

■ conservation



Sandblasting Inge King's *Temple gate*



(detail) White pustules on Robert Klippel's *Group of eight bronzes*

When an artist creates a work, particularly for outdoor installations, there is a public perception that those works will last in perpetuity — largely unaffected by the elements and human hands. However, the reality is far different, as can be seen by examining some of the outdoor sculptures that form part of the National Gallery of Australia's extensive Sculpture Garden. Bronze and steel sculptures in the Garden have been adversely affected in a number of ways. The Gallery's Senior Objects Conservator, Benita Johnson, recently identified seven items manufactured from cast bronze and two items constructed from painted mild steel as the most in need of remedial or maintenance treatment.

In autumn 2003, Sydney Artefacts Conservation was engaged to conserve these artworks. Due to the public location of the works, gallery visitors had an opportunity to gain some insight into what is involved in sculpture conservation. It is a joyful experience for a conservator working on outdoor collections to interact with the public. Many visitors were curious about our work, while some were surprised that the sculptures required maintenance at all, as they believed metal to be a durable material capable of surviving for centuries.

Conservation in the Sculpture Garden



Scaffolding erected to undertake conservation on Robert Klippel's *Group of eight bronzes*

Although metals such as bronze are known to be long-lasting, their appearance and longevity outdoors can be adversely affected by a combination of factors. External factors include excessive handling, vandalism, environmental exposure (rain, pollution, ultraviolet radiation), the site (for example, *On the beach again*, by the American artist Robert Stackhouse, is located underneath a tree and immersed in water), all of which can result in damage to the surface. If left untreated, corrosion may develop and irreversibly alter the surface of the metal. Lesser known causes of deterioration are inherent weaknesses, which relate to the work's manufacture such as the type of materials and surface coatings selected by the artist and/or their fabricator, the quality of the construction and the design. Any inherent problems are increased when a sculpture is displayed in the uncontrolled outdoor environment.

For these reasons outdoor cultural material requires regular maintenance, also referred to as preventive conservation, to ensure the artists' workmanship is retained. Most of the bronze sculptures only required routine maintenance, which involved washing down the sculpture, localised removal of corrosion products and re-application of a protective coating of microcrystalline wax. The sheer size or siting of an outdoor artwork can limit access for maintenance. The installation *Group of eight bronzes* by Robert Klippel presented difficulties as it is in the middle of a pond and surrounded by reeds. The recent treatment was the first major conservation work that had been conducted since the sculpture's installation 20 years ago and it required a more complex treatment than the other works. The protective coating of wax had degraded, exposing the bronzes to atmospheric corrosion, as indicated by the development of green, copper corrosion. One of the eight sculptures had developed a green patina overall, while the other seven had a dark brown patina. More unusual features were the disfiguring white pustules caused by plaster core material leaching to the outside of the cast. The design of one of the sculptures created a catchment for water, which promotes corrosion.

The full extent of treatment for the *Group of eight bronzes* was devised after consultation with the Gallery's Conservation and Curatorial departments. Due to the water restrictions enforced by recent drought conditions, it was not viable to drain the pond, so a scaffolding floor needed to be erected above the water level. The sculptures were thoroughly washed and the white pustules mechanically removed. The green (copper) corrosion was removed with a chemical poultice, which acts to soften the bond between the corrosion and the metal. One sculpture required repatination, involving the use of chemicals and heat to artificially create a brown surface colouration (patina), to match the other works. A protective coating of microcrystalline wax was applied. Holes and porosity in the metal were filled with adhesives to make the sculpture watertight. A drainage hole was drilled in the lowest point of the water catchment area to keep the area dry.

The two painted steel sculptures, *La bobine* by the American artist Alexander Calder and *Temple gate* (steel and aluminium) by the Australian artist Inge King, required repainting. The paint systems had begun to fail; in some areas moisture had infiltrated the paint coating and prolonged exposure to ultraviolet radiation had faded the paintwork, resulting in the formerly black paint appearing as a patchy grey colour. In conservation terms the paint had failed aesthetically and was interfering with the artist's intention for the presentation of the work. In the case of *Temple gate* we were fortunate to be able to consult with the artist. Inge King's primary concern was that

the sculpture should not appear grey as this compromised the integrity of the work, which was intended to be a solid black colour.

Both of the painted steel sculptures required removal of the old paint by controlled abrasive blasting and applying a new, durable paint system. After removing the paint back to the bare metal a zinc-rich primer paint was used, which acts to provide long-term corrosion protection to the mild steel. The type of paint system was selected for its longevity in outdoor exposure as a 10-year life-span was specified by the Gallery. The sculptures require regular maintenance, including washing dirt and bird droppings off the surface, and reapplying protective coatings to the sculptures, when they show signs of degrading. An ongoing maintenance regime will ensure that the works continue to represent the intentions of the artists and reduce the need for future large-scale restoration work.

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Installing Alexander Calder's *La bobine* following treatment