

# Preface

Knowledge in the modern world is shared globally. Different knowledge communities in science, technology, economy, politics, and public opinion are becoming ever more entangled. This process has also affected the history of science, which is more and more becoming part of a global history of knowledge and ever less focused on specific disciplines or specific countries. Rather, it becomes clear that the history of scientific disciplines or national developments can only be understood as part of processes of knowledge exchanges and transformations, often over long time periods and large distances. Against this background, we consider this volume on the history of physics in Cuba, covering a period of more than 200 years, as a contribution to the study of the globalization of knowledge in history (Renn 2012).

With European colonial expansion, new forms of knowledge exchange were also created, partly destroying former regional networks. Cuba was a strategic center in the Caribbean and directly connected to all parts of the Spanish colonial empire. Havana became a colonial metropolis, communicating to all other cities in the Iberian world. The island of Cuba was also closely related to the non-Spanish colonies of the Caribbean. The relationships established during the colonial period persisted even after the independence of the Spanish-American nations. During the nineteenth century, commercial, cultural and political contacts to the United States increased considerably under Spanish colonial rule.

The early history of science in Cuba was closely connected to the history of its role as a colonial metropolis. The intellectual and political climate on the island was shaped by a continuous exchange with other parts of the Americas and with Europe. In Cuba, a rich and cosmopolitan aristocracy belonged to a worldwide exchange network transgressing the imperial frontiers.

The Cuban aristocracy relied on the so-called sugar-capitalism, a conjunction of capitalism, slavery and advanced technologies. But Cuba's impressive technological advance in the nineteenth century was not accompanied by an equally strong development in the educational and academic system, since such developments were opposed by Spanish colonial rule. Nevertheless, the worldwide diffusion of scientific knowledge in the eighteenth century and the ideals of the Enlightenment

associated with it also affected Cuba. A constant migration of young Cubans to Europe and the United States, as well as the economic and social development of the island over the course of the nineteenth century also created new possibilities for the production and dissemination of knowledge.

These global connections persisted even after Cuba, beginning in the mid-nineteenth century and more strongly after its independence in 1898, became increasingly dependent, both politically and economically, on the United States. However, Cuba was never completely dominated by these influences and succeeded in maintaining intellectual networks outside their spheres. As a result, Cuba was open to the appropriation of global cultural and intellectual developments and in turn was able to disseminate its own achievements worldwide. The idea behind this volume on the history of physics in Cuba is to contribute to the reconstruction of this global entanglement of knowledge.

In this sense, the volume is a pioneering step toward providing a detailed account of global entanglements in the history of science by focusing on the global relatedness of one discipline in one country. Especially after the Cuban revolution of 1959, connections to the USSR and the Eastern European countries formed the basis for a co-evolutionary process that involved both local advances and the generous foreign support of physics research in Cuba.

During the last years, an anachronistic situation has evolved that weighs heavily on the future development of science in Cuba in a globalizing world. The United States' politics of blockade continues to represent a major obstacle: two major laws passed during the last two decades effectively restrain commerce and the exchange of information between Cuba and other countries. Meanwhile, the Internet and open access to scientific information have become an ever more crucial condition for the development of science. One of the starting points for our interest in the development of Cuban science was in fact the encounter between one of us (JR) and Professor Fidel Castro Díaz-Balart on the occasion of the conference on "The Role of Science in the Information Society" (RSIS) held in Geneva from 10–12 December 2003 in support of the role of open access. Consequently, the Cuban Society of Physics, headed at that time by Professor Oswaldo de Melo, became one of the first institutions on the American continent to sign the Berlin Declaration on Open Access to Knowledge in the Sciences and Humanities (<http://openaccess.mpg.de/286432/Berlin-Declaration>). The complex political and technological history of the establishment and usage of the new media in Cuba has itself now become an active subject of research, undertaken by scholars such as Bert Hoffmann (2004, 2012).

This volume appears in the context of a process of rethinking Cuban history in a global environment. Until very recently, the linear development from colonial and imperial subjugation to the *Revolución* competed with a rather marginal historiography that regarded these periods in their own right and not just as episodes in a one-dimensional historical account. New interpretations now commonly emphasize the autonomy of Cuba—at least for the time after the revolution. Here, the need for Soviet aid from the 1960s on, for instance, is contrasted with autonomy in both internal development and foreign policy. These studies emphasize the uniqueness of Cuba, supposedly impermeable to penetrative influences from the outside. Global

history, in contrast, would demand the location of Cuba in a global environment that is defined neither by its hermetic confinement, nor by exclusive bilateral relations with Spain, the United States or the Soviet Union, but rather by multilateral entanglements. These different viewpoints promise to trigger interesting discussions about the relation between local and global epistemic traditions.

As the only participants in this project who are mere observers of the Cuban history of physics, we would like to express our gratitude and respect for all those who in past years have not only made this history, but also engaged in its writing. We consider it a privilege to have been able to work with our co-editor, Angelo Baracca, in bringing this volume together. He has not only initiated it and created the basis for its realization, but over many years has himself also been actively involved in Cuban physics, as a passionate participant-observer, so to speak. Since we do not share his first-hand experiences, our role was rather, together with Lindy Divarci, to act as midwives in helping to turn the available materials into a book. Nevertheless, also for us, the histories of Cuba and of Cuban physics have become a passion that we will continue to pursue.

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