

# Introduction

**T**he idea of this Italian-Swedish publication emerged at the time of the first centenary of the award of the Nobel Prize to Guglielmo Marconi and the related celebrations, organised in Stockholm at the National Museum of Science and Technology starting in December 2009 by the Italian Embassy in Sweden, in liaison with the Italian “National Committee for the celebrations of the bicentenary of the birth of Antonio Meucci” and the Italian “National Committee for the celebrations of the centenary of Guglielmo Marconi’s Nobel Prize”. In November 2009 also an “International radio symposium celebrating the centenary of the Nobel Prize in Physics 1909” was organised by the Royal Swedish Academy of Sciences in Stockholm to commemorate both Guglielmo Marconi and Ferdinand Braun.



**Figure 1.** Alfred Nobel (Stockholm, Sweden, October 21, 1833 – Sanremo, Italy, December 10, 1896), on the left; Villa Nobel in Sanremo, Italy, where Alfred Nobel lived his later years and died.

The decision to honour Marconi on this centennial occasion, among all the Nobel laureates, stems from the huge impact that wireless communications has had on society, which is probably greater than the impact of the findings of any other Nobel Laureate, at least in Physics.

The entire celebrations – comprising a conference, an exhibition on telecommunications history and a selection of films – were also intended to underscore the link, which is not merely symbolic, between Antonio Meucci (Florence, Italy,

April 13, 1808 – New York, New York, USA, October 18, 1889) and Guglielmo Marconi (Bologna, Italy, April 25, 1874 – Rome, Italy, July 20, 1937): the two Italians who mostly contributed to the creation of telecommunications.



**Figure 2.** From left to right: Alexander Graham Bell, Antonio Meucci and Guglielmo Marconi.

Indeed, while Guglielmo Marconi achieved worldwide fame, it was only in recent years, more than a century after the start of the lawsuit against Alexander Graham Bell (Edinburgh, Scotland, March 3, 1847 – Beinn Bhreagh, Nova Scotia, Canada, August 2, 1922), that the work of Antonio Meucci came to be recognised outside Italy:

*...the life and the achievements of Antonio Meucci should be recognized, and his work in the invention of the telephone should be acknowledged...*

*Congress of the United States of America,  
Resolution 269, June 11, 2002.*

In effect, mobile telephony - which is essentially a two-way radiocommunication of the greatest social impact - is perhaps the most representative “synthesis” between the possibility of transmitting the voice via an electric signal (Antonio Meucci’s telephone) and that of using radio waves for wireless communications (Guglielmo Marconi’s radio). This entire field, which emerged in the 1970s, was indicative of a staggering technological evolution.

The international conference entitled “A Wireless World – The Italian contribution to telecommunications” – in addition to tracing the main steps which led to the attribution of the Nobel Prize to Guglielmo Marconi and proposing interesting research on the Ital-

ian scientist – also provided the opportunity of developing a number of topics related to the history of wireless communications, the utilisation of radio waves in certain areas of scientific research, such as radio astronomy, and on the present and future of telecommunications, with special focus on the economic and social impact. This had indeed been foreseen by Marconi himself, as the quotation from the Chicago Tribune Forum broadcasting reproduced at the beginning of this book testifies.



**Figure 3.** As a further acknowledgment of the link between Antonio Meucci and Guglielmo Marconi, the plaque commemorating Antonio Meucci in Santa Croce – the church in Florence where the greatest Italians are buried or remembered – is positioned close to that commemorating Guglielmo Marconi.

Collected in this book are some of the most important contributions presented at the conference together with more recent articles and studies; it is divided into four thematic sections briefly described below, addressing the life of Guglielmo Marconi and his social context up to the time of the Nobel Prize. Each section comprises a number of related contributions preceded by an introduction. Most of the papers are original works, written for this book, while a few are reprints of significant material that has been published in leading academic journals by the most important scientific bodies in the sphere of Electrical and Electronics Engineering (The Institution of Engineering and Technology, IET, URL <http://www.iet.org/>; The Institute of Electrical and Electronics Engineers, IEEE, URL <http://www.ieee.org/>; The European Microwave Association, EuMA, URL <http://www.eumwa.org/>).



**Figure 4.** Evolution of the mobile phone: Left, Analog Motorola DynaTAC 8000X Advanced Mobile Phone System mobile phone (1983), the first authentic functional commercial mobile phone; Right, Sony Ericsson XPERIA X1, one of the latest 3G models.

The first section of this book – “Documents” – comprises four contributions closely related to the award of the Nobel Prize to Guglielmo Marconi in December 1909. The second section – “Marconi: the road to the Nobel Prize” – offers further insight into the work of Marconi before his Nobel Prize, addressing his scientific training and certain particular, not well known events in the years of his first experiments. The third section – “Marconi’s contemporaries and later scientists” – deals with Ferdinand Braun, who shared the Nobel Prize with Marconi, and the work of other scientists related to wireless communications. Finally, the fourth section – “Equipment, devices and collections in Sweden and Italy” – offers an overview of the cultural heritage connected with the history of telecommunications engineering conserved in Sweden and Italy.

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