**Imperial Rome and Ostia**

*The Baths of Caracalla*

**Colin Chant**

But the Pantheon also owed much of its intended majesty to the hidden power of its concrete structure; and the new concrete building technology was also exploited by the emperors in the greatest of their public benefactions: the massive imperial baths, or thermae.The Baths of Trajan, designed at the start of the second century by the architect Apollodorus, were the biggest baths to that date. They became the model for an even larger complex situated on the southern outskirts of the city, the Baths of Caracalla, built at the beginning of the third century. It was the size of a small Roman town and could be used by several thousand people at a time.

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The great imperial thermae, like the baths of Caracalla, were far more than places simply to get clean. They were the great urban social centres, like the leisure centres of the modern world, places where you could pass perhaps a whole day, sometimes even without getting wet. ..

The great baths had far more rooms or spaces for which no specific function can be assigned than any other kind of public building. Many of these social spaces, both inside the main bath building and outside in the precinct, were lavishly decorated. Outside the main building, there were walks and gardens, providing a park-like setting for social gatherings, lectures and poetry readings. These readings may well have taken place in large halls which formed part of the outer walls of the complex. The whole complex sat on a huge artificial platform. This platform was partly dug out of a hill behind, and built up, as can be seen here, along the Northeast side. Built into the platform were the underground furnaces supplying radiant heat and hot water to the baths building. Also underground were the drainage system and service corridors, wide enough for carts.

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The baths were laid out symmetrically, and oriented so that the heated rooms faced Southwest. There were four main entrances for visitors to the baths, who went first to one of the sets of dressing rooms. They then went through to a palaestra, an open air exercise area, for weight lifting or ball games. Next they went to one of the dry sweating rooms at the Southwest end of the building, where they might also have a massage. From there, they would go to the main heated space, the caldarium, with its seven heated pools. The tepidarium was a warm passageway, leading to the vast central area of the baths building, the frigidarium,with its four cold plunge pools. Finally, they could go to the natatio, an unroofed Olympic-size swimming pool - no more than three feet deep, as the ancient Romans were not keen swimmers. Water for the baths was stored in 64 cisterns in the area behind the caldarium supplied by an extension to one of the aqueducts, the Aqua Marcia.

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The basic technology for making the baths work is exactly the same as that used in smaller baths and in apartment houses. The hypocaust system used on a small scale in ordinary bath buildings also operated here in the Baths of Caracalla, but again simply on a much larger scale. It's a problems of scale rather than changing technology which had to be faced when making a building like this function. This is the massive brick-and-concrete northeast face of the bath building, where the entrances were found. Some 250 metres long, its lower portion was originally clad in marble, with stucco above, imitating stone blocks. Water was raised in pipes up these channels to supply ornamental fountains in the niches above, animating the façade. The surviving shell of the building reveals how concrete arches enabled wide openings to be made into the wall without sacrificing its strength during construction. This arch in the northwest façade is not simply decorative. It has the vital structural function of

spanning a wide window space. In this case a double row of bricks is used to give the arch extra strength during construction. Concrete building technology was also eminently suited to the huge windows which were such an important feature of bath buildings. The arch making the top of this high window forms the end of the cross vault over the central entrance hall. In this exercise area, or palaestra, customers could take the sun, or do a variety of exercises such as lifting weights and playing ball games. The palaestra originally had a colonnaded portico running around three of its sides. The portico had a vaulted roof, which carried a promenade from which people could view the activities below. This is a piece of the marble frieze which originally lined the portico.
The portico frieze was suspended on iron rods fixed into the holes in the wall. Above the portico, the concrete vault that supported the promenade was of light construction, with pumice as the aggregate. It was stabilised by iron tie-rods, not unlike modern reinforced concrete. Square facing bricks prevented the concrete from sticking to the wooden form work used to shape it. Embedded in this palaestra wall, and in most of the great walls of the baths building, were vertical ducts and shafts. This particular one allowed rain water to pass through the building - others acted as flues for the heating system. The centre of the baths building was occupied by the frigidarium, a great transverse hall divided into three bays, one of the largest areas covered by a single vault in the Roman world. The long axis of the baths building passed through the frigidarium, providing vistas articulated by fountains and major works of sculpture. Opening on to each palaestra  was a huge semi-domed hall, originally screened by a double colonnade of20-feet columns. The walls contained niches for statues lopg since removed. The surviving concrete shell of the hall demonstrates the skill of Roman engineers. Here the brick facing of the wall continues into the lower part of the vault, partly covered by the foundation for the glass mosaic which once decorated its interior. Square bricks mark the point where wooden form work shaped the vault. The remainder the vault shows how the engineers managed to lighten it by mixing different grades of aggregate with the concrete. In this case pieces of yellow tufa in the concrete give way to dark red pumice, a much lighter material. In this hall opening on to a palaestra, there is clear evidence that much of the interior of the baths building was revetted in thin sheets of marble. The marble was set in place on a mortar bed, and secured by metal pins. These marble shims ensured that the surface of the marble revetments was level.
The earliest examples in Rome of coloured geometric mosaics are found in the palaestra areas. These pavements display some of the most precious imperial stones: green porphyry from Sparta, red porphyry from Egypt, and yellow giallo antico from North Africa. Like the floor of the Pantheon, they are a statement of the emperor's dominion. A most spectacular deployment of decorative materials would have been the glass mosaics which once covered the Southwest façade of the baths building, intended to catch the light of the afternoon sun.
The southwest façade was dominated by the caldarium, the main heated space in the baths. Originally a monumental domed circular structure, there are now only some relics of the thick concrete walls of the drum. It's hard to imagine now that these once supported a dome over two-thirds the diameter of the Pantheon's.