

edited by
Maria Antonia Barucco, Elti Cattaruzza, Rosa Chiesa

ANTIFRAGILE GLASS

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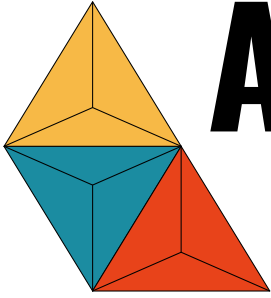
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ANTIFRAGILE GLASS

MARIA ANTONIA BARUCCO, ELTI CATTARUZZA, ROSA CHIESA

The year 2022 is the International Year of Glass, established by the United Nations with Resolution 75/279. Università Iuav di Venezia, Università Ca' Foscari Venezia and the Fondazione dei Musei Civici Veneziani are celebrating 2022 with ANTIFRAGILE GLASS: a conference, an exhibition and a publication, but also, and most of all, a celebration of a material, an ancient art form and an industry in constant evolution.

The objective of the UN is to highlight glass technologies and their potential contribution to addressing the challenges of sustainable development and inclusive societies. With this in mind, ANTIFRAGILE GLASS examines the past and future of glass, so that those who work and study this material can continue to ensure that crises are, to all intents and purposes, new starting points for bold innovations.

For many years, Università Iuav di Venezia, Università Ca' Foscari Venezia and the Fondazione dei Musei Civici Veneziani have been involved in training, research and promotion of the history and innovation of glass. The year 2022 was therefore chosen as the ideal time to establish potential partnerships, to structure the dialogue between the region and academia with new guidelines, to challenge young people to imagine the future, to learn from the past and to describe the current state of the art.

The ANTIFRAGILE GLASS programme was designed to promote opportunities for exchange, interaction and discussion. Developed during a period between the initial resumption of collective life and the outbreak of the war in Ukraine, it is therefore a proudly optimistic, broad and challenging programme. ANTIFRAGILE GLASS is an opportunity for discussion, to envision the future of glass, to meet and discuss the need to respond to crises and work on new projects. ANTIFRAGILE GLASS is an opportunity to reaffirm the interest in continuing, renewing or reinventing the aptitude for innovation that craftspeople, manufacturers and researchers share.

Even the title, ANTIFRAGILE GLASS, affirms these objectives. Nassim Nicholas Taleb has proposed using the adjective "antifragile" to describe a new worldview; indeed, this very adjective is the title of his acclaimed book, published in 2012, in which he emphasises the difference between resilience and antifragility. Those who are resilient stand the test of time and retain their structure, their choices and their goals. Those who are antifragile change over time and with time grow, transform, evolve or regress in alternating phases; this renders them consistent with the present day and often innovative. Research, culture, and glass are antifragile. Antifragile is the property of remaining strong during the fluctuations between authority and checks and balances. Antifragile is the ability to develop new ways of thinking and new products in the constantly changing human, economic, and political environment. Antifragile has a stubborn, challenging and revolutionary character. Antifragile is an attitude that becomes stronger in adversity. The city of Venice must also, now more than ever, persist in becoming fully antifragile.

ANTIFRAGILE GLASS enters into a dialogue with this definition and provides evidence that, throughout history, glass has faced challenges, crises, and innovations by transforming technologies, processes, production methods, shapes and designs, while continuing to enhance the characteristics of the material. Glassmakers, innovators, scientists, artists, entrepreneurs and designers have studied and worked with this material; one that has accompanied mankind in the development of new products since the very dawn of civilisation. The material, its design and its technologies are transformed by fulfilling different functions, affirming some of its characteristics and modifying others, adapting to changing contexts and demonstrating a capacity for innovation.

The history of Murano glass is such an example of antifragility. Many crises have affected this art form; they have exhausted and renewed it, put it to the test, overcome and strengthened it. Antique glass more than a thousand years old is very different to the glass that is created in the kilns of Murano today, but between these two manifestations there exists a strong historical and cultural bond. An antifragile, stubborn, and tenacious culture, in as much as it is willing to rise to the challenge of learning the new and from the new. The characteristics that can be observed in a small but highly-valued geographical area – the island of Murano – are also recognisable in academic research, in science, in art-historical and archival research, in design skills, in business culture, and in the skills of the artists and designers who work with glass. It is for this very reason that glass is antifragile.

And to draw the attention of young people to these issues, to invite them to describe their vision for the future of glass and to emphasise the value of shared work, we organised a residential interdisciplinary workshop entitled VETRO FUTURO, which took the form of a hackathon. Strongly endorsed by Università Ca' Foscari Venezia and organised by Università Iuav di Venezia, VETRO FUTURO was included in the programme of The Italian Glass Weeks 2022. This volume of proceedings presents the outcomes in the form of three posters, material produced by twelve master's degree students from the two Venetian universities. What clearly emerges from these papers is the extraordinary ability of these students to reframe the issues we face as starting points for recognising that these problems represent opportunities and new challenges. With this approach, everything can be reevaluated. With muraNEWABLE, the energy supply issue that is affecting Murano becomes an opportunity to rethink energy sources for sustaining a large territory, while poroVE suggests the recycling of waste glass to exploit its chemical and physical characteristics in order to address the complex problems of drinking water pollution and microplastics; finally, wearGLASS proposes the technology transfer of innovations to the fashion industry, which could enable even the most underused waste (such as discarded plate glass from buildings) to be exploited. In this context, Murano and Venice serve as a laboratory of ideas and a hotbed of experimentation, land and culture: ingenuity and willingness to work together are the qualities that the students lend to the universities they attend and to the proposed outreach to local companies. The

editors of this volume aim to seize this momentum in order to work on glass with an increasingly international, collaborative and inclusive outlook.

A call for papers, an exhibition, a workshop and a publication, but, above all, a place for dialogue: all this serves as an important reminder that we cannot be antifragile alone. Antifragility is a quality that can only be developed through a network of connections and bonds that, although in constant flux, recognise the value of antifragility, and support and benefit from it. When one node or connection in the network fails, others make up for this and develop new skills and aptitudes. Every failure, as well as being the actualisation of a crisis, is an impetus for fresh growth. ANTIFRAGILE GLASS is the result of a working method based on collaboration between many people.

For the support given to this work, sincere and grateful thanks are due to the organisations that supported it: Fondazione Luav, Anteferma Edizioni, the OFFICINA* cultural association and the Regione del Veneto. Without these partners, ANTIFRAGILE GLASS would not be antifragile at all and would lack courage, perseverance and substance. Furthermore, we should not forget the sponsoring bodies, who believed in the value of a wide-ranging and complex project and encouraged its dissemination:

- Italian Committee of IYOG2022 – International Year Of Glass 2022
- CONAI – National Packaging Consortium
- Confindustria Venezia – Metropolitan Area of Venice and Rovigo
- Consorzio Promovetro di Murano
- COREVE – Consorzio Recupero Vetro
- Future Cities Research Hub, School of Architecture and Planning, Waipapa Taumata Rau – University of Auckland
- SITdA – Italian Society of Architectural Technology

The visual identity and, in particular, the logo of ANTIFRAGILE GLASS expresses this variety and diversity in its network of stakeholders: the atoms that make up the tetrahedron structure of silica draw a pattern and constitute the main “ingredients” in the “recipes” of the ordinary glass that is all around us. Silica atoms and three backgrounds, to highlight the three lenses through which we have chosen to investigate glass: science, architecture and design. These are just three among many other potential approaches, questions, perspectives and insights – the first three, and not the only three, points of view that Università Luav di Venezia, Università Ca’ Foscari Venezia and the Fondazione dei Musei Civici Veneziani want to address.

ANTIFRAGILE GLASS is a set of research, teaching and third mission activities that has actively involved teachers and students in a dialogue with the historical, industrial and artistic activity of Venice, the glass capital of yesterday and tomorrow. Both the title and the logo representing the event express the hope that this opportunity for work, discussion and meetings will enable a varied and complex series of activities to be launched to support and enhance the present and possible future of a material that is as innovative as it is ancient.

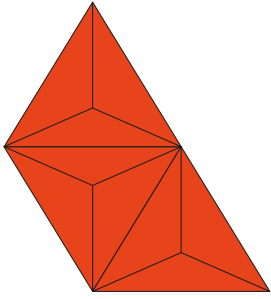
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From industrial float glass to collectible design: the functional light sculptures Baracche, project by artist Paolo Gonzato

BEATRICE BIANCO^A, MARINELLA FERRARA^B

In the panorama of the today Expanded Design, the connection design-craft, is promising in the perspective of the development of Creative Industries and economies in Italy. This paper brings the direct experience of intersection between the industrial and standardised material float glass, the creative approach of artist Paolo Gonzato on this material to create unique light glass sculptures and all the process related to them. It will encompass the qualities of the glass and the specific production process that characterize it, with the possibilities related to its functional features. It will investigate the phenomenon of the creative process that sees the transformation of such material from an architectural – construction element to a unique artwork, realised in a craft environment.

A IED Turin, Italy.

B Politecnico di Milano, Italy.

KEYWORDS: COLLECTIBLE DESIGN, INDUSTRIAL MATERIAL, FLOAT GLASS

Introducing the material

The making process of float glass is an example of industrial and large-scale production. Invented in the '50 by Alastair Pilkington and Kenneth Bickerstaff in England, the aim was to obtain flat or smooth sheets of glass without resorting to costly operations to remove abrasions (Pilkington, 1969).

This radical technological change was quickly adopted by the plate glass industry, where it eliminated the labor-and cost-intensive grinding and polishing production phases. Sheet glass was a cheaper product, and its manufacturing process did not require as huge capital investments as were needed in the plate glass industry. However, float glass gradually entered the sheet glass markets as well and finally the float glass process replaced the existing drawing methods (Uusitalo, 2014).

Pilkington's discovery of float glass forced other glass manufacturers in the '60 to switch production techniques almost overnight and the high cost of installing new plant meant that only larger, cash rich organizations could survive. The result has been to increase the concentration of manufacturing power within a small group of companies operating out of the UK, France, Japan, and the US (Taylor, 1979).

Even though the production of flat glass is one of industrial processes at higher temperatures, it represents only 0.65% of emissions industrial CO₂ of the EU16 (Glass for Europe 2020), with a 100% recyclable material.

In Italy most of the distributed float glass comes from St. Gobain and Pilkington, as major glass producers in Europe.

The process

The main components used for the manufacture of "Float" glass are, Silica sand (73%), Calcium Carbonate (9%), Sodium Sulphate (13%).

Once dosed and mixed, a certain mass is added to these components of recycled glass, in fragments, to reduce the gas consumption of the furnaces of Merger. The mixture of raw materials, properly dosed in a silo, passes

on a conveyor belt and is fed into a five-sided melting furnace chambers where it is brought to a temperature of about 1,200° C.

At the exit from the melting furnace the mass of molten glass is brought to float on the surface of a molten tin bath, at a temperature of about 1,000° C. The glass which at this temperature is very viscous and the tin which instead is very fluid do not mix and the contact surface between the two elements is perfectly flat and smooth.

The glass thus forms a "ribbon" of 3.21 m in width with a thickness that it can vary from 3 to 19 mm. The glass leaves the tin bath at a temperature of about 600° C and enters, now in the solid state, in an annealing chamber passing on a series of rollers. This step of the manufacturing process serves



Fig. 01 Inspirational work by Paolo Gonzato. Courtesy Paolo Gonzato

Fig. 02 Drawing of twisted metal sheet by Paolo Gonzato. Courtesy Paolo Gonzato

to change the voltages internal allowing that the glass ribbon, made flat, can be cut into plates without problems the two surfaces of the glass ribbon are perfectly smooth and shiny and not need no further finishing.

At the end of the cooling phase, the glass strip is subjected to a series of very strict controls; then it is washed and dried at this point it is cut into “Cast Plates” having dimensions of 3.21 x 6 m (Ferreira Nascimento, 2014).

Brief colouring elements

During the process the glass can be treated with minerals and metals like chromium or copper, to give colours to the dough. Iron is one of the most used metals, producing several shades of green – depending on the iron concentration and ion ratio, ultraviolet control, and infrared transmission. Amber colouring is normally used to prevent ultraviolet damages of the contents and is the result of an iron-sulphur chromophore. Highly oxidized glass is an unpleasant yellow green.

Metallic colloids (Au, Cu) dispersed in glasses are the primary source of red glasses. Silver colloids produce a variety of yellow to brown colours. Colloidally coloured glasses have been produced for around 2000 years for art objects and are still routinely used by glassblowers and other glass artists. Other metallic colloids produce either grey to black (Pb, Co, Ni, In, Bi) or brown to black (As, Sb) glasses.

Since the invention of the Pilkington float glass process in the '50 enabled the production of float glass with standardized quality, architects and engineers have pushed glass technology for maximizing size and transparency, nurturing a building culture of minimal material presence and maximal transparency in the glass. Meanwhile, multi-coloured glass has been rarely implemented in construction and so in the float process. This is due to the labor intensiveness of the manual crafting process, which results in high costs and non-standardized quality, and the lack of automated methods for manufacturing polychromatic glass at the construction scale. (Giesecke et al., 2022).

From functional needs to aesthetic fruition: the work of Paolo Gonzato on float glass

In 2016 Camp Design Gallery, Italian collectible design gallery based in Milan, founded by me and my former associate Valentina Lucio, participated to the former design fair Operae in Turin, where the gallery was invited to the program Piemonte Handmade. The aim of the program was to connect the figure of the gallery, an invited artist or designer, and a well-known artisan in the productive network of the Turin area.

Paolo Gonzato, Milanese artist, was invited to work with an assigned industrial glass artisan called Cristal King. It was the first time that the artist was called to work such material.

He took confidence with the different types of glasses like the cathedral type or the float glass and the techniques that the artisans use to work it: mostly cuts and assemblage and the thermos-forming through industrial ovens. After several experiences, the option was to use the float glass, thanks to its resistance properties and the possibility to thermos-sculpting it.

The formal and aesthetic research of Paolo Gonzato lies on the contemplation and crystallisation of leftovers and borders, forgotten objects and poor materials. Travelling from Milan to Turin gave the artist the possibility to observe the borders of the cities and notably the metal shacks. Moreover, the industrial environment of the artisan's factory, gave to the artist the impulse to use exclusively industrial materials for the creation of unique pieces of collectible design: a lightened glass sculpture.

The conceptual process

As aforementioned, Paolo Gonzato's research is part of an active and daily aesthetic, of collecting and manipulating objects of common use if not waste, exercising an *Aesthetic of Existence*, as defined by Michel Foucault (1998, p. 27), where "the action of self-creation takes place through the exercise of criticism and care", in the search for a balance and one's own order in the world, which

seems to work even in marginal contexts (Lunghi and Trasforini, 2010). In this context Gonzato develops his aesthetic of the forgotten, that includes physical and mental margins, leftovers, to give dignity and beauty to what is voluntarily not seen and retained by society. Like Bell Hooks, that defined “aesthetics of existence”, the ability to experience beauty as a form of resistance to social marginalization and the impoverishment of the spirit (1998).

The following text has been written by Damiano Gulli, Art and Public Program Curator at the Triennale Milano, invited by the artist and the gallery to summarise the *Baracche* project in the occasion of the second solo show displayed at Camp Design Gallery in September 2020.

“baracca s. f. [from Catalan barraca (probably pre-Roman voice), through the Spanish]. – 1. Temporary construction, general of wood with metal sheet or asbestos cover, for sheltering people or goods.

In 1906 Giuseppe Ungaretti met Enrico Pea, poet, writer, dramatist, and theatrical impresario, who recently moved to Egypt, with whom gave life to the Baracca Rossa, a marble and timber warehouse that soon became the venue for meetings for an archists and socialists. But not only. Here Ungaretti had the opportunity to get in touch with several intellectuals and writers from all over the world, essential for his educational enrichment.

The cabin is therefore a physical place and at the same time a metaphor for a relational and creative process poised between anarchy and control, poetry, and rationality. But still with humble, precarious roots, marked by transience.



Fig. 03 The artist Paolo Gonzato studying the material and its possible solutions. PEPE fotografia

Unlike the hut-sophisticated machine-à-habiter (think of Le Cabanon by Le Corbusier), an intellectual shelter, an ideal existenzminimum – the hut conceals, not too subtly, the prodromes of imperfection, imbalance, fragility.

When in 2016 Paolo Gonzato designed the first series of Baracche as part of Operae in Turin – a brilliant dialogue between the designer, Camp Design Gallery in Milan, and the artisan know-how of the Turin glass factory Cristal King – he had a very specific vision in mind: “Instant architecture”, “bric-à-brac constructions”.

By carrying out an operation of appropriation and decontextualization (sometimes forcing the technical-executive limits) Gonzato isolates a part of the whole – the corrugated sheet metal constituting the roof of the hut – creating it a luminous body, changing its axis and inclination, making it sculptural. He monumentalizes, ennobles, transforms, and dramatizes scraps and pre-existing fragments, initially poor, and translates them into precious glass. This action of recovery, transformation, and transmutation of materials whether paper, ceramic, marble, or glass, in fact – is recurrent in Gonzato’s practice, already evident in one of his first works in 2001, part of the series *The Sound of Ego*: a bale of hay wrapped in a hot pink satin ribbon. Is it a sculpture of a poor nature in salsa camp? A seat reminding the Straw Chair by Alessandro Mendini from 1975? An ironic fake Christo packaging? Glamor that envelops the bucolic, high and low merge. Cheap and chic, one might say, to take up the name of the famous perfume – almost a claim – by Moschino, surely one of the references of the artist and designer for the subversive design approach. Gonzato plays and slides between disciplines and techniques – from art to fashion to design, from painting to installation – while maintaining constant rigor and consistency. He assimilates and makes his own from the lessons of some Italian Masters, whom he loved, also elusive to rigid categorizations and disciplinary hierarchies. In his works the Pontian decoration echoes – and how not to think of the lozenge, an element taken from the costume of Arlecchino, reiterated in numerous paintings and collages by Gonzato – the charm of Pesce’s imperfection, the anthropology of Mendini’s objects, Munari’s aleatory nature, Sot-tsass’s eroticism and sacredness.

With his Baracche Gonzato outlines an aesthetic of precariousness, marginality – “a smoothie of brutalism and mall ruins, Baracche is the semantic reduction from a house to a caricature”, in the artist’s words that can be placed in an open path from the simulacra of construction sites of the installation *L’isola delle rose* of 2012 or *Achtung! Frisch Gestrichen* of 2015. A fascination for ruin and transient that is also found in the recent studies on Giambattista Piranesi merged into the *Pastiche* series of ceramics of 2020.

With his new Baracche, Gonzato resumes and expands previous research, coming to deal with the type of chandelier to re-semanticize it in a goliardic and grotesque key.

Finally, I like to think of a vernacular regional connotation of the expression

“fare shack”, which means “partying”, but also “making noise, confusion”.
It is the perfect translation of Gonzato’s work. The chaotic joy of designing.”
Damiano Gullì (curatorial text for Baracche 2020, Camp Design Gallery).

Reception, public and market

Since its first show at Operae 2016, the Baracche project received a vivid welcome from the public and the design press. This brought to realise an entire solo show of Paolo Gonzato’s Baracche collections in January 2017 and a second one in September 2020, both at Camp Design Gallery. Moreover, Baracche has been shown in Paris, during the Paris Design week 2020 and at Collectible Design Fair in Brussels both in 2018 and 2020. Among the two collections several commissioned pieces have been created during these years, thanks to the craft approach of the project where every piece is entirely hand made and unique in shape. The reference markets are the collectible design field and the high-end craft market which is composed by a strong niche of private collectors, architects, and interior design studios, on national and international scale.

Craft and handmade design projects like Baracche concern to the collectible design and luxury market as they can provide work and beneficial specialization in the craft sector. Italy has an important craft network to rely on and able to absorb experimental approaches, as we will see in the next paragraph.

Behind the design work

The process for the creation of such piece involves several professional figures that accompany the artist:

- The gallery project manager, that coordinates the artist and the artisans with timing and calendars.
- The glass supplier (a company can’t directly buy glass from the wholesale chain, there’s the distributor that intermediates for it).
- The glass artisan that assists the artist during the preparation of the sculpture.
- The led and transformer supplier.
- The smith that works industrial reinforcing bars as hanging custom prong that holds the glass sculpture.
- The electrician that instal the led and its transformer.
- The crate supplier for national and international transports.
- The shipping companies for the work destination.

Emanuele Quinz opens is text *Contro l’Oggetto* (2020) with a peculiar observation: in Italy there is not only a great tradition of design, but also a great tradition of design definitions. One of the most triggering ones is



Fig. 04 Installation of Baracche collection at Camp Design Gallery in January 2017. Federico Floriani, courtesy Camp Design Gallery

certainly that of Maldonado explained in his fundamental essay *Disegno Industriale: un riesame* (1976), where design is seen as a social practice, and in Italy this connection is particularly strong.

The network of the creative industries is often composed by small and medium-sized enterprises (SMEs), a fundamental element of the Italian productive system. In the panorama of the today Expanded Design, the connection design-craft, as well as contemporary crafting and making modalities, is promising in the perspective of the development of Creative Industries and economies in Italy and abroad. Specifically, Italy is a good example where the collaboration between designers and craftsmen has a solid heritage with successful production innovations (Branzi, 2015). Design, artisanal skills, and industrial manufacture have a tradition of strong connections that brought important profitable achievements with as well a profound contribution in the construction of the Italian contemporary production identity better known as Made in Italy. In these circumstances, in the 70s and 80s experimental practices redefined the role of design, “marking the passage from design as a tool for the industry to a process of collective and social creativity” (Ferrara and Ban, 2022).

For these reasons, Italy plays internationally a key role thanks to the high-level artisanal tradition and well-known materials that are now branded such as Carrara marble or Murano glass (Micelli, 2011). International artists and designers come all over the world for the production in Italy, and Italian artists and designers benefit from such a rich tradition in manufacturing too. The red thread that runs through the successful Made in Italy is still today the craftsmanship, a trait of Italian culture (Midal, 2019). However, within this flourishing artisanal tradition there is a well-defined threat which is the lack of technological innovation of the artisanal Italian network to keep up with digital tools (Micelli, 2016).

Thanks to new technologies and innovative approaches, craftsmanship developed on different paths of contemporary design. As Margolin stated (1989), with the recognition of design's wider role in society, we started to make a place for design discourse within the larger debate about social and economic theories, notably those that centre on cultural transitions and sustainable productive development. As well, it is fundamental to consider the development of cultural identity through design practices and methods, traditional craftsmanship and productive process, with the valorisation of crafts practices to be functional for the rise of the creative economies and for the social organization of making (Sennet, 2008).

Conclusions

This paper wanted to tell a story as many can be found in the Italian field of the creative industries associated to the craft network.

In this case it has been underlined the intersections from the massively produced and standardised process of a material such as the float glass and the uniqueness of the final works realised by artist Paolo Gonzato. Bringing the material beyond the standard is what a good artist does.

What made Paolo Gonzato's artistic process interesting was his capacity to explore contexts and situations in an original way, suggesting ideas and results to a material that has been rarely explored to express emotions and feelings. This ability to find innovative meanings to the material is the outcome of a continuous exercise of deepen knowledge associated to open mindedness to diversity and new perspectives. Thanks to the material approach, the artist had fundamental confrontations with the craft knowledge of uses and manipulation of the material itself, where its direct contact triggers solutions and possibilities. This free approach has been helped by the flexible craft network that Italy offers: small and medium enterprises that are opened to experience and test the process to realise a final work that normally wouldn't have seen the light.

In this context the project can be analysed as a design experience of social, cultural, and economic mediation with groups of actors that interact within a situated process, as Maffei pointed (2010). Each design experience is unique and therefore not generalizable, it is built thanks to conditions such as shared knowledge, resources, local practices, and experiences of the actors involved. With this heritage the final product of the design experience, unfolds various layers of interaction with abstract subjects such as context, politics, cultural development, and intersectionality (Biggs, 2002). The project becomes a medium of cognitive contexts, conventions, and outcomes in the reality the designers and artists are immersed in¹.

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