control in regions where empires boasted longer lineages."[2] However, whilst 'new' technologies did present many benefits for the British, they also presented many challenges. Technological determinism which sees technology as an independent variable that follows an obvious path and imposes impacts on society without regard to its context, is simply not a view that can be supported with historical study of the British Empire. History is rarely as 'clean-cut' as we often aspire to present it as; the reality of industrialism in British empire-building is a 'messy' picture in which technology was both a promise *and* a pitfall. We can particularly see this through the study of guns, as a mechanism of gaining control; of trains, as a means of consolidation of power; and of the telegraph as a tool for connecting the Empire.

[1] Arnold, D. (2005) 'Europe, Technology and Colonialism in the 20th Century' *History and Technology: An International Journal*, 21(1), p.92
[2] Ibid, p.92

Before we assess the implications of the use of guns by the British Empire against their opponents, it is helpful to first understand that gun technology was not entirely a Western phenomenon. Laichen attacks the 'Eurocentric approach' to Southeast Asian history, (although this same accusation could be made of most studies of imperialism in general).[3] Laichen goes on to argue that "long before the appearance of the Europeans in Southeast Asian waters, Chinese firearms- including rockets, hand-guns and cannon" were already in use in the area.[4] Laichen does make the concession that European firearms were more effective and accurate when they arrived in Asia and as such were taken up by the Chinese, but the 'murkiness' of the origins of gun technology presents the first step towards perceiving that guns didn't present a uniquely British advantage.

The case of the relations between Britain and China particularly illustrates the complexity of the effects of guns. In the 18th Century China was a very prosperous place with strong central governments that set the terms of trade with the British rather than the inverse.[5] However whilst the British underwent their industrial and military revolutions making great improvements to their guns; Chinese technological development effectively remained stagnant. By the time of the supposed 'Opium War' of 1839, dramatically superior weaponry meant that "small British forces easily brushed aside Chinese defences to impose the first of the unequal treaties that came to symbolise Western imperialism in East Asia."[6] On one level this seems to paint a very simple picture of a war in which the superior industrial technology of Britain triumphed over its more 'backward' counterpart. However the wider

[3]Laichen, S. (2003) 'Military Technology Transfers from Ming China and the Emergence of Northern Mainland Southeast Asia (c.1390-1527)' *Journal of Southeast Asian Studies*, 34 (3), p. 495
[4] Ibid p.497
[5] Hacker, B. (1977) 'The Weapons of the West: Military Technology and Modernisation in 19th-Century China and Japan' *Technology and Culture*, 18 (1), p.45
[6] Ibid, p.48

historical context of the 'Opium War' challenges this assumption. Hacker argues that the Ch'ing dynasty was slipping into a decline based on corruption, excessive taxation and social unrest, independent of direct Western influence.[7] This instability continued throughout the period particularly seen in the Taiping Rebellion of 1851-1864 in which millions of Chinese lives were lost.[8] China had previously demonstrated both its ability to negotiate on the same 'level' as its Western counterparts and its willingness to utilise European weaponry in times of civil peace. As such, a very plausible argument can be made that China's necessary focus on internal affairs was a more significant weakness in allowing its subjection to Britain, than mere technological inferiority.

Although China may represent a situation where guns clearly worked to the advantage of the British in establishing a position of power, gun technology also presented a force easily adopted and deployed against Britain by her enemies. A particular example of this is the Second Boer war of 1899-1902 in which the British Intelligence Department underestimated the number of rifles held by their Afrikaner opponents by at least 10 000.[9] Lieutenant-Colonel ES May in 1901 reflected on the perplexity of how a country, whose entire population was similar in number to that of an average British town, managed to make a fearsome stand against the British Empire; "There has probably never been a more striking example of a foe being underrated than has been given to the world of late in South Africa."[10] A possible reason that the Boer forces managed to kill approximately 22 000 British soldiers as to an estimated figure of 6 000 Boers (not counting tens of thousands of civilian deaths on both sides) is that

[7] Hacker, p.49
[8] Ibid, p.48
[9] Van der Waag, I. (2000) 'South Africa and the Boer Military System' from Dennis, P. & Grey, J. eds. *The Boer War: Army, Nation and Empire,* p.46
[10] Ibid, p.47/8

they arguably made better use of European guns than Britain did![11] The Boer commandos utilised the Mauser gun which although carried half as many cartridges as the British choice of the Lee-Metford, it was lighter and fired further at a faster speed. Van der Burg explains the superior burgher tactics which focused on marksmanship allowing great accuracy, whilst "the British regiments fired in volleys at the command of officers who also determined the distances, without actually aiming at a particular target."[12] In light of this, it can be seen that the ultimate defeat of the Boer people was due to other intervening factors (such as internal conflict, lack of morale and poor military organisation) not due to British industrial technology; in fact this very force worked against Britain in the Boer War.

In assessing the value of the gun in the history of British Empire, it is also of interest to directly challenge the technological determinist understanding of the unquestionable supremacy of the gun as a weapon in these times. Gun technology didn't really become what we envision it to be today, until the major historical catalysts of the World Wars. For much of Britain's imperial history the gun had the capacity to be unreliable in certain conditions and not automated enough to be used in close-range combat. In 1879, at the Battle of Isandhlwana against the Zulus, in just six hours the British army lost over 1 300 of 1 700 men in battle despite having the sole use of guns.[13] This decimation was achieved because the British had not set up a defensible position in which they could shoot from; thus the Zulus engaged in close-range combat with a non-industrial weapon, superior in such situations when wielded by trained warriors; the 'assegai' (a short stabbing spear with a long double-

[11] Van der Waag, p.45
[12] Ibid, p.56
[13] Housworth, S. (2005) *The British Empire: Catalyst for the Demise of the Zulu Kingdom*, New York: The State University of New York, p.11

edged blade).[14] Once again the victory of Britain could be seen in part at least to inferior organisation of the Zulu people, not their inferior weaponry. The Zulu king Cetshwayo did not have the control he needed over his people. In fact the disastrous Battle of Kambula in which Zulu attacked a British encampment went against direct orders of the King who had strategically planned instead to cut off vulnerable British supply trains and starve them out; a strategy which could well have been highly effective if Cetshwayo had the necessary support.[15]

The effects of any particular technology can be far wider spread than could have been imagined upon their invention. We can see a clear example of gun technology having a negative effect on the British Empire even external to their actual application against opponents, in the case of the instigation of the Indian Sepoy Revolt of 1857-8 in which soldiers rebelled against their British leaders. The Enfield rifle apparently used cartridges which were bitten by soldiers, that were smeared with pig's grease and cow's fat; substances highly offensive to the Sepoy religion. Hazewell, a contemporary of the time explained that the "rumour spread among the Sepoys that there was a trick played upon them- that this was but a device to pollute them and destroy their cast, and the first step toward a general and forcible conversion to Christianity."[16] This offence was the spark that instigated a rebellion that became one of the most concerning to England at the time.

The significance of industrial technology within the history of the British Empire does not lie solely in military development that had initial importance on the battlefield, but rather

[14] Housworth, p.3
[15] Ibid, p.12
[16] Hazewell, C. (1857) 'The Indian Revolt' in *The Atlantic Monthly Digital Edition*, Cornell University, p.2

is also relevant in studying Britain's maintenance and consolidation of control. Alike the gun, the ultimate value of the technologies that impact on these areas is not clear-cut; we can see this particularly in the case of creating extensive railway systems, particularly in India. The railway during high imperialism was often perceived to be within British politics the "key to modernisation, progress and economic development."[17] A merchant letter to Lord Russell campaigning for the development of the Indian railway in 1848 argued that "wherever railroads have been established, has been opened to the world."[18] Clarke in 1857 outlines the British advantages of the railway as including improved government administration, greater control of India by English troops, higher levels of English colonisation in India and revenue from accessible land.[19] Idealistic discourse championed railway as a means of counteracting lack of employment and starvation of Indians; but the base level considerations were of course about money as we can see in official response to the merchant's campaign; "it would not be reasonable to expect that individuals should advance money here on a work so totally new in its nature as an Indian Railway, without some further assurance of profit."[20] Although a quantitative measurement of the administrative and economic benefits of railway within colonies is difficult to gauge, it seems plausible to assume that it provided an extent of advantage to Britain or she wouldn't have continued with the project.

Concluding that railway presented some advantages to the British Empire is not to say that it necessarily worked entirely for its interests. Headrick states that "as befitted its size,

[17] Headrick, D. (1988) *The Tentacles of Progress: Technology Transfer in the Age of Imperialism, 1850-1940,* Oxford: Oxford University Press, p.17
[18] East India Merchant (1848) 'A Letter to the Right Honourable Lord John Russell: on the Subject of Indian Railways' in *Bristol Selected Phamplets,* University of Bristol, p.3
[19] Clarke, H. (1857) 'Colonisation, defence and railways in our Indian Empire' in *Knowsley Phamplet Collection*, University of Liverpool, p.8
[20] East India Merchant, p.7

the Indian rail network was the costliest construction project undertaken by any colonial power in any colony."[21] Such a major investment of money and effort would have to have been based on clear plans for its use. Contemporary Rowland Stephenson argued before the railway construction that "the people of India are poor, and in many parts thinly scattered" but as India possesses many "valuable products" then the benefit of the railroad would be derived "chiefly from the conveyance of merchandise and not from passengers."[22] This turned out to be a misconception on a grand scale; within the first year of the construction of the Indian railway in 1854 alone, 450 000 Indians dominated train use to commute and this utilisation continued thereafter.[23] The newspaper 'Friend of India' proclaimed in 1855 that the train was "producing a social change in the habits of general society far more deep and extensive than any which has been created by the political revolutions of the last twenty centuries."[24] This is of course quite an exorbitant claim, but it does raise the significant idea of empowerment for native populations. Transport technology does not discriminate who it carries to whom, or what ideas it allows to be disseminated. It is certainly possible that this transformation of Indian mobility contributed to the spread of ideas that sparked the Sepoy Mutiny of 1857. If this is a bit ambiguous, a more obvious example of trains forming a pitfall for the British Empire can be seen in the Second Boer War. Van der Waag explains how Boer strategists perceived the obvious target of British supplies via railway lines and intentionally diverted British energy in order to strike at their logistic lines; succeeding in causing a break in British railway lines more than 250 times in 12 months.[25]

[21] Headrick, p.53
[22] East India Merchant, p 10-11
[23] Headrick, p.63
[24] Ibid, p.63
[25] Van der Waag, p.50

Once lands are claimed and held under British power, industrial technology also forms the means of connecting far-away localities within the Empire. Headrick explains that before 1840 it took 5 to 8 months for a letter to transit between Britain and India; when this was added to waiting for shipment and slow mail systems within India, one could not expect a reply for 2 years![26] The development of the telegraph revolutionised these systems, leaving contemporaries in awe of this incredible power. MP Henniker Heaton argued that in the "telegraphic services, the Empire of our Queen possesses a cohesive force […] stronger than death dealing warships, stronger than the might of devoted legions."[27] Prescott in 1860 argued that upon further development of the telegraph to connect the entirety of the Empire that the "distance between the East and the West will be fairly and forever annihilated."[28] These again represent rather overly idealistic discourses; we know that the distance between the 'East' and the 'West' in some ways (such as economically) is today still more distant than ever, but they reflect on the important role of communication technology that can easily be overlooked from a 21st Century outlook in which such interconnectedness is second nature. We can see that the telegraph presented an incredible source of power for the British Empire in counteracting MP Burke's argument that: "three thousand miles of ocean lie between you and them. No contrivance can prevent the effects of distance in weakening government; the want of a speedy explanation of a single point is enough to defeat a whole system."[29]

The benefits of communicative industrial technologies can be also be realised in less obvious ways. Clarke in 1857 focused particularly on the health benefits the telegram could

[26] Headrick, p.97
[27] Ibid, p.97
[28] Prescott, G. (1860) *History, Theory and Practice of the Electric Telegraph,* Boston: Ticknor and Fields, p.20
[29] Bell, D. (2005) 'Dissolving Distance: Technology, Space and Empire in British Political Thought, 1770-1900' *The Journal of Modern History*, 77(3), p.538

bring. He argued that telegraph communication would provide a means of directing government from hill towns not just the coast which comprised of areas prone to sickness and that troops could be granted leave more safely as they could be summoned quickly; "saving many valuable lives, and promoting the health of the European community."[30]

These accounts recognise the advantages of the telegraph to the British Empire, but do not consider any possible effect against it. In a sense it is difficult to theorise the ways in which the telegraph could work against the British Empire because it is only indirectly a mechanism for either reinforcing or challenging power. Yet the development of industrial communication technologies which really was kick-started by the telegraph creates important mechanisms for community building. Through studying the technology of guns, a common theme emerged that British victory was often at least partly due to the internal disjuncture of its opponents. The telegraph and its descendants worked as a means of joining people together in a shared identity which allows them to present a unified force against an enemy. Prescott's account included a poem that highlighted this role of the telegraph; "Now what stirring news it brings!/ Plots of emperors and kings ;/ Or of people grown to strength, / Rising from their knees at length;/ These to win a state, or school;/ Those for flight, or stronger rule/ All that nations dare or feel."[31] History is not a discipline of coincidences; it is possible to argue that a world of highly inter-connected societies is one ready for post-colonisation; of those 'rising from their knees.'

Thus it can be seen that attempting to 'neatly' define industrial technology exclusively as a promise *or* a pitfall for the British Empire cannot represent the reality of the complicated

[30] Clarke, p.4-6
[31] Prescott, p.233

process that imperial power struggles embody. The study of guns shows that whilst Britain's technical capabilities could work for their benefit within particular contexts; they were equally as capable of being turned against them, causing the British great troubles. Whilst trains presented great logistical benefits, they were also utilised in ways that were not planned for and could in fact present a particularly vulnerable target. The telegraph allowed for a revolution in the way in which the British Empire could be governed and held together, but it was perhaps also the start of community-building technologies that led towards movements of independence. Even so these industrial communication developments, often overlooked as forces of empire, remained a means of connection even after Britain's imperial borders dissipated, perhaps allowing for 'cultural imperialism' to survive. The idea of 'mother country' was maintained long after many states had been emancipated politically from Britain. Perhaps even today we can see this 'cultural empire' in the 'royal frenzy' that arises over events such as William and Kate's wedding. Although we may not see any signs of direct 'imperial' interference, we shouldn't overlook the fact that Australians have held onto the symbolism of a British Head of State 112 years after our federation!

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