

The background of the cover is a dark, moody composition. It features a large, glowing blue sphere that appears to be a wireframe or a transparent shell. A vertical rod or tube passes through the center of the sphere. The entire scene is overlaid with a complex network of thin, white, intersecting lines that create a sense of depth and technical precision, reminiscent of a CAD model or a complex architectural drawing.

# PROCESS

50 PRODUCT DESIGNS FROM  
CONCEPT TO MANUFACTURE

JENNIFER HUDSON



Emmanuel Babled's innovative glass vases and lamps are mainly produced by master craftsmen in Murano, Italy. He is fascinated by the nature and demands of the mercurial material. Changes can only be made when the glass is still malleable; the next moment it crystallizes and becomes, as Babled puts it, 'fragile for the rest of eternity'.

The concept behind the Lum lamp was to create a diffuser with an organic, neuronal aesthetic produced by combining a sinuous fibrous element with glass to catch, soften and spread the light from within the shade. Glass is pure and does not mix easily with any other substance. Known for his subversion of the classical ideal of glass design, Babled decided to work on a dialogue between an industrial material and craft technique. During a trip to the Novotomi furnace in the Czech Republic he tried a first combination of two materials, mixing a glass fibre used in boat construction with Czech crystal. The symbiosis was not successful, the 'short' glass reacting badly with the strong fibre, and caused cracks to appear within 24 hours.

Once back in Murano, and with the collaboration of Venini, the world-famous manufacturer of Italian art glass, Babled's experimentations began in earnest. Sheets of glass fibre were combined with 'long' Murano glass. The method seemed to succeed, producing a pattern within the glass, which in turn didn't shatter. However, the result did not have the random fibrous

look that Babled desired. During discussions with an engineer from the Stazione Sperimentale del Vetro, it was suggested that the most commonly used fibre made from glass type E, which has a coefficient of 50, be adopted. As Babled was working with Type A Murano glass with a coefficient of 104, he decided that the two materials would have a better chance of combining if he found a fibre with a similar chemical balance. He finally sourced a fibre, type C, in China with a coefficient of 80, which he thought close enough. A couple of proofs were tried with excellent aesthetic results. However, under the control of a Polariscope, the pieces showed a structural tension that meant mass manufacture was not an option – especially as the lamp would use a halogen light source and the thermal variations would exert even more pressure on the delicate symbiosis. As a last option, Venini's technicians tried shortening the Murano glass to make it harder and as close to 80 as possible. Although the two materials finally coalesced, the fibre dissolved, producing a cloudy effect, which wasn't what Babled had envisioned.

In parallel with the tests to mix the two materials, different methods of optimizing the combination of glass and glass fibre were developed and several techniques were rejected. Rolling the molten glass over the fibres placed longitudinally on the marver before blowing again had the effect of making the aesthetic too regimented. An organic look was achieved by wrapping continuous threads of the fibre

around the circumference of a glob of glass. The only drawback was that, as the fibre does not stick to itself, the cooling glass had to be dipped in glass and heated after every revolution. Once the fibre was added, the glass was placed in a spherical mould and was blown into shape.

The form of the lamp, a sphere sitting within a concave base, was kept as simple as possible. As the process was highly unpredictable, an uncomplicated shape mitigated the chance of anything going wrong in the delicate blowing and cooling stages. The lamp is made entirely of glass, with the sphere supported on a base that progresses from transparent to opaque as it nears the top. The electrics are hidden in a coloured glass tube that adds a strong focal accent to the design.

Unfortunately, after the Polariscope tests, Venini could not take the risk of using the glass fibre. It was decided to keep the form but to add a spiral of white glass, randomly, inside a plain diffuser to recreate the organic patterning of the fibre concept.

# LUM LAMP

EMMANUEL BABLED

## Manufacturer: Venini SpA

Hand-blown Murano glass

Light source: halogen

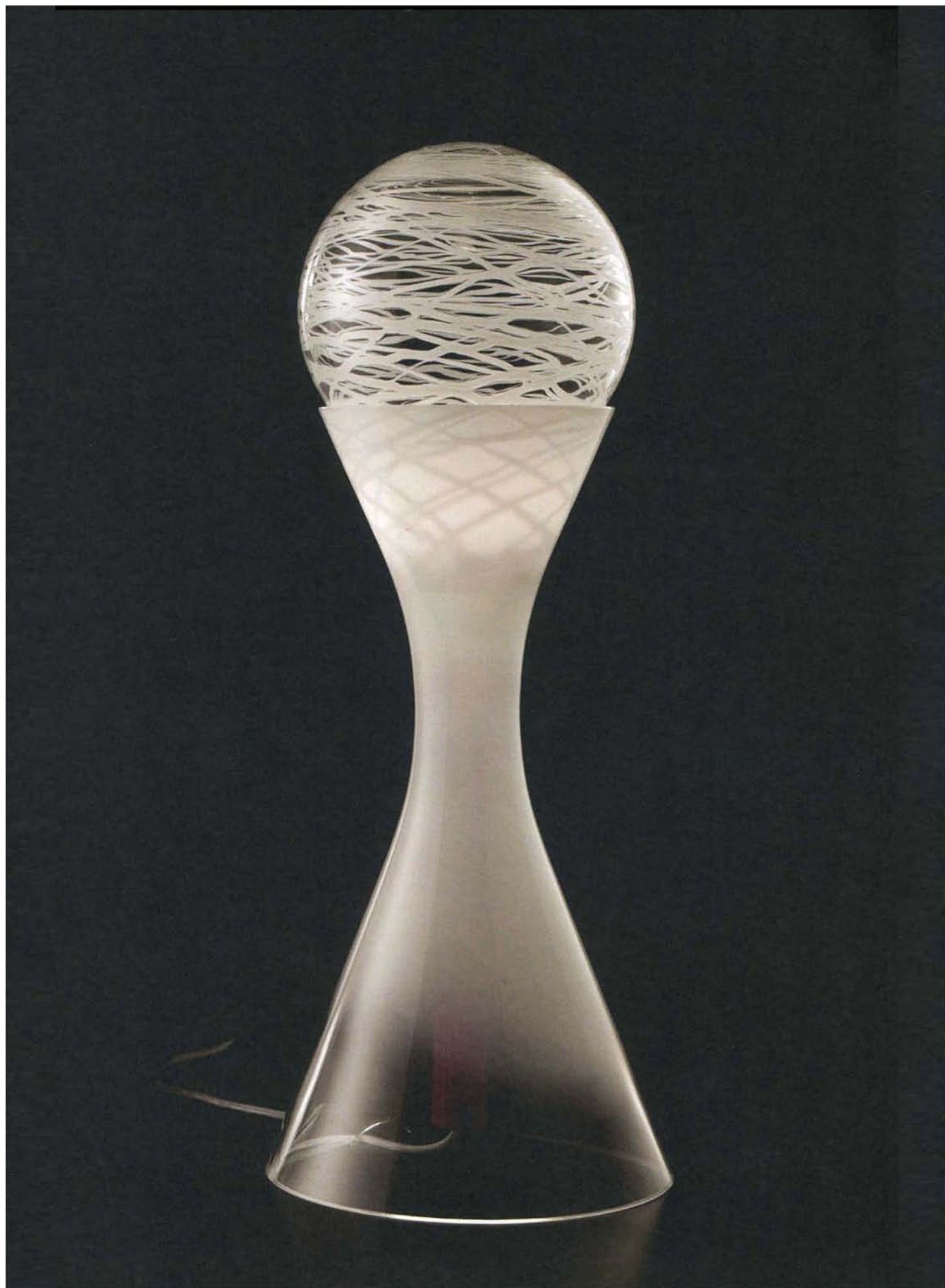
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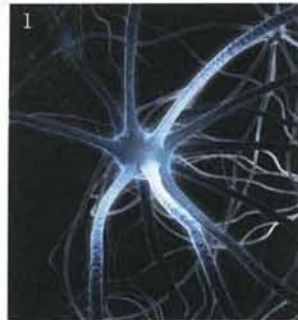
Design to manufacture: 24 months

Mass-manufactured

[www.babled.net](http://www.babled.net)/[www.venini.com](http://www.venini.com)







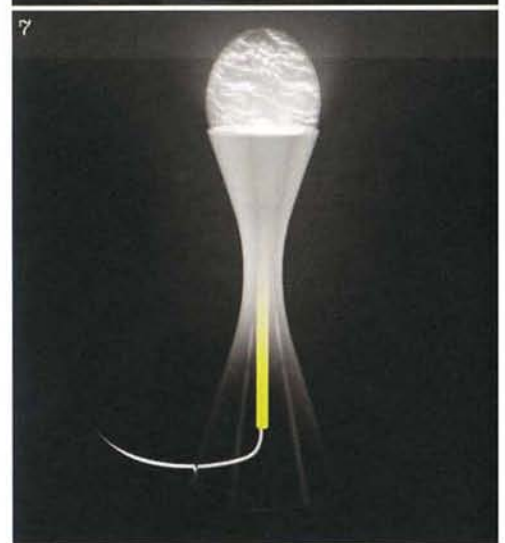
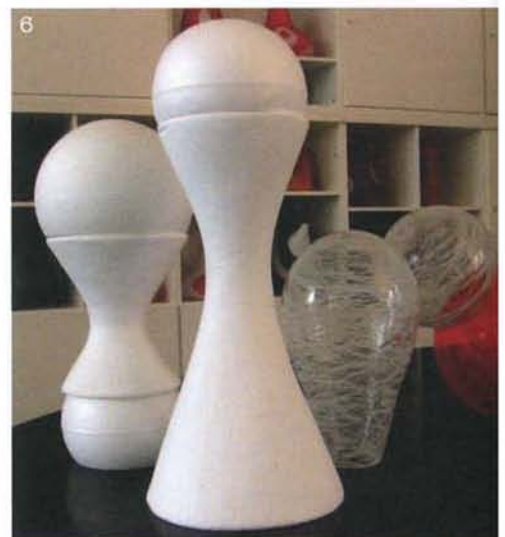
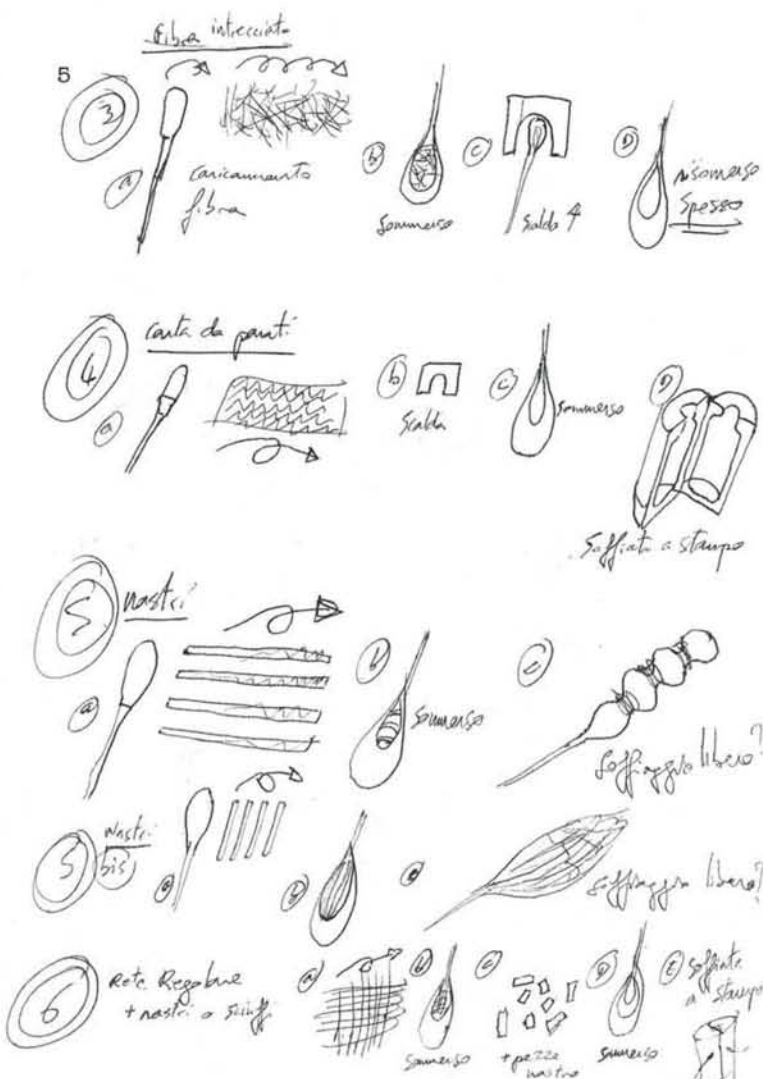
(Previous page). The Lum lamp's base changes from transparent to opaque. The molten glob is rolled to reduce the quantity of white glass on the extremity. A grip is used to further reduce this quantity at the top of the glob. Once in the mould the extremity is closer to the heat and thus softer. As the glass is hand-blown the extremity inflates becoming transparent.

1. The concept behind the Lum lamp was to create a diffuser with an organic, neuronal aesthetic.

2-3. An early experiment mixed glass fibre sheets used in the manufacture of wall coverings with Murano glass. The method (2) did not crack and produced a regimented pattern within the glass. Another experiment

(3) wrapped a fibrous belt around the glass, which was then blown through it. Again, the materials appeared to combine, but the aesthetic did not have the fibrous quality Babled desired.

4. Mixing glass fibre C with hardened Murano glass dissolved the fibre, creating a cloudy effect.





5. Babled used sketches to convey to the craftsmen how he intended the glass to be worked.

6. Polystyrene models were produced to work out the form.

7. Renders were used to present the aesthetic of the design.

8-9. Various methods were tried to combine the glass fibre with the glass. Here (8) they are placed longitudinally on the marver, the glob rolled over them and then blown (9).

10-13. The technique selected was to roll a continuous strand of fibre around the glob (10). As the fibre does not stick to itself, the cooling glass had to be dipped and heated

after each revolution (11 and 12). The glass was then blown into a spherical mould (13).

14. The materials combined and the fibrous aesthetic was achieved. However, after random testing in a Polariscope, the glass fibre was found to be too unstable to use as a mass-manufactured technique.

15. The compromise was to keep the form of the original but to add a spiral of glass to the inside of the diffuser. Rather than applying this in a normal way, the craftsman created the spiral in an organic pattern to mimic the fibre.





The Units series of sculptural glass pieces was born from Emmanuel Babled's desire to produce works in glass that would provoke questions. Because of the flowing nature of glass in its molten state, it is a material more suitable to organic shapes; a classical aesthetic we have come to associate with the tradition of glass-blowing. Babled wanted to create geometric, mathematical forms that would express modernity and go beyond the merely functional by generating an emotional response. Taking as his starting point the idea of a drop of glass, he began to sketch idealistic, fluid, single-piece forms and came up with the concept of a visionary city. At this stage the drawings were just for fun; he had no idea whether he could make them work in glass. He started to think of different ways the shapes could be conceived physically, finally deciding on a layering technique with the notion of taking away glass to make 'windows'.

With the manufacturer Venini's collaboration, it was decided to launch the series in an exhibition called 'Toys' at the Bevilacqua La Masa, the most prestigious art foundation in Venice, during the architecture biennale in 2004. The special exhibition of art pieces was to be accompanied with a video celebrating Babled's futuristic vision. The concept was for the series to be seen only side by side with the visionary aesthetic of the animated film, which was realized in cutting-edge 3D Maya computer graphic and After Effect motion graphic programs. By linking the concrete with the conceptual,

the viewer's perception of the objects would change and a bridge be created between the age-old techniques of glass-blowing and innovative computer technology.

Babled's rough sketches were turned into detailed CAD drawings using Rhinoceros® software, which he hand-delivered to the Murano masters. The drawings were refined; adding and subtracting from the curves so the proposed shapes were practical to mould and blow. Polystyrene models were constructed and a series of working sketches produced by Babled to inform the masters just how he wanted the pieces made. Three layers were blown over a mould: first heavy crystal, then coloured glass, and finally white glass. A few examples were made with the coloured glass on top; this is a simpler process but one that Babled thought did not fully express the modernity of the concept.

Each Unit had a complicated form, and a great deal of skill and expertise was needed to make sure the glass reached all the angles and extremities. Failed attempts were broken and examined to test the ratio of the layering and the process refined. Once removed from the mould and cooled, the cold work began. Using a diamond wheel, the master slowly turned the piece by hand, cutting away the white glass and then the colour, feeling the thickness of the material to gauge the depth of etching needed at each stage. Sandpaper was applied to finish and smooth the cut, followed by a cork wheel with abrasive plaster to polish the surface. The

final result appeared as if various layers of glass had been stuck together while, as if by magic, they were created in one piece.

In this project the concept was very much part of the process. Babled wanted the pieces to be appreciated for reasons other than the virtuosity of the glass. His aim was to add a cultural element to make these sculptural objects more contemporary and to give them meaning.

From the Bevilacqua, the exhibition travelled to the Centre Culturel Français in Milan then to the Gallerie Mouvements Modernes in Paris. It was last shown at the Gabrielle Ammann gallery in October 2006.

# UNITS

EMMANUEL BABLED

## Manufacturer: Venini SpA

Hand-blown Murano glass

Various dimensions

Design to manufacture: 12 months

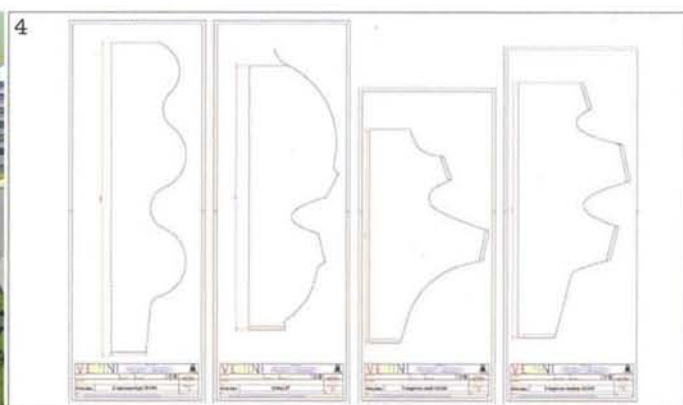
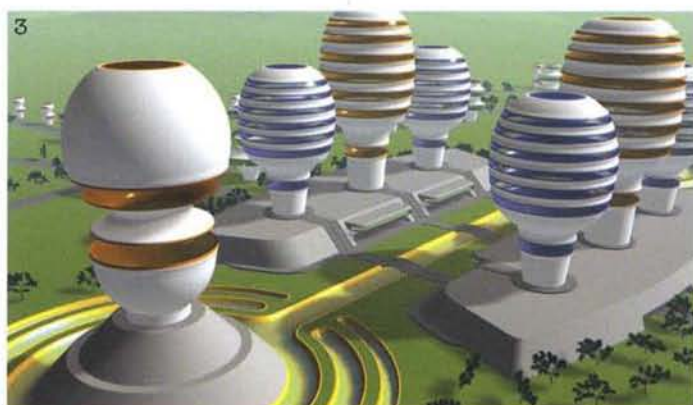
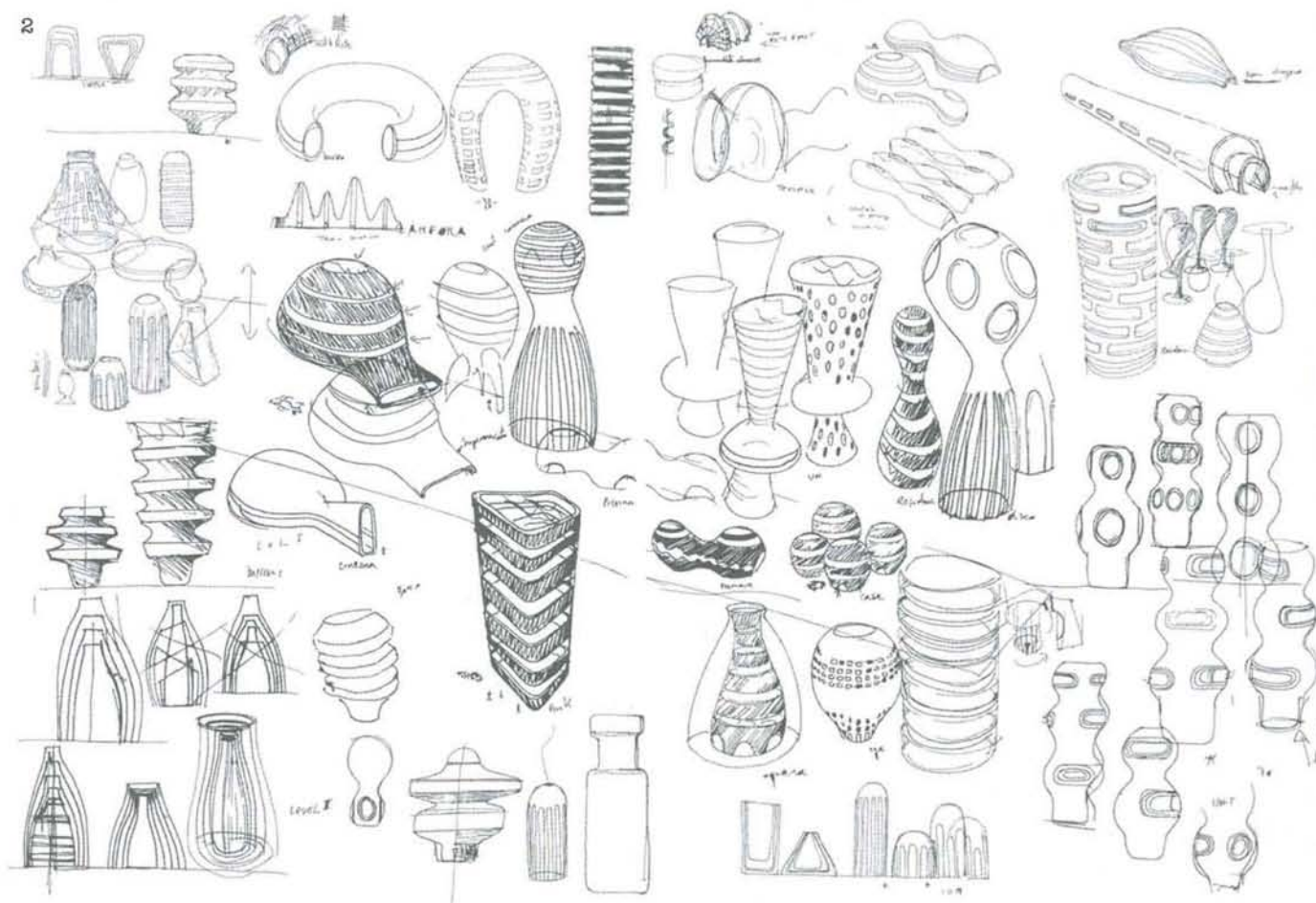
Limited edition, 5 of each colour

[www.babled.net/www.venini.com](http://www.babled.net/www.venini.com)



Units is a modern, geometric series of sculptural pieces that can be used as vases. They are made from three layers of Murano glass hand-blown into a mould.







1. Computer rendering of the Unit series of vases, which consists of eight pieces formed in hand-blown Murano glass.

2. First sketches of the architectural forms, some of which would eventually form Babled's futuristic city.

3. Still from the animated film showing an imaginary city, which was made to accompany the presentation of the sculptural pieces.

4. Example of a CAD drawing delivered to the Murano masters to be refined so the pieces could be feasibly blown and moulded.

5-14. The glass layers were prepared (5), the three layers of semi-molten glass were placed in the mould (6-7), and blown (8). After each blowing, the shapes were examined to ensure that the glass filled the extremities of the mould (9). Failures were smashed and the ratio of the layering examined

so it could be refined (10). One of the sculptural pieces before the cold processing (11). The layers of glass were cut away by a diamond wheel (12) and sandpapered to finish the cut (13). Finally, the glass was polished using a combination of cork and abrasive plaster (14).

15. Babled was on hand in the Murano factory throughout the production process.

16. Detail showing the finish and layering: crystal, coloured

glass and then white glass, as for the majority of the pieces.

17. A couple of pieces transposed the coloured and white layers; a far easier permutation to blow and mould.

