

*Civilisation/Industry, an art work in coloured glass, blown and heat-shaped with punctures, produced by artist Pavel Hlava in 1983*

that we mostly associate with glass, namely transparency and fragility, exploited.

The basic materials used to make glass are silica (sand), a flux (soda or potash) and a stabiliser (for example, lime). The mixture turns into a liquid when heated to a high temperature and is then shaped through various techniques. It becomes solid when cooled. Glass is a solution and retains the random molecular structure of a liquid when it stiffens. Because it lacks a structure of interlocking crystals, it is transparent, easily shattered and deteriorates over time.

Through additions to the basic recipe the quality, durability or workability of the final product is determined. Added iron gives green, selenium or gold produce red and the addition of soda or lime results in a clear glass. During the post-industrial era new uses for glass have been made possible. New glass is produced with specific properties that serve the product needs of artists, engineers, scientists, architects and industrialists. Examples of contemporary applications are spun glass fibres for heat resistant clothing and heat shields for spacecraft.

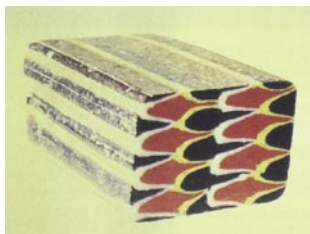
While glass had been extensively used as an industrial material, the studio glass move-

**MARIANNE ELLIOTT**  
Regional Librarian, Southern Region

In ancient times glass was associated with luxury and exclusivity and never used as functional, everyday objects. Glass making was associated with mystery and processes were developed through careful observation of the production procedures. Only during the Industrial Revolution was glass making understood and scientifically

controlled. Yet most techniques used in glass making were developed before the scientific revolution of the last two centuries.

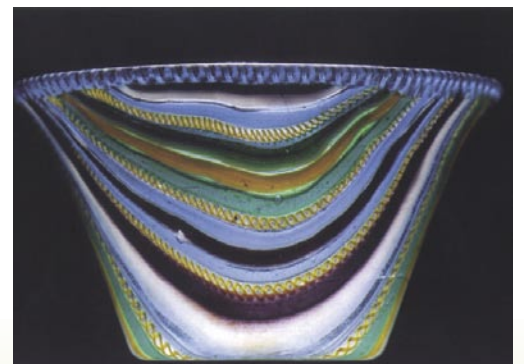
Glass can be coloured or colourless, monochrome or polychrome, translucent, transparent or opaque. During the first 3000 years of glass making, other qualities than transparency were sought-after and valued. Only with the development of glass blowing, around 1 BCE, were the qualities



△ Scale-patterned bar, mosaic glass technique, Roman Empire, late 1 BCE to 1 CE, 2.9 cm high. (Making glass beads)



◁ Vessel made of diatreta glass. This complex technique involved cutting pieces with thick walls to create a network of geometrical motifs attached to the surface. Eastern Mediterranean, Italy or Cologne, 4CE. (Warm glass)



△ Mosaic glass bowl made by fusion in a mould using different coloured glass threads. Probably made in Italy, 1 BCE. (Warm glass)



△ Flask, core-formed, Egypt, New Kingdom, late 18th-19th Dynasty, 1360-1240 BCE, 11 cm high. (Making glass beads)



◁ Gunnar Cyren Orrefors, Sweden, four blown and cut unique glass bowls, 1985-1986, 15cm high. (Glass: a contemporary art)

ment was established by Harvey Littleton in America in the 1960s. Since then glass has increasingly been exploited as a creative medium within the artist's studio. Beautiful contemporary creations can be viewed in galleries, for example, the Edge Gallery in Cape Town.

## Basic methods used in glass forming

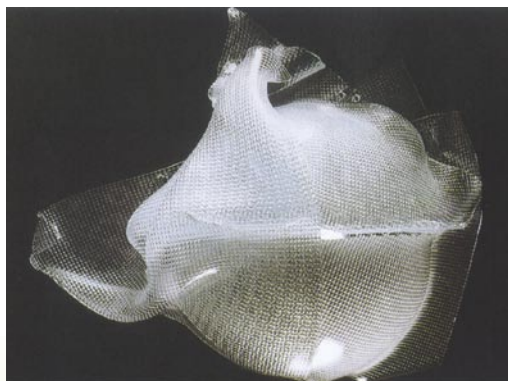
### Primary methods

#### Core-forming

This was exclusively used in ancient times. A thick core of material was built around a metal rod in the shape of the desired vessel. This core was covered in hot glass by dipping or trailing hot glass over it. This vessel was then rolled onto a stone surface to make it smooth. After the glass had annealed, the mould was removed and the vessel polished.

#### Inflation

A blob of hot glass is gathered at the end of a hollow metal tube and inflated to form a bubble. More glass can be added to expand the object. To prevent distortion the object or vessel is constantly rotated during the forming process.



△ **Veronique Monod**, 'Wall Sculpture', 1980s, pressed glass, fused, 30cm high. (Glass: a contemporary art)

▷ 'Suzanne' - made in Lalique's trademark frosted and opalescent glass, here converted to a light source. This is one of his most famous and prized statuettes. (Lalique)



#### Mobile pressing

A stream of liquid glass is passed beneath metal-patterned rollers, which flatten or impress the glass surface. Float-glass (for example, window panes) is produced and polished while the liquid glass is moving on a bed of molten tin.

#### Mobile stretching

The stickiness and elasticity of hot glass enables it to be stretched. As it stretches the object becomes thinner, but still retains the inherent patterns of the individual pieces.

#### Centrifugal force

An amount of liquid glass is placed in a mould and rotated at a speed of 3000 rpm. The centrifugal forces push the liquid outwards to fill the mould.

#### Primary casting

Liquid glass is poured directly into a mould. Glass forms a skin on contact with the mould, which resists and slows down movement, so a simple mould is required.



△ Illustration of bead making in the studio, using the twister technique. (The new jewelry)



△ 'Calm Sea' (2003). Bead made by Susana Aparicio Ortiz using the twister technique. (The new jewelry)

◁ 'Ceylan', a clear, frosted, opalescent and blue-stained vase, with parakeets perched on branches, moulded in low relief. Wheel-cut and engraved, 24 cm high. (Lalique)

## Secondary methods

Glass may be obtained in its solid form and then reheated to shape it. The range of available forms includes sheets, tubes, rods, ingots, grains or powder form. For secondary processes simpler heat sources may be used, operating at lower temperatures, which is more convenient for studio craftsmen.

#### Lamp working

Glass rods and tubes are reheated and shaped, joined or twisted. Coloured glass yields an enormous variety of effects. Since the Mesopotamians used this process for bead making, it has been used continuously throughout history and is still popular today.

#### Fusing

Pieces of glass are joined together when heated. The resulting patterns formed may then be further manipulated or shaped.

#### Bending (slumping)

Glass softens and loses its rigidity when heated. When a pre-shaped disc of glass is reheated, it can be reshaped over a mould. While the Syrians already slumped glass



bowls in the 4th century, the method is still applied today in industry to shape architectural features, or platters in the studio.

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*Videos in stock*

A five part series with the following titles:

**Glass programme 1: Shaping glass.**

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**Glass programme 3: Colour.**

**Glass programme 4: Bending light.**

**Glass programme 5: Strength.**

**Glass now.**

A two part series: **An introduction to the fusing and slumping of glass.**

*Note: Videos on the subject are available in the Western Cape Provincial Library stock.*

2007

Featured here are a selection of glass creations by some contemporary South African artists who have embraced African influences in their work



Shirley Cloete

◁ Harmonious lines and delicate nuances of colour

David Reade

▷ Building on classical foundations



△ Elmarie van der Merwe

An exploration of sculptural glass

▷ Sue Meyer

A confluence of cultures



Nelius Britz

△▷ Colour and light captured in sculpture. The two sculptures featured here, Autumn and Summer, are from his 'Four Leaf' series

