

INTERCONNECTIONS BETWEEN FORM AND MATTER IN TWENTIETH-CENTURY MURANO GLASS

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The digitisation and cataloguing of the *Seguso Vetri d'Arte* archive –together with other archives of glass factories preserved in the *Fondazione Giorgio Cini in Venice*– has led to the analysis not only of the documents themselves, but also of the relationships between them. What emerges is the particular design process that gives shape to glass. We refer to the process for which the material is responsible, rather than to the intervention of a designer. The role of the designer –in constant cooperation

with the glassmaker– remains nonetheless influential, but there are particular constraints to take into account.

The research analyses the process that leads to the creation of an artefact through drawings and, consequently, some features of the production of hand-blown glass artefacts in some of the most famous glass factories in Murano during the 20th century, giving rise to considerations that are related both to artistic and scientific theories emerged in the same years.

INTRODUCTION

The activities related to preservation and research discussed in this article have been developed at the *Centro Studi del Vetro*, which is part of the *Institute of Art History* of the *Fondazione Giorgio Cini* in Venice, and they primarily concern drawings and photographs belonging to the *Seguso Vetri d'Arte* archive. Besides the Seguso production, this archive also includes drawings related to companies such as *Salviati*, *Pauly*, *Zecchin-Martinuzzi*, of which the former *Artistica Soffieria e Vetreria Barovier Seguso & Ferro*, which then became *Seguso Vetri d'Arte*, was the executor (Heiremans, 2014, p. 38). Communication and exchange of ideas were, therefore, of vital importance in the parallel development of shapes and techniques, a process that can be retraced especially in drawings. This will be explained, in the following paragraphs, by comparing drawings made at different stages of creation of an artefact.

The subsequent comparison between different sources (drawings, photographs, catalogues of different glass factories) is also useful to observe the similarities and differences between the initial concepts and the actual products, but also to consider the relationship between a shape and the techniques that have been adopted to obtain it. Thus, the evident interconnection of form and matter will eventually lead us to some considerations about biomorphism, an aspect that becomes important in the artistic and scientific field from the second half of the 20th century, but that glass has always incorporated to some extent, especially considering its chemical structure.

MATERIALS AND METHODS

While the process of digitisation and cataloguing has been performed using advanced technology, such as high-resolution cameras, an advanced scanner and an on-

line platform for the analytic description of documents, the study of the different items has been developed without any computer simulations, so as to focus entirely on the value of the documents themselves. In effect, a model wouldn't have the same impact of these drawings and it wouldn't be so useful for conducting historical and archival research on the way to communicate the 'drawing of glass', meaning 'the drawing created by the material itself', that needs to be understood and brought to life by designers and glassmakers.



Fig. 1 (left) Comparison between different documents representing the spherical vase designed by Vittorio Zecchin for the M.V.M. Cappellin in 1926; (centre) box formerly belonging to the Barovier family and containing pictures, letters and a small Murano guide; (right) two 'master drawings' by Flavio Poli for *Seguso Vetri d'Arte*. *Centro Studi del Vetro of the Institute of Art History, Fondazione Giorgio Cini, Venice.*

This research has been carried out dealing in particular with documents from the *Seguso Vetri d'Arte* archive, composed of about 22.000 drawings, 10.600 photographs and 31 catalogues. Most of the drawings and photographs were already chronologically numbered and they show a combination of lamps, chandeliers and blown glass objects that, in some cases, are imitations of the 19th century ones, whereas in others are consistent with contemporary aesthetics and techniques. Other archives from *Centro Studi del Vetro* have been consulted as well, in particular Aureliano Toso, Fulvio Bianconi, Pauly, Salviati, Cappellin, whose history is somehow intertwined with the *Seguso Vetri d'Arte* (Figure 1).

The digitisation and online cataloguing of these documents aim at complying with standards related to the field of 'digital humanities', in which the application of information technology to art-historical disciplines aims at preserving as far as possible the original documents, while spreading the contents worldwide, often using open-access platforms, according to recent studies and guidelines (Warwick, Terras & Nyhan, 2012). The exploration of the mentioned archives, which are exemplary of the glass production in Murano in the 20th century, is a consequence of this activity.

RESULTS

The archival research conducted to analyse the process that leads to the creation of an artefact allows us to retrace the history of Murano glass in the 20th century, in particular considering the period between 1930s and 1970s. First of all, by taking into consideration the drawings from the *Seguso Vetri d'Arte* archive, we can distinguish the three main phases of the design process (Heiremans, 2014, p. 38):

1. The preparatory sketches, drawn by the designer, were the first step to visualise the shape of the artefact;
2. After that, the designer discussed his concept with the glassmaker in order to understand if it could be created according to the properties of the material and the glassblowing techniques. Thus, the model was purified, drawn at 1:1 scale and often coloured. This was called 'master drawing' and it was chronologically numbered and kept in the factory archive;
3. When an artefact had to be produced, a copy of the related 'master drawing' was made: this 'furnace drawing' was a more schematic representation, with all the notes and specifications necessary for the production. It was a reminder for the glassmaker who created the objects by analogy, even though every artisanal piece remained unique.

Most of the existing drawings belong to this category, whereas sketches were often destroyed and 'master draw-

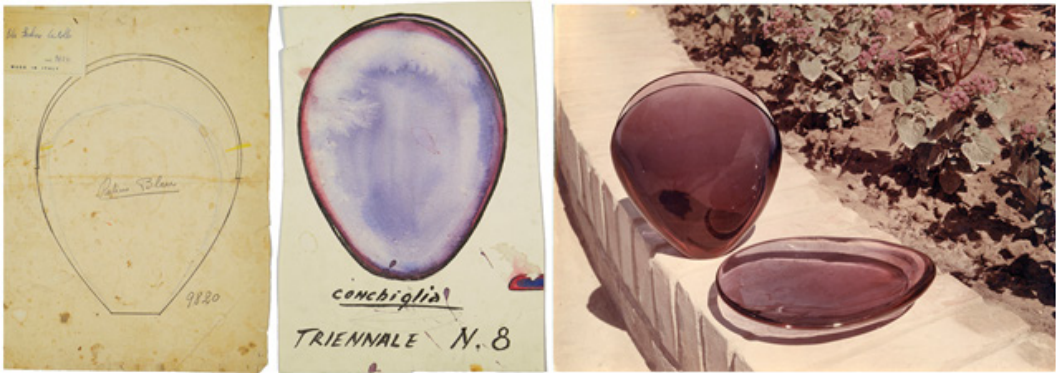


Fig. 2 (left and centre) Two different design phases of the “sommerso” glass shell produced by Seguso Vetri d'Arte and presented in 1954 at La Biennale di Venezia and La Triennale di Milano; (right) Photograph that portrays the same object together with a plate made with a similar technique. Seguso Vetri d'Arte Archive, Centro Studi del Vetro of the Institute of Art History, Fondazione Giorgio Cini, Venice.

ings’ extracted from the archive. Anyway, drawings of different phases have sometimes been preserved (Figure 2).

This process, considered as a whole, shows the importance of maintaining a constant dialogue between designer and glassmaker, in order to create an artefact that respects the properties of the material. Even in other glass factories drawing was essential in the creation of an object and sometimes, as we can see in a document from the Aureliano Toso archive referred to a vase by Dino Martens, there are more versions of the same drawing, with written specifications and also samples of the different types of glass to be used (Figure 3).

The interconnection between form and matter that we have observed in the drawings can also be found by retracing the his-

Fig. 3 (left) Dino Martens, drawing of the Ape amphora for Aureliano Toso, 1952, with glass samples that the master glassmaker needed as a reminder for the techniques to be used, which were difficult to describe in the drawing. Dino Martens/Aureliano Toso Archive, Centro Studi del Vetro of the Institute of Art History of the Fondazione Giorgio Cini in Venice; (right) photo of a vase by Dino Martens similar to the drawing on the left. Retrieved March, 16, 2020 from <http://www.artnet.de/kuenstler/dino-martens/19>.



tory of hand-blown glass in Murano especially from the 1930s to the 1970s. This is analysed in relation to the concept of biomorphism, because biological organisms are the best examples of structures for which form is the result of the interaction of forces located inside the matter.

We consider as a starting point the artistic research of the early 1930s, after the well-known complicity between many Liberty works and Ernst Haeckel's naturalistic tables (Haeckel, 1862). In those years, Napoleone Martinuzzi, the artistic director of Venini, who also participated in events such as *La Biennale di Venezia*, stands out for his very rich, classicising production (Barovier, 2013, p. 19), often connected to the natural world (see for example the series of 'Aquariums', 'Animals' or 'Succulents'). We must mention, in this regard, that animal-like glass sculptures are characteristic of the 20th century Murano glass production (Barovier & Dorigato, 1996, p. 9) and this has given rise to particular techniques to render the volume (Barovier Mentasti et al., 1982, pp. 256-281), for example by adding air bubbles to glass ("pulegoso" technique), by modelling thicker layers of material or also by superimposing different layers of coloured glass ("sommerso" technique).

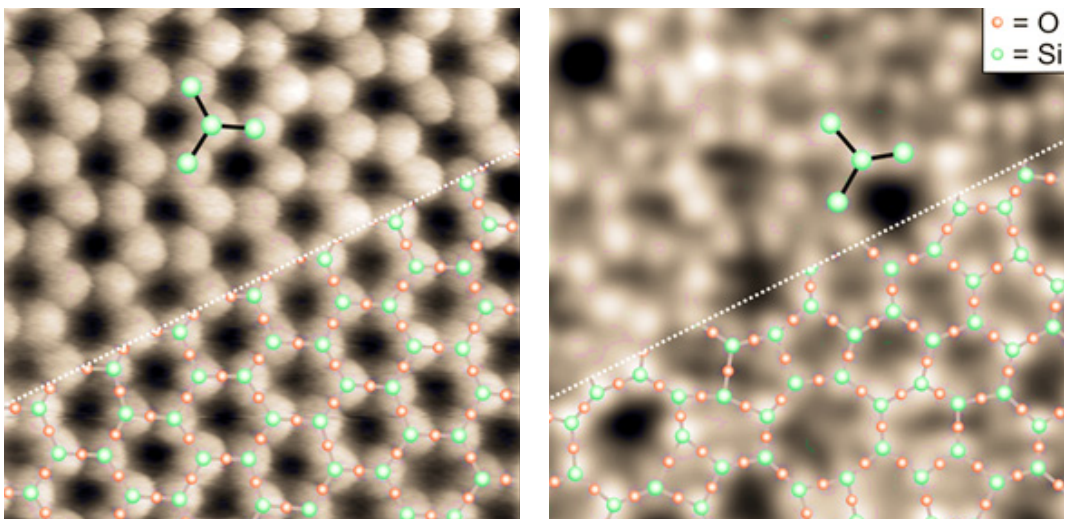
A few years later Tomaso Buzzi, who collaborated with Venini specifically in 1932-33, showed in his elegant works, often innovative from a technical point of view, a strong reference to antiquity (Barovier, 2015, p. 29). Compared to the caricatural iconography of Buzzi, Carlo Scarpa's glass works in the 1940s achieved a much deeper figurality (Barovier, 2012, p. 27), thanks to the exploration of biomorphic patterns, in close harmony with Paul Klee's contemporary theory of form and figuration (Klee, 2009).

It is precisely the 1948 *La Biennale di Venezia*, featuring the products of many different glass factories and also a Paul Klee retrospective in a room set up by Carlo Scarpa, that inaugurates the most daring proposals of the 1950s and 1960s: the spatialist research of Vinicio Vianello for Toso, Ferro, SALIR, the stained or striped vases by Fulvio Bianconi for Venini, the polychrome vases by Dino Martens for Aureliano Toso, all examples of more 'abstract' and informal objects, far from Martinuzzi's figurativity.

DISCUSSION

Even in these last cases, biomorphism does not disappear; on the contrary, it can be considered taken up at a deeper level, of a physical-chemical nature, which recalls the ideas developed in the scientific field by Turing (1952), Waddington (1940), Thom (1988), but also the experiments that emerged in the same years in the artistic field (informalism, action painting), or even Simondon's concept of techno-aesthetics (Simondon, 2012). In this sense, the shape of an object is originated from intrinsic forces located inside the matter. Form and matter become therefore inseparable, but this is a characteristic that glass production has always incorporated to a certain extent and that is visible in the design process that we have already analysed. The origin of this particular interaction between forces can be seen in the chemical structure of glass. This material is mainly composed of silicon oxide and it is obtained by solidification of liquid not accompanied by crystallization, which gives rise to an amorphous solid with different states of stress, impurities, nanoparticles, empty spaces in its structure (Figure 4). On a macroscopic level, this affects its workability, flexibility, transparency, optical effects, such as, first of all, colour. Even small variations in these parameters can lead to very different results, as happens in the theory of complex systems underlying the morphogenetic models for living beings.

Fig. 4 Comparison between the ordered structure of crystal and the disordered—amorphous—structure of glass. Both are composed of silicon oxide, but the difference lies in the quenching rate: unlike crystal, glass is rapidly quenched after melting, thus it does not have enough time to arrange itself in a regular configuration. Author's editing based on the image retrieved March, 28, 2020 from URL <http://romunpress.co.nz/romunnose/>.



CONCLUSIONS

The digitisation and cataloguing of the *Seguso Vetri d'Arte* documents, together with the study of other factory archives, allow us to examine the history of Murano glass making in the 20th century from different points of view, between art and science. It would be curious to trace in a more precise way—as far as possible—the relationships between different glass factories, which are still too chaotic to be analysed. It would be interesting to notice how some shapes have not been 'invented' by a particular designer in a particular glass factory, but were already part of a technical knowledge passed on by glassmakers who knew the properties of the material and how to take advantage of them. The role of the designer is still important if we mention the ability of reinterpreting some of those shapes and making them become icons of a brand (like Venini's *Fazzoletto*).

However, we have to remember that, when glass is modelled, there are some precise techniques and limits, for example shape is generated at specific temperatures, with particular techniques and movements, and it conserves the traces of those movements, even though the shape of the final product cannot be deterministically known before its accomplishment. This is the drawing of glass.

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