



# The Glass Cone

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# The Attraction of Imperfection

## Global creative uses for recycled glass Part 1: Factories and artisan workshops

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**W**HEN we were given a bowl made from recycled glass in Mexico, I realised how little I knew of the fate of the glass we diligently place in the recycle bins or take to the centre. Here I describe what I have discovered of its new life which might interest glass enthusiasts and collectors. We mostly seek perfection in collectable items and the maker strives for consistently outstanding quality, but both studio artists and ethical glassware producers, especially in developing countries, are incorporating recycled glass into aesthetically pleasing, if sometimes imperfect, objects. Some of the factory and workshop products, which are commonly found in our high street shops, are discussed in this first article while studio examples will be described in the second part.

### Background

UNTIL cheap and mechanised mass-production, glass items were not single-use products and would be used repeatedly until damaged, when repair would be difficult if not impossible. Restoration was only attempted on rare, expensive or cherished pieces. Fortunately, in the early days of glassmaking, it was found that the material could often be re-used. Now organisations such as British Glass and Friends of Glass champion glass as being almost infinitely recyclable. This is attractive in a world concerned with conserving energy and natural resources, and reducing unusable waste, especially for a material which does not rapidly decompose. In the EU (2011), an average of 70% (individual countries 6%–98.5%; UK 64%) of used glass containers are made into new ones by the closed-loop recycling industry. There is an increasing number of other initiatives to reduce the amount of glass going to landfill.



*Fig.1: Giraffe family. Courtesy Ngwenya glass*

Damaged or redundant items can be cleaned, crushed, or ground and re-melted to produce new objects, though the structure and appearance of the metal may be modified. Some sources such as soda glass containers and float (window) glass are more amenable to this process compared to specialist products like mirrors, light bulbs, car windscreens etc. or glass combined with other materials. Factors like clarity, mixed colours, toxic minerals, co-efficiency of expansion (COE), melting points and devitrification temperatures influence its destiny.

### Uses for the original object

SOMETIMES the original object finds an alternative purpose, so called *upcycling*. Bottles can be made

into walls, chandeliers, table lamps, beakers or vases, and parts of vessels can be incorporated into collages, windows or sculpture.

Innovative bottle walls are common in eco houses worldwide (Inspiration Green), and include a bus stop in Kentucky, USA and a men's public toilet in Kawakawa, New Zealand. Wat Lan Kwat, 'The Temple of a Million Beer Bottles', is now a tourist attraction in Khun Han, Thailand. All the walls, roofs, and some of the floors of the complex are constructed from cemented beer, wine, medicine and fizzy-drink bottles. The mosaics are made from bottle caps.

On a visit to Curacao in 1960, the brewer Alfred Heineken was dismayed by the lack of building materials and a surfeit of bottles littering the beach of this Caribbean paradise: thus the WOBO (World Bottle) was born. Designed by John Habaken, these stackable beer containers, which came in two sizes, doubled as self-aligning interlocking bricks. Technical difficulties with wall and roof junctions hampered development; few bricks have survived and only a couple of structures on the Heineken estate, near Amsterdam, remain.

### Sources of glass

GENERAL commercial and domestic glass is aggressively re-cycled on an industrial scale for use in a variety of architectural processes (even replacing sand in concretes) which tolerate variations in composition, inclusions and contaminant level (see Cindy Ann Coldiron). For example, mixed glass from more discernible sources can be used for decorative horticultural aggregates, marbles and glass pebbles for water filtration systems (*Glass Cone 72/73*). Beverage bottles and glass food containers are by far the most common reliable source. Panes of float glass are another clean

consistent start material. The front barium/strontium glass plates of obsolete cathode ray TV tubes are removed by Recycling Lives from the lead glass funnel and the cullet turned into tiles and bricks. This cullet and also whole plates are a popular source material for glass sculptors. Nulife Glass has a system for melting the tube glass, running off the lead and producing a safe cullet, suitable for an expanding list of diverse products, from cufflinks to work surfaces and sculpture.

### Factory and small workshop initiatives

IT is the selection of specific articles from our throwaway society, particularly containers, that fuels many of the newer glass working initiatives throughout the world. The Eden Project in Cornwall provides an elegant eco-friendly upcycling example. Their used green beverage bottles are sent to a local glass workshop which transforms some of them into bowls to be sold in the project's shop. A similar 'pay twice' scheme in Africa (Green Glass) involves mobile production units which attend large public events and tourist sites. They collect empty beverage bottles, convert them into drinking glasses on site and sell them back to the visitors!

The portfolios of many prestigious glass factories include tableware ranges made from recycled glass (e.g. the mouth blown Mia and Firo bottle glass ranges of LSA International). The major Spanish company La Mediterranea works exclusively with recycled glass to which small amounts of compatible frits are added to produce their internationally renowned colourful collections.

Fig.2: TranSglass group. Courtesy Artecnic



In 1979 a Swedish Aid Project imported the equipment and set up Africa's first glassblowing factory in Swaziland. They even sent a couple of locals to Kosta Boda for training. Unfortunately it closed in 1985. Frustrated collectors of the factory's glass elephants, the South African Prettejohn family, re-opened it in 1987. Similarly, Ngwenya Glass makes a large range of tableware, corporate items and animals (fig. 1). They have a glass art studio which runs international workshops and conferences; Scandinavian artist Annette Gulbaek has designed ranges for them.

### Artisan workshops

APART from sustainability, the two main drivers for smaller artisan units are economics and locally available starting material which negates the need for glassmaking facilities. They use simple equipment, run training schemes for unskilled locals and

'collecting' bottles provides welcome paid work. Global supporters and sponsors of artisan products, such as Artecnic, Traidcraft, Overstock/Worldstock, The Netherlands FTO and Italian CTM encourage such enterprises, often by enlisting technical and artistic expertise from more developed countries. The British Association of Fair Trade Shops has almost 100 members, many of whom enthusiastically import and sell a wide range of these functional and decorative products. Individual makers have interesting and diverse histories.

A few examples illustrate this variety:

- The process at its simplest is encapsulated in the work of Green Glass in Cornwall who, developing an idea pioneered in Southern Africa, initially cut and shaped bottles into drinking glasses. By designing what they describe as 'Wallace and Gromit' equipment, they can provide a range

Fig.3: Water carafe and glass. Crisil s.r.l., Bolivia

Fig.4: Colourful Mexican tumblers. Courtesy Milagros



of decorative finishes and have expanded into tea lights, candle holders, vases and fused glass beads, winning design awards along the way. They supply equipment and provide help and advice to those wishing to set up similar enterprises elsewhere in the world.

- A high profile example is tranSglass. In 1997 the London-based designers Emma Wolffenden and Tord Boontje (Professor and Head of Design Products at the Royal College of Art since 2009) produced vases, carafes etc. from recycled wine bottles (fig.2). They are still widely available and are sufficiently regarded to be included in the permanent collection of MoMA in New York. Through the 'Design with Conscience' programme of Artecnia in LA, USA, and with the help of 'Aid for Artisans', production has been moved to a specially created workshop in Guatemala City (2005) which teaches young people cutting and polishing skills.

- In 2007 the Crisil glassworks in Bolivia (supported by Traidcraft and Dutch FTO) acquired the skills of glass artist Will Shakespeare as a consultant. On a visit in 2011 Mike Holden, studying glass and ceramics at Sunderland, and Jim Maskery, the University's glass technician, helped with technical and commercial issues (such as logos and colour) (fig.3).

- In 2011 American designer, engineer and recycled glass artist Bill Hess was part of a University of Virginia team which shipped a kiln to Mongolia and taught the locals how to make greenhouse panes from bottle glass. They have already progressed to dinnerware and other objects.

- In Mexico, glassmaking arrived with the Spanish and much of the present output often consists of brightly coloured, decorated blown glasses, jugs and other tableware made from recycled glass, mainly in small factories and workshops (fig.4). Companies like Milagros import it in large quantities into Britain for wholesale and retail. They have a significant trade with caterers, restaurants and hotels and offer a bespoke manufacturing service.



Fig.5: Odumasi glass beads.  
Copyright John Irwin,  
African Fabric Shop

**Beads**  
SINCE the dawn of glassmaking, shards and powdered glass from recovered objects have been turned into beads. Today they are used by makers from internet-tutored amateurs, through international, handmade craft workshops and small factories, to large-scale mechanised factory production in places such as China, India and the Czech Republic.

Two of the most revered sites for traditional handmade recycled-glass beads are Ghana and Indonesia. The Ghanaian system uses cullet,

powdered glass and ceramic dyes packed into clay moulds and combustible cassava stalks for the holes (figs 5 & 6). Similar moulding is used in Indonesia, but glass tubes, lampwork and facet cutting and polishing are also employed. Turkey's traditional hand-wound beads are available in recycled glass. Sea glass beads are ubiquitous and currently fashionable. They have a rough opaque finish, which results from the iron oxide content and partial devitrification during heating and mimic beachcombed pieces.

Fig.6: Ghanaian bead moulds.  
Copyright Ghanacraft

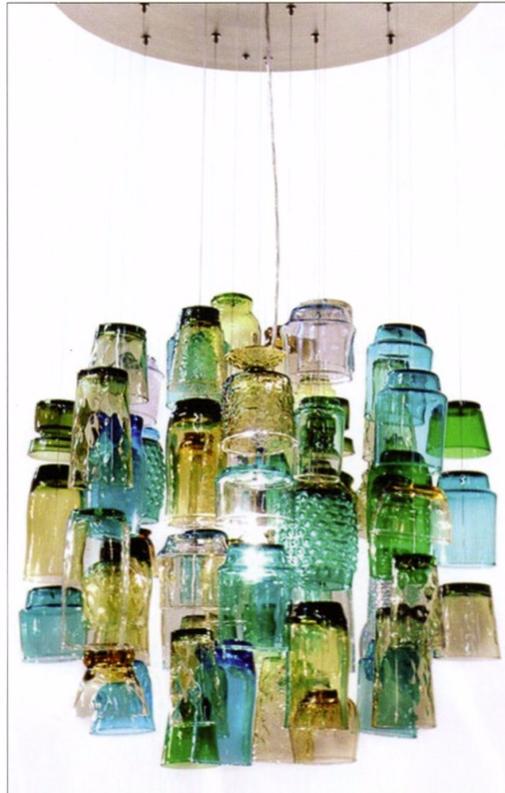


## Lighting

LIGHTING is yet another area for the inventive use of upcycled glass. Ever since it was found that candles would fit into their necks, bottles have been used as lamp bases. Electric table lamps made with Portuguese rose- or raffia-clad Chianti bottles were trendy in the 1970s. Chandeliers and similar collections of hanging bottles, drinking glasses, glass shards and rings of recycled glass are popular on internet eco sites. They are constructed by everybody from amateurs to high-end bespoke designers. Propellor Studio in Vancouver, BC has a suggestion for all those old drinking glasses in the back of your cabinet (*fig. 7*). Table lamps patiently made in Indonesia from recycled glass pieces bound with baling wire, are widely available (e.g. Overstock) and have an architectural quality (*fig. 10*).

Ceiling lights made from blown elements in Syria which echo an ancient tradition can be found in Artiquea's Aladdin's cave of Middle Eastern delights (*fig. 9*). The present situation of the Damascus workshops in which they and several other fabulous lighting models (*fig. 8*) were fashioned from locally-collected glass bottles, using century's old skills, is heart-rending. Since the 2011 uprising, production has stopped as fuels became unavailable and travel to work too dangerous. The safety of the workers is uncertain, although one glassworker is now in Egypt and hopes to resume work soon.

Few of these everyday items are likely to become collectable, but many are functional, attractive and often well-designed. While they are with us they are helping to save the planet.



*Fig. 7: Dram Chandelier.*  
Copyright, Propellor Studio

*Fig. 8: Syrian lighting: Plate lamp.*  
Courtesy Artiquea

*Fig. 9: Syrian lighting: Blown pieces.*  
Courtesy Artiquea

*Fig. 10: Indonesian table lamps.*  
Overstock/Worldstock



### Links for both articles

'Recycling Glass Bottles/Glass bottle Walls': [www.inspirationgreen.com](http://www.inspirationgreen.com)

'Sculpture and Design with Recycled Glass'. (2011) Cindy Ann Coldiron. Schiffer Books. ISBN: 978-0-7643-3889-2. [www.schifferbooks.com](http://www.schifferbooks.com)

'Transformations': Form and Function in Recycled Glass. (2009) Zest Contemporary Glass Gallery: [www.zestgallery.com](http://www.zestgallery.com)

Clean Washington Centre: 1. Recycled Glass for Art Glass Applications (1996). 2. Using Post-Consumer Glass for Blowing and Casting (1996). [www.cwc.org/glass](http://www.cwc.org/glass)

Matthew Durran / Glass Heap Challenge: [www.mattdurran.com](http://www.mattdurran.com)  
[www.glasheapchallenge.com](http://www.glasheapchallenge.com) for eBook - [www.info@mattdurran.com](mailto:www.info@mattdurran.com)

Ruskin Glass Centre/ Ruskin Mill Educational Trust: [www.ruskinglasscentre.co.uk/](http://www.ruskinglasscentre.co.uk/)  
[www.rmt.org.uk](http://www.rmt.org.uk)

British Glass: [www.britglass.org.uk](http://www.britglass.org.uk)

Friends of Glass: [www.friendsofglass.com](http://www.friendsofglass.com)

British Association of Fair Trade Shops: [www.bafts.org.uk](http://www.bafts.org.uk)

African Fabric Shop: [www.africanfabric.co.uk](http://www.africanfabric.co.uk)

Artecnic: [www.artecnicainc.com](http://www.artecnicainc.com)

Artiquea: [www.artiquea.co.uk](http://www.artiquea.co.uk)

Crisil: [www.en.crisil.com.bo](http://www.en.crisil.com.bo)

Gallery East: [www.galleryeast.com.au](http://www.galleryeast.com.au)

Ghanacraft: [www.ghanacraft.com](http://www.ghanacraft.com)

Green Glass: [www.greenglass.co.uk](http://www.greenglass.co.uk)

Kestle Barton Rural Centre for the Arts: [www.kestlebarton.co.uk](http://www.kestlebarton.co.uk)

La Mediterranea: [www.lamediterranea.com](http://www.lamediterranea.com)

LSA International: [www.lsa-international.com](http://www.lsa-international.com)

Milagros: [www.milagros.co.uk](http://www.milagros.co.uk)

Ngwenya Glass: [www.ngwenyaglass.co.sz](http://www.ngwenyaglass.co.sz)

Nulife Glass: [www.nulifeglass.com](http://www.nulifeglass.com)

Overstock/ Worldstock: [www.overstock.com](http://www.overstock.com)

Propellor Studio: [www.propellor.ca](http://www.propellor.ca)

Recycling Lives: [www.recyclinglives.com](http://www.recyclinglives.com)

Traidcraft: [www.traidcraft.co.uk](http://www.traidcraft.co.uk)

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Bill Hess: [www.ideaonlegs.com](http://www.ideaonlegs.com)

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Shuro Kasai: [www.homepage2.nifty.com](http://www.homepage2.nifty.com)

Jon Lewis: [www.orbicglass.com](http://www.orbicglass.com)

Daniel Maher: [www.drmstainedglass.com](http://www.drmstainedglass.com)

Erwin Timmers:

[www.washingtonglasscentre.com](http://www.washingtonglasscentre.com)