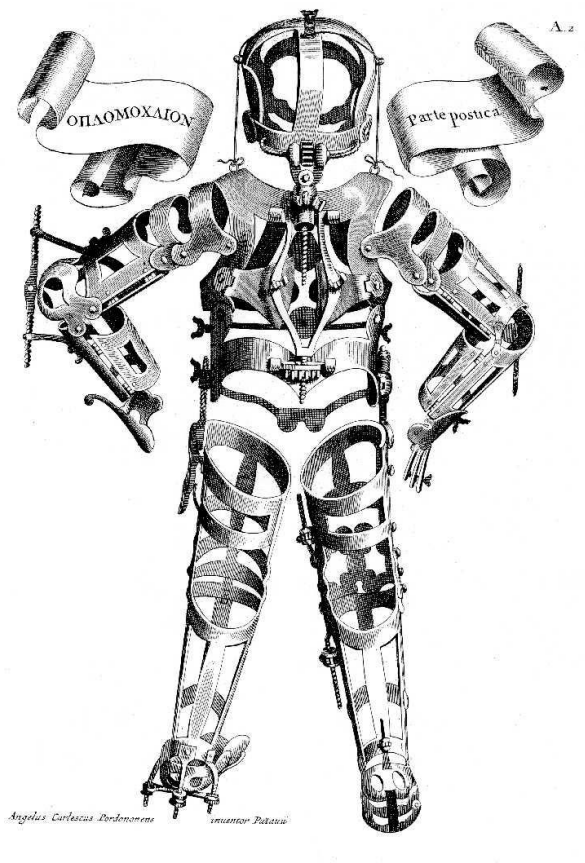
17th Century Orthopaedic Frame

Why is this object important?
It is of international importance and very rare, with only two other similar objects known.
It gives an insight into how prosthesis and supporting mechanisms were made c 1600-1800

Background to Prosthetics and Orthotics
The support of damaged/ failed limbs and replacement of missing limbs has been attempted for thousands of years. Egyptians fashioned prosthetic limbs while Hippocrates used leg splints. Pliny the Elder writes that a general in the Punic wars who had lost his arm, had a new one fashioned in metal so he could hold his shield. In the 12th Century the medical school at Bologna was constructing spinal supports from metal and wood and splints for fractured femurs. In the middle ages prosthetics were made from wood. The richer you were, the better you could afford and knights injured in battle asked armourers to make new limbs and metal hands.

The 16th century saw further development in Orthotics when French surgeon Ambroise Paré wrote *Dix Livres de la Chirurgie* in 1564. He advocated metal corsets for spinal deformities, splints for fractures, walking splints for hip disease and special shoes for Club feet. His methods were cutting edge technology at the time and were for the rich. He commented that Peg legs were for "the prosthesis of the peasants and the poor". A Paper in the Bone and Joint Journal explores "etchings and engravings of subjects with artificial legs supporting non-amputated limbs, from the period 1500 to 1700 AD". Artificial limbs were not only used to support amputated limbs but also to complete limbs with other injuries and deformities. If you were rich, however, you had the choice in investing in something that was engineered and more pertinent to your disability, e.g. a metal limb replacement or body support.

It is difficult to ascertain how widespread this practice was, but by the 17th century it was the focus of some of Fabricius Ab Acquapendente's work. He was a lecturer at Padua in Italy from 1566 in both anatomy and surgery. With wide interests, he published important work on veins and embryology. In 1592, *Pentateuchos Cheirurgicum* was published, followed an addendum, *Operations Chirurgicae*, in 1619. This included two plate illustrations of an orthopaedic device in the shape of a man which was intended to "combine in all apparatus the principles for all existing devices for the correction of orthopaedic injuries and deformities". It is thought that a device was actually built. Further research would be needed to ascertain if Fabricius designed the techniques himself, or if he was bringing together examples of current practice.



The Object

This object was purchased by the Thackray Medical Museum in 1995 for $45,000. A grant was obtained from the Prism Fund to assist with the purchase

This German made orthopaedic correction and instruction frame is 58 inches (4ft 8”) tall and consists of:

- Skull – anatomically shaped with a hinged upper jaw and adjustable nose piece. The ears are cast in a lifelike form
- Torso formed of two halves with articulated plates, adjusted by wing and butterfly nuts for compression and expansion
- Two arms constructed to demonstrate two different types of metal splint. The right arm ends with articulated digits and the left in a shaped hand with rigid fingers
- Two legs – right with joints adjusted with turn buckles and threaded rod and flower-head nut. The left has a fully articulated foot.

A few nuts and screws are missing.

It is thought that it is some kind of copy of the frame illustrated in Fabricius Ab Acquapendente’s *Operations Chirurgicae.* The frame was used as a teaching device to show various techniques that can be used and different devices to create limb supports. This would be indicative of the adoption of the techniques. It is still likely that only the wealthy would have been able to afford such

products. It is extremely rare and the only comparisons are a small 15 inch frame in the Welcome Collection in London and an exact copy of Fabricus's design held in the Instituto di Storia della Medicina in Rome. Examples of individual limb metal prosthesis and orthotics do exist but are rare. The Welcome Trust / Science Museum have several examples. There is an iron corset at York Castle Museum.

Reproduction? Of frame in the Instituto di Storia della Medicina in Rome

This type of object would have been produced by the experts of the time, armourers. Two experts were asked for their opinion before purchase, Karen Watts from the Royal Armouries and Claude Blair, an international expert. They both agreed that the half turn technique on the edges dates the armour to the of the 17th century. The head appears to be made from a child's grotesque helmet, dating from c 1625-50. There is evidence of other armour re-use, with one of the feet being made from a foot defence (sabaton), and some of the decoration is similar to that used by armourers in the 17th century. The frame has had a long working life, with repairs and adjustments going on into the 18th century.

How Does this Object support the Development Project?
The frame has qualities which links all aspects of the project and could be used as a sign post:

- Rich and poor healthcare – how the poor would have dealt with disformaty and amputation/ Hannah
- Pioneers – the work of Pare and Fabricus
- Tools and technologies – surgeons must have worked closely with armourers to produce it.
- Everybody – it includes all parts of the body
- Response to Crisis – military had armourers create false limbs following injury in war.

Future Research
Contact Instituto di Storia della Medicina
Look at other individual limb prosthesis
Review of poverty and disability, including picture research

Sources

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Alison Bodley
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