The world inside a Spanish globe (w/ video)

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(Phys.org)—Study of a mysterious 100-year-old interactive toy – perhaps the Wikipedia of its day – is painting a vivid picture of Spain's path into the modern world.

Object Wh.5892 in the University's Whipple Museum of the History of Science is something of an enigma. Clearly it's a globe, but lift the northern hemisphere and you enter a startling world: volcanoes erupt, a mammoth lifts its tusks, dinosaurs clash. And amid these beautiful illustrations and encyclopaedic entries, a planetarium lies ready to re-enact the revolution of the planets around the sun at the turn of a cog.

The Spanish globe, unlike any currently known, has been shrouded in mystery: where, when and why was it made? Who would have used it? Most fundamentally, what is it – some kind of scientific instrument or a child's toy?

Now, research by Seb Falk in the Department of History and Philosophy of Science has brought us closer to understanding the puzzling object, which is 25 cm in diameter. Remarkably, his work highlights how it symbolises a wave of change that swept 19th-century Spain into the modern world – from increasing trade in scientific instrumentation to a move of the education system towards interactive learning.

"Making a globe like this would have been technically difficult: apart from the construction of the globe from brass, wood and pasteboard, the inside of the sphere is hand-covered with encyclopaedic information designed expressly for the object and printed using the latest

chromolithographic technology. All in all, it's rather surprising that such an object was made in Spain, a country where there was no previous tradition of globe making." By contrast, globe-making in other parts of Europe was thriving, with several makers exporting globes in Spanish to Spain.

Yet Falk believes that the balance of evidence weighs in favour of a Spanish provenance. "The prime meridian is shown running through Madrid, and the encyclopaedic entries are in Spanish."

His research has led him to believe that it may have been made as a prototype for a globe-toy that was never mass produced and whose maker has long since disappeared from the annals of history. Today, no trace exists in the databases of Madrid's National Museum of Science and Technology of the man who perhaps made the globe before marking it with his company stamp: Benjamín Tena of Valencia.

"International trade had expanded hugely in the late 19th century and there was a flourishing intra-European trade in scientific instruments and educational products. The globe's maker may have imitated foreign models produced in Central Europe and then collaborated with an established publisher. Recent developments in printing technology were vital to the production of such a beautiful, brightly coloured toy."

Dating the globe has been a remarkable exercise in detective work. Falk used cartographic evidence such as the presence of the border between Norway and Sweden (their union was dissolved in 1905), together with information in the encyclopaedic entries on the names of plants and animals and the number of moons for each planet, and even the use of accents in Spanish words that lost them suddenly in the first decade of the 20th century. All point towards the maker having made the globe around 1907.

This was a crucial time in Spain, as Falk explained: "The 19th century had seen civil wars and coups with numerous failed attempts at economic reform and industrialisation. A vociferous press argued that Spain's problems resulted from inadequacies in the education system."

As a result, said Falk, Spanish educational practices began moving away from passive learning with a master lecturing on his dais, towards flexible, small-group education with children learning from tactile experiences and experimentation – for which the globe would have been perfect. "Although what one might ordinarily want to do with a globe – spin it – is almost impossible, it is clearly intended to be touched. The planetarium is sized to fit a child's hand, with instructions designed to be read aloud: 'if we place the little lunar globe in a straight line between the earth and the sun, the moon will block the sun's light…. we thus have a solar eclipse.'"

Perhaps the most graphic testimony of its having being used by a child is its 'injury'. "On one of the planets in the planetarium, a child has written 'SOLO'. Its meaning is not clear – the child may have confused the planet with the sun – but it reminds us that these museum objects were once much loved toys, thrilling and exciting the children who used them."

Why only one 'encyglobedia', as Falk describes it, exists is not known, although Falk hazards a guess that its complexity may have made it too pricey for its most obvious market in schools, or for a family home-tutoring their children.

Today, the globe-toy stands on display alongside the newly re-housed collection of globes at the Whipple: blank slate globes for children and teachers to draw the world in chalk, lunar globes showing the craters of the moon, pocket-sized and portable 'umbrella' globes, and many other examples of our abiding fascination with imagining the world in three

dimensions.

Director and Curator of the Whipple Museum, Professor Liba Taub, whom Falk worked with, sees the wider collection at the Museum as vitally important in a working research and teaching department: "I work to foster a mutually beneficial relationship between the Museum and the Department, and am always happy when students are inspired by an object from the Whipple collection. Students have the opportunity to develop their research skills and interests in museum work, and the Museum and its visitors benefit from the increased knowledge and understanding gained through their endeavours."

For Falk, the fascination of this particular globe has been the tantalising opportunity to help to unravel its mystery. But it has also been the chance to see at first-hand how the study of 'things' – the times and places that objects were made and used, played with and discarded – can tell us about ourselves and the society around us.

"In this one object we can see the intersection between the popularisation of science, printing technology, education, international trade and Spanish political developments. That's what object studies have the power to do."

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