Early Telecommunication and the Birth of Telegraphy in Malta

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Abstract: This paper reviews the birth of telegraphy and its take-up in Malta before the advent of radio. The driving force behind the adoption of a number of signalling methods and the telegraph in Malta was the militia, but a means of effective communication was also important for trade and as a warning system against unwanted intruders. Foreign, diplomatic, and news correspondence became possible after submarine cables linking Malta to mainland Europe were laid in the 1860s.

Keywords: Telecommunications; electric telegraph, semaphore, submarine cables

Introduction

The Maltese archipelago has been the focus of attention of many powers who, at different periods, sought to capture and rule the islands. The Carthaginians, Romans, Arabs, Normans, French, and British, among others, all left their mark on these tiny islands. The Knights Hospitaller, a military religious order of St John now known as the Knights of Malta, settled in Malta in 1530 when Emperor Charles V of Sicily offered it to them after they had been driven out of Rhodes by Suleiman I. In 1798 the last grand master of the knights surrendered to Napoleon when the latter captured Malta on his way to Egypt. The French occupation was brief, the British taking over just two years later. Malta was made a British colony in 1813 and became independent in 1964.

In view of Malta's strategic location and therefore its importance as a military base and a place for international trade, the knights of St

John built impressive forts and bastions and improved upon existing defence structures. The 1565 siege of Malta when the Turks were driven back home owes much to the knights' military strategy and Maltese bravery as to the imposing structures of the bastions. The knights also built a series of watch towers along Malta's shores to watch out for piratical incursions and simultaneously serve as a means of communication. The British complemented these watch towers by more forts, redoubts, and batteries. Given that the British Empire had already grown substantially by the mid-nineteenth century, the advantage of communicating with other British colonies from Malta was obvious so that, once the electric telegraph was invented, it was quickly introduced to the island, with submarine cables being paid out from Malta to various Mediterranean ports.

Communication before the electric telegraph

Seventeenth-century watch towers

The simplest, and perhaps oldest, way of communicating information over long distances was by smoke signals during daytime and beacon fires at night. These signals were often used as an alarm, for example, to alert attention that the enemy had been sighted. In Malta, the Order had erected watch towers at strategic positions along much of the coastline to serve as sentinels against impending sea approaches.

The towers were positioned in sight of each other so that visual signals could be sent along the entire chain. The average distance between neighbouring towers is about 3 kilometres. No towers were placed along the western and south-western coast since the cliffs on this side of the island were considered inaccessible. Equipped with a small cannon, each tower was manned day and night.

In all, 23 towers were built, ten in the time of Grand Masters Alof de Wignacourt (1601–22) and Jean Lascaris (1636–57), the remaining 13

under Martin De Redin (1657–60).[1] Eight were erected in Gozo.[2]

Prior to the building of these towers and a few other forts, batteries, redoubts, and entrenchments constructed first by the Order and then the British occupation, the only warning system in operation in Malta was by means of coastal huts which served merely as observation posts but offered no defence possibilities. Marauding incursions were very common: the open defencelessness of the islands before the coming of the knights was exploited to full advantage by barbarians who would suddenly land on the beaches and raise havoc. Therefore, the Order's military projects concentrated on fortifying the islands: building large forts and bastions, first on Malta and subsequently on Gozo. The importance of an effective communication and warning system was also recognized, so that the watch towers – as well as providing limited protection (most were provided with ammunition) – served as important signalling stations. In practice, the towers' role therefore was at least dual, serving also to warn off vessels in times of epidemics.

Unfortunately, there are few historical records about the signalling methods that were agreed upon, what simple rules were to be followed when raising the alarm. Thus, although details about the construction, manning and equipment of the De Redin towers were laid out in the Grand Master's proposal to the Order's Council of 30 March 1658, nothing appears on the subject of signalling. There is a reference to the effect that, in addition to a small gun, each tower was to be provided with a 'Speaking Trumpet' for communicating with vessels and boats in the vicinity; and with oil for lighting the lanterns at night to signal to the other towers. Some towers even had bells, presumably for raising the alarm. A century later, Grand Master Pinto, in his *Regolamenti delli Sei Regimenti di Campagnia di Malta—per la difesa delle Marine in un Incursione del Nemico*, did however give some details of what 'protocol' to follow in the event of an enemy threat.[3]

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1 Some old history books quote 14 towers but the actual number of towers built by De Redin was 13. For a full explanation, see A. Samut-Tagliaferro, 'The 13 Towers of de Redin', *Sunday Times of Malta*, 15 June 1969, 30.

2 Id., 'De Redin's Thirteen Coast Watch-Towers', *Treasures of Malta*, Vol. 1, No. 2, Easter 1995, 56.

3 See id., 'British Military Communications on Malta and Gozo', *Armed Forces of Malta Journal*, No. 32 (1979), 5.

During the First and Second World Wars, these towers also served as redoubts but following the Second World War, when it was felt that they had no further purpose, they were practically neglected and many fell into disrepair.[4]

The mechanical semaphore system

Telegraphy is generally considered to have started with the Frenchman Claude Chappe who was commissioned to install the first line of his optical telegraph between Paris and Lille in 1792. The Chappe semaphore system consisted of pivoted arms on high poles:[5] by bending the arms into various positions, coded signals could be spelt out indicating the letters of the alphabet. The arms were controlled by skilled operators by means of ropes and pulleys. The operators had telescopes for reading the signals at the nearest post which they then reproduced. Sometimes, lanterns would be used at night. The Paris–Lille line was opened in 1794 and, with 22 posts placed at roughly 10 km intervals, a message leaving one city arrived at the other within minutes.

Since Malta is so small (with an area of only about 300 square kilometres), one might suppose that there would not have been the need of the semaphore system (except, perhaps, between Malta and Gozo some kilometres away), and that an efficient personal courier system would have done the job quickly enough. However, for a number of years (starting from *c*.1840) Malta did have an optical semaphore system in operation, with some of the watch towers having served as signalling stations. In addition, apart from wooden poles, other towers were erected specifically for this purpose. Although superseded by the more modern electrical telegraph, the semaphore system was kept as an alternative means of communication until it was closed down on 11 April 1883.[6]

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4 Thanks to *Din L-Art Ħelwa* and other philanthropic organizations a number of these coastal towers have been restored.

5 E. Larsen, *Telecommunications: a History* (London, 1977), 23; and K. Beauchamp, *History of Telegraph* (London, 2001), 6–8.

6 A. Samut-Tagliaferro, 'British Military Communications', 6.

The semaphore system in Malta was used by both the British Army and the Maltese Forces. In 1844, with a view to increasing its efficiency the Military even sought the bishop's permission to use the steeples and domes of certain churches as signal stations. At first, the bishop agreed but subsequently he withdrew his concurrence.[7] Some years later, at the request of the civil government, the Army also built tall towers on three important sites, namely Nadur in Gozo, and Għargħur and Għaxaq in Malta, to be used as semaphore stations. Together with other buildings adapted for the purpose, such as the Mtarfa Barracks Clock Tower and Selmun Tower, they formed key communications links between Malta and Gozo.

An important use of the mechanical semaphore was to report the sighting of vessels. Those approaching Malta from the west were reported to the Valletta turret at the Palace – then used by the governor and the commander-in-chief – by means of the semaphore in Gozo, where one station was situated next to Tal-Ġordan lighthouse on the north coast of the island. This enabled the shipping agents, mostly located in the capital city, to know of their vessels' arrival in advance.

The electric telegraph

In *Media, Technology and Society—A History: From the Telegraph to the Internet*, Brian Winston states that 'optical mechanical systems, such as the Chappe semaphore can be seen as a sort of precursor to the electrical telegraph, like the string telephones'.[8] String telephones were something of a fascination, even serving as adult toys. They were experimented with, nonetheless, and worked up to distances of well over a hundred metres, the size and nature of the string or chord having some effect on their efficiency. Of course, they could have never found any real application, hence their use as toys. As for the Chappe optical-mechanical telegraph, this had already become widespread in Europe by the first half of the

7 Ibid., 5.

8 B. Winston, *Media, Technology and Society—A History: From the Telegraph to the Internet* (London, 1998), 21.

nineteenth century, by which time a number of persons in various places had started experimenting with transmitting electrical signals along a conducting wire, initially over short distances, subsequently covering tens of kilometres and eventually spanning continents.

Of the early electric telegraph experimenters, and building on the works of scientists such as Volta, Oersted, and Ampere (the latter being among the first to suggest using electromagnetism for transmitting telegraphic signals), there were Gauss, Weber and Steinheil (Germany, *c*.1833–37); Schilling (England/Germany, *c*.1835); Alexander (Scotland, *c*.1837); Davy, Cooke and Wheatstone (England, *c*.1835); and Morse and Henry (USA, *c*.1837), among others. As with many other inventions, the development of the telegraph occurred contemporaneously in different countries. By the 1840s a number of countries had properly functioning telegraphs, much of them – not without good reason – running along railway lines.[9] In France, the supervening necessity for the semaphore was the need of France's revolutionary armies, although it was also used for civilian communication. The means to the end of the electrical telegraph remained pretty much the same, for military use, but the supervening necessity was really the safety of railways since railway accidents were common and therefore some means of signalling system was vital.[10]

In a matter of years much of Europe became connected by electric telegraph lines but as Arthur C. Clarke has put it 'the wires still stopped at the edge of the sea'.[11] The next natural step was to span the seas, to link islands to mainlands, and to interconnect the continents by means of submarine cables. This feat started in 1850.

As for Malta, the installation of the electric telegraph, that is, of the land telegraphic cables, proceeded roughly in parallel with the laying

9 Ibid., 21; Larsen, 24–5.

10 In fact, about two decades before, static electrical telegraphic systems, which worked over a number of kilometres of wire, were demonstrated but they were rejected because (i) the mechanical semaphore served the needs well enough; and (ii) there was no supervening necessity.

11 A.C. Clarke, *How the World was Won – Beyond the Global Village* (London, 1992).

of the first submarine cable[12] (see next section). As a key fortress, Malta was accorded operational priority in the installation of the telegraph: in November 1859, when the first telegraph station at 6–7 Marsamscetto Road, Valletta, was established by the Mediterranean Extension Telegraph Company, a proposal to connect the various forts with the Palace in Valletta was made by Governor John Gaspart Le Marchant to the Duke of Newcastle in England, Henry Pelham-Clinton, who was then secretary of state for the colonies.[13] Approval for this request came within months and work began in earnest in the summer of 1860.[14] By the following year, each fort and defensive work had been directly linked to the commander-in-chief's headquarters at the Palace. Subsequently, more lines were added to some parts of the island; however, unlike places abroad which had railway networks in operation, Malta had just one small railway line and there was little need for a nation-wide telegraphic system.[15] The use of the cable telegraph continued well into the twentieth century by which time the telephone started taking over.

Submarine Cables

Although, prior to 1850, a handful of persons had tried sending signals via underwater cables, the first true attempt at establishing an underwater telegraphic link over a considerable distance was made in the late summer of 1850 when a cable was laid in the English Channel from Dover in England to Cap Gris-Nez (near Calais) in France. This connection did not function well and was short-lived, so that about a year later a second more successful venture – again across the Strait of Dover – effectively linked Britain to mainland Europe. In the span of a few years submarine cabling

12 Whereas many countries chose to pass the cables overhead, some countries, notably Germany, preferred to bury the cables underground.

13 Despatch to the Secretary of State, 29 November 1859. National Archives of Malta [NAM:CSG 4978].

14 Despatch to the Secretary of State, 1 February 1860 [NAM:CSG 8711].

15 Malta had one short railway track that ran from Valletta to Rabat, covering a distance of just 11km. Before the Malta Railway started operating on 28 February 1883, the intention was to connect each station by telegraph but in 1882 it was decided to use telephones instead. See J. Bonnici and M. Cassar, *The Malta Railway* (Malta, 1992), 34–5; and *The Malta Standard*, 8 December 1880.

was being laid in many places around the globe and had become big business. The Gutta Percha Company alone, which for the next one hundred years would supply most of the cable core insulation, produced thousands of kilometres of insulated wire in just a few years (the manufacturing of the protective armouring being left to other companies).[16]

Being a small island in the middle of the Mediterranean and therefore somewhat cut off, Malta benefited greatly from submarine electric telegraph cables and wireless communication. In 1857 – the year Cyrus West Field began his long struggle to lay a cable across the Atlantic – the first attempt to link Malta to mainland Europe by submarine cable was made. In that year, the Mediterranean Extension Telegraph Company was formed by John Watkin Brett to lay a cable from Sardinia to Corfu via Malta.[17] Another firm, R.S. Newall Company, of Birkenhead, UK, was subcontracted to manufacture and lay the cable. The Gutta Percha Company supplied the core. The cable laying was completed that same year but the Sardinia–Malta link failed in 1859 and the Malta–Corfu link failed in 1861. Another cable laid in 1859 between Malta and Sicily was more successful and functioned for several years. The original proposal for the Malta–Sicily cable was put forward by Mr Preston but, for some unclear reason, permission was not granted immediately.[18]

It was also in this period, exactly in 1859, that the first telegraph station at 6, 7 Marsamscetto Road, Valletta, was established in Malta by the Mediterranean Extension Telegraph Company, later to be incorporated as part of the British company Cable & Wireless after a series of mergers involving other telegraphic companies. The Mediterranean Extension Telegraph Company had been set up by John Watkin Brett, the person who, together with his brother Jacob, had written to the British Prime

16 Companies that manufactured the protective armouring for submarine cables were not very numerous. In fact, much of this was again done by another British company, Glass, Elliott and Company, which combined with the Gutta Percha Company in 1864 to form the Telegraph Construction and Maintenance Company.

17 B. Glover, 'The Evolution of Cable and Wireless', in *History of the Atlantic Cable & Submarine Telegraphy—Cable Timeline*. Retrieved from http://www.atlantic-cable.com.

18 Despatch to the Secretary of State, 21 January 1859, National Archives of Malta [NAM:CSG 9447].

Minister, Sir Robert Peel, in 1845 to connect Britain to France by means of an 'oceanic and subterranean inland electric telegraph'.[19] Cable & Wireless operated from Marsamscetto Road as well as from another main office at St George's where many of the underwater cables had been landed.[20]

Ironically when the Malta–Corfu link was completed on Friday 4 December 1857, with the cable being paid out in Malta at St George's Bay, the landline connection between St George's and Valletta had not been completed yet and a personal courier service had to be set up for the electric telegraph to be used immediately. The vessel involved in the laying of the Malta–Corfu cable was the *Elba*; it has been reported that on completion of the cable-laying, the vessel shot a salute with the sailors shouting three cries of welcome.[21]

The Sardinia–Malta link now made it possible for the first time not only to communicate with places in the Mediterranean, but also with London via Cagliari in Sardinia (which had a connection to Corsica which, in turn, was connected to Genoa on mainland Italy). Since Malta was a British colony, this was important for the British government, with subsequent links involving Malta proving invaluable particularly during the two world wars. Although no logs of the early telegraphic transmissions survive, we can gain an idea of the duration of messages transmitted from Malta to London from a letter sent to Downing Street by Governor William Reid, to which were attached the results of a short telegraphic message communicated purposely to test the working of the new telegraphic system. The eight-word message was sent from Valletta on the morning of 20 December 1857: it took roughly 30 minutes to complete and about 2 hours and 20 minutes to be received at London.[22]

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19 See, for example, L. Solymar, *Getting the Message – A History of Communications* (Oxford, 1999), 69. The British Government was initially disinterested in the Brett brothers' proposal. Undeterred, the Bretts raised funds from private capital and laid their first cable across the English Channel in 1850.

20 Electra House at St George's, built in the early 1900s, bears a remarkable similarity with the telegraph office at Porthcurno, where many Maltese personnel working for Cable & Wireless were sent for training.

21 J. Bezzina, *Servizzi Pubblici f'Malta* (Malta, n.d.).

22 The message was 'At what o'clock is this received at London?'. This message was

Of course this case of the test message is perhaps not very typical of the normal transmission speeds, which were more of the order of a few words per minute, but it does show the problems associated with new technology and the state of the art of the technology itself. The signals had to make their journey via a number of receiving and relaying stations where each message had to be manually decoded and then again manually relayed forward to the next station. A problem involving just one link would render the entire connection useless.[23]

Another cable paid out from Malta was that to Tripoli in 1861. This formed part of a much longer link involving Benghazi, Alexandria, Rangoon, and Singapore. The Malta and Alexandria Telegraph Company was the telegraph operator.

In 1868 the Malta and Alexandria Telegraph Company was taken over by the Anglo-Mediterranean Telegraph Company, John Pender's first telegraphic company formed specifically to lay the first direct cable from Malta to Alexandria. This cable put Malta on the telegraphic map because it was to become the central link in the system connecting Britain and India. The British newspaper *The Times* of 17 September 1868 reported:

> The progress of the expedition which has left England to lay the Anglo-Mediterranean cable cannot fail to be watched with considerable interest, inasmuch as the completion of the line will duplicate our means of communication with Egypt, and will also constitute a most important adjunct to our agencies for corresponding with our Indian empire.[24]

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sent by Governor Reid to the British Premier Laboucher in London. Despatch to the Secretary of State, National Archives of Malta [NAM:CSG 4795].

23 In one early system, the telegraph operator would decode each character by following the left-to-right and right-to-left movement of a spot of light projected by a mirror galvanometer on a graduated screen and write down (or read aload to another clerk) the interpreted character. With the popularity of the telegraph and the increasing number of communicated messages the job of the telegraph operator became very tasking and strenuous on the eyes. By the end of the 19th century better methods were being employed, and signals were even being automatically recorded on paper.

24 Quoted in Glover.

By that year – a decade after the suppression of the Indian Mutiny – the commercial telegraph network in British India had already been well established, with thousands of kilometres of lines linking major Indian towns and cities.

In 1869 Pender formed his second telegraphic company, The Falmouth, Gibraltar, and Malta Telegraph Company, with the aim of completing the link between Britain and India by laying a cable from Malta to England via Gibraltar. The original intention was to land the cable at Falmouth (hence the company name) but the high risk of damage from ships' anchors at the busy port led Pender to choose Porthcurno instead. At Malta, cable-laying started on 14 May 1870 and within two months the entire stretch of cable connecting Porthcurno, Carcavelos (Portugal), Gibraltar, and St George's (Malta) had been laid.[25] This submarine cable, together with the former 1868 Malta–Alexandria cable and the 1870 Suez–Aden–Bombay link would form the all-sea route (with the exception of the relatively short landline section from Alexandria to Suez) from Britain to India.

The 1868–70 Malta–Alexandria cable was followed by several others involving Malta, some duplicating and triplicating existing cable routes. These connections were to make Malta[26] a strategic hub in international telegraph communication.

Some anecdotes: the telegraph and its applications

Whereas some countries used the telegraph for news reporting from the very beginning, others initially used it for military purposes, diplomatic correspondence[27] (for example, between the governor of Malta and the British secretary of state), shipping, and international trade (for

25 Ibid.

26 Military reasons apart, telegraphic links with the Far East would become even more significant with the opening of the Suez Canal in 1869, allowing an increase in trade.

27 This was particularly so in the United States where the telegraph was quickly handed over to free enterprise and produced greater progress and service than those under government ownership in other countries. See G.P. Oslin, *The Story of Telecommunications* (Macon, Georgia, 1999).

example, placing or accepting overseas orders). Quite naturally, there were times when it was used to relay important or unusual events, and it also occasionally served as a tool for scientific experiments.

Thus, in 1863 when Queen Victoria's son Alfred was taken ill during his time in Malta, the telegraph was a constant means of communication, updating the Royal family in England about the prince's health. In a despatch dated 11 May 1863 by the foreign secretary, John Russell, at Downing Street to Governor Le Marchant we find that the sum of £225.5s.2d had been charged against Special Services Funds 'on account of Telegraphic communication with this country during the recent illness of His Royal Highness Prince Alfred'.[28]

Another example when the telegraph was of considerable help was when the battleship HMS *Victoria* collided with HMS *Camperdown* on 22 June 1893 during routine exercises off the coast of Tripoli in the north of Lebanon. Three-hundred and fifty-eight servicemen lost their lives in that accident, and 357 were rescued. Of the surviving crew, 173 injured officers and sailors were transferred to the cruisers *Edgar* and *Phaeton* and taken to Malta for convalescence. These sailors wanting naturally to telegraph home to their relatives, the initiative was taken by the Eastern Telegraph Company's chairman, John Pender, for such messages to be sent free of charge, since it was assumed that most of the inquiries would come from people unable to afford the cost of the telegrams.[29]

A third example involves the earthquake which struck Peloponnesus (Greece) on 27 August 1886.This earthquake had its epicentre in the Ionian Sea, off the coast of the Kyparissa Gulf, about 30 km south of Pyrgos and about the same distance east of Kalamata. It was a strong earthquake, estimated at between 7 and 8 on the Richter scale, and was felt from a number of countries, including Malta, several hundred kilometres away. At Filiatra, it caused extensive damage and affected a population of about 110,000, killing 370 and injuring many more. In Malta, the earthquake is reported to have lasted about one minute, with at least one strong aftershock. Although local newspapers gave slightly

28 Despatches by the Secretary of State for the Colonies, 11 May 1863. National Archives of Malta [NAM: GOV 2.1.60, No. 343].

29 See http://hansard.millbanksystems.com/lords/1893/jun/30/question-observations.

varying accounts regarding the extent of the caused damage, all agreed that no one was hurt. Hours following the earthquake many telegrams were received at Malta, particularly from Greece and Southern Italy to report the event and enquire what it was like in Malta.

Finally, one of the earliest unusual applications of the telegraph in Malta occurred in December 1870 when a small group of American scientists visited Malta (and neighbouring Mediterranean countries) to observe a total solar eclipse (on 22 December) and simultaneously measure the geographical coordinates (latitude and longitude) of Malta. Malta's coordinates were already reasonably well-known, but the eclipse expedition provided an opportunity for the astronomers to carry out experiments to improve on the established values. In particular, they would make use of the relatively new method of finding the longitude of a place by means of the electric telegraph.

About two weeks before the eclipse proper was due, arrangements were made with the Anglo-Mediterranean Telegraph company for the use of the telegraph to communicate among the countries involved in the project, which included England, Gibraltar, Sicily, and Malta. Using telegraphic equipment in conjunction with other instruments such as the transit telescope and the sextant, it was possible to make simultaneous observations (of stars or the sun) from different countries, obtain the difference in time between a location in Malta and a location elsewhere that lay east or west of Malta (and whose coordinates with respect to Greenwich, for example, had already been established), and from this difference deduce Malta's longitude. In one experiment, the observations were done from near Spencer's Monument, then located on Corradino Hill.[30]

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30 For a historical account of the determination of Malta's geographical coordinates, see F. Ventura, *L-Astronomija F'Malta* (Malta, 2008), Chapter 9. For the method of finding longitude by the telegraph, see, for example, Chiat, 'Longitude Determination: An Historic Survey', Monthly Notes of the Astronomical Society of South Africa, Vol. 15, 32 –4 (retrieved from http://adsabs.harvard.edu/full/1956MNSSA..15...32C); and F.M. Green, 'Telegraphic Determination of Longitude', Popular Science Monthly, Vol. 7 (August 1875), 426–33 (retrieved from http://en.wikisource.org/wiki/Popular_Science_Monthly/Volume_7/August_1875/Telegraphic_Determination_of_Longitude).