

Dodecahedral bowling

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Here I am proposing a possible use of Roman Dodecahedra, which are bronze artifacts of gallo-roman origin dating from the 2nd or 3rd centuries AD, for playing a bowling game. The presence of holes and knobs can be quite important during collisions.

The "Boules" is a collective name for some popular bowling games in France and Italy, played with metal balls. It seems that these games had origin in the Ancient Greece, where people played using stone balls, called "spheristics", trying to have them go as far as possible [1,2]. The Ancient Romans modified the game by adding the "jack" and the rule to approach it as close as possible. The modern game has the same aim, to launch the boules close to the jack. The best game is therefore played on large, smooth, horizontal surfaces.

The boules (bocce, in Italian) have a diameter of about 8 centimetres, and can be made of bronze. The mass of them is between 0.60 to 0.80 kg. Some marks on the boules can tell who is their owner. The jack (boccino) is instead a smaller boule, about 3 centimetres in diameter.

The rules of the game are described in Ref.1. Usually there are two teams. First of all, it is chosen the throwing place. The team that plays first chooses where to draw a circle on the ground. Standing inside this circle, the players will throw their boules. Then the jack is thrown, about 6 or 10 paces from this circle. A player of the first team launches the first boule, trying to get it as close as possible to the jack, without touching it. A player of other team then tries to get closer to the jack or to knock the opponent's boule away. The game goes on, counting the score according to the distances from the jack.

It could be surprising, but "square balls" to play with also exist. According to Ref.3, "square balls" started to be used on the precipitous streets of Haut Cagnes, above Cagnes sur Mer, near Nice, France, in order to avoid the balls to run away, being therefore easily lost. To play, the local people invented the use of small wooden cubes. The jack is square too.

I have recently found that one of the mysteries of archaeology are the Roman Dodecahedra [4,5]. Fig.1 on the left shows one of them. These are bronze artifacts of gallo-roman origin, having the dodecahedral form, dating from the 2nd or 3rd centuries AD (a very interesting discussion on the use of the dodecahedral shape in science and art is proposed in Ref.6). The faces have holes and knobs on all the vertices. Their size is ranging from 4 cm to 11 cm in size.

According to Ref.5, their function or use remains a mystery; because no mention of them has been found in the ancient literature. Speculations tell that they can be candlestick holders; dice; survey instruments; devices for determining the optimal sowing date for winter grain [7], and so on. Here I am proposing another possibility for these objects, to be the boules for a dodecahedral bowling. They could had been used for a game as the above mentioned "square balls", on uneven surfaces.

Most of these dodecahedral artifacts have been found in Gallo-Roman sites: this fact is reinforcing the hypothesis of being the boules of a ancient popular game, as the modern one played with spheres are quite popular in France.

Of course, the motions of balls and their collisions can be easily approached by physics. In my opinion, a study of the motion and a simulation of the collisions of Roman Dodecahedra can help in understanding their use for bowling. The presence of holes and knobs appears to be quite important during the collisions. A model is under investigation.

It seems that there were also Roman Icosahedra (one is shown in Fig.2 on the right). It is hollow too, bronze, and about 8 cm in diameter. According to Ref.8, "this only deepens the mystery as to the function of these objects." In my opinion, the icosahedron could be the jack.

References

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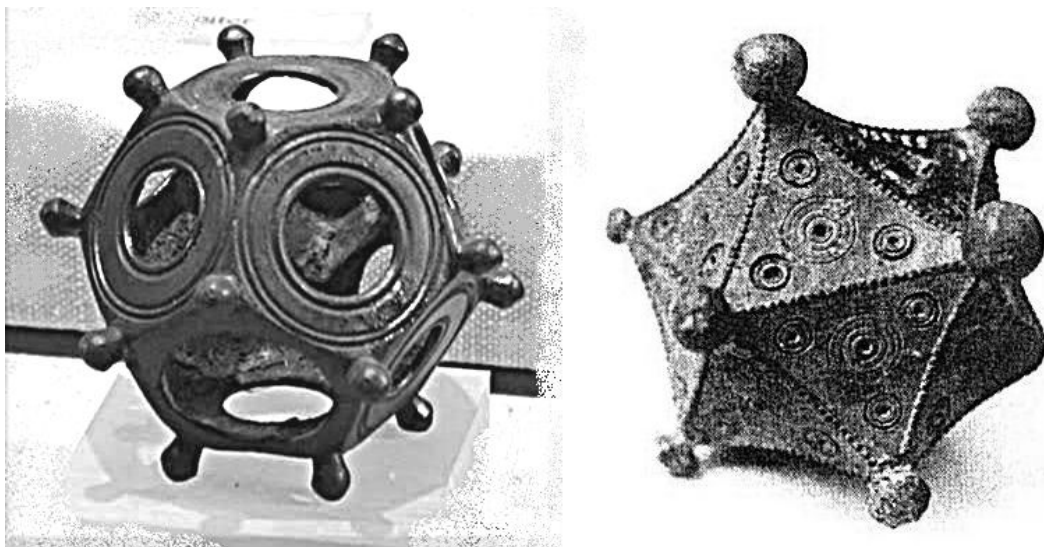


Fig.1 On the left, a Roman dodecahedron. On the right, a Roman icosahedron