Lazaros C. Triarhou (Ed.)

**Cajal Beyond the Brain: Don Santiago
Contemplates the Mind and its Education**

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Santiago Ramón y Cajal (1852–1934) is considered the father of modern neuroscience for having established that the neuron is the fundamental unit of the nervous system. While Spanish readers may be aware of Cajal's books and articles on psychology, art and education, non-Spanish readers tend to know only a little about his contributions. Our colleague, Lazaros C. Triarhou, a well-known and prolific author in history of neurology, has given us an admirable collection of twenty of Cajal's essays, most of them appearing in English for the first time, in a single volume entitled *Cajal Beyond the Brain: Don Santiago Contemplates the Mind and its Education*.

According to Triarhou, Cajal was an acute observer of the avant-garde intellectual and social scene in Spain. As a philosopher, he was fascinated by education. Triarhou offers not only an accurate translation; he starts each chapter with a short explanation of the context of the original writings. Triarhou also notes the overall trends of Cajal's essays and re-creates his colourful style, as well as his sense of modesty and humour. At one point, Cajal notes that the reader "does not need the bitter absinthe of my prose as an appetizer." Nonetheless, Cajal's texts show his first-hand experience, his erudition, and his penetrating mind.

Some of these essays have already been translated. For example, *Psychology of Don Quixote* and *Quixotim* was translated by Craigie and Gibson [1]. Triarhou gives us a more complete English translation incorporating all the original footnotes.

Several of the essays are prefaces that Cajal wrote for friends and students. Examples include the preface to *Introduction to the Study of Positive Psychology* by Tomás Maestre, which gives an overview of the theories of the day. There is also the preface to José-Maria de Villaverde's translation into Spanish of Eugen Beuler's treatise, *Lehrbuch der Psychiatrie*.

One of the lesser known essays discusses Cajal's analysis of around one hundred of his own dreams; he transcribed the mate-

rial between 1918 and 1934. Cajal intended to develop the essay into a book, a project that never came to fruition. However, the manuscript, considered lost, was recently discovered and published in Spanish in 2014. The book includes a comparison with the work of Sigmund Freud [2]. Cajal's methodical and lengthy introspection led him to share Freud's theory, whereby dreams and hallucinations are cortical in origin; he thus rejected the competing retinal theory of hallucination.

Cajal was curious and passionate and had a wide variety of interests. As a break from his histological research, he delved into the modern technologies of his day, such as the phonograph as well as photography. At the turn of the twentieth century, Cajal developed new approaches in these areas to improve both the sensitivity of the recorded data and the quality of the formats used. In 1925, Cajal became interested in colour motion picture films, notably how the recorded data were processed to give an illusion of colour.

In a speech intriguingly entitled *Man as a Sculptor of His Own Brain*, Cajal sought to interest Spain's youth in scientific research. His speech would need to be updated in order to make it current and universal today.

In all of his writings, Cajal's patriotism is evident as well as his regret that Spanish research lacked vitality. "Foreigners do not read us, and nationals ignore us." This view suggests that Cajal felt a degree of pessimism and sadness, which is borne out by his photographic portraits, many of which are included in Triarhou's book.

Those interested in Cajal's work will find no shortage of biographies. This volume, benefiting from Triarhou's skill as a translator, provides several angles by which to approach the original works. It also underscores the many important contributions that Cajal made as a scientific researcher.

Olivier Walusinski, Brou

References

- 1 Craigie EH, Gibson WC: *The World of Ramón y Cajal with Selections from His Nonscientific Writings*. Thomas, Springfield, CC, 1968.
- 2 Rallo Romero J, Martí Felipe F, Jiménez-Arriero MA: *Los sueños de Santiago Ramón y Cajal : sus teorías sobre el ensueño desde la crítica a las teorías oníricas de Freud*. Madrid, Asociación Psicoanalítica de Madrid, Biblioteca Nueva, 2014.