

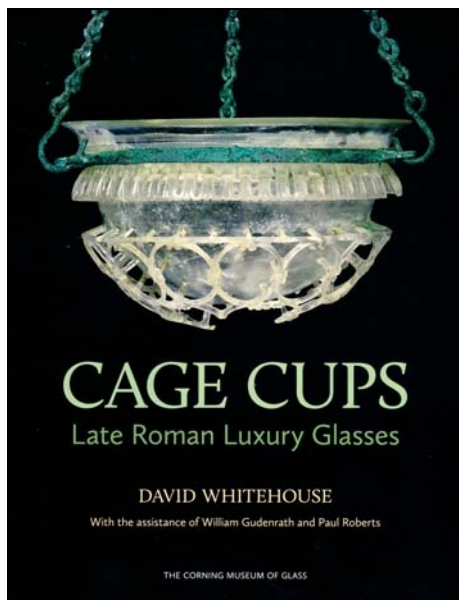
Rosemarie Lierke

Bad Soden, June 2016

On the Manufacture of Cage Cups in Whitehouse, „Cage Cups - Late Roman Luxury Glasses“, Corning, New York 2015

The book on cage cups by the late David Whitehouse [1] provides a **comprehensive survey of the known vessels and fragments** with information on size, shape, color, provenance, detailed history and selected literature. Regrettably **missing are information and illustrations of the manufacturing marks of these vessels**. A proposal to close this gap with a survey of these marks sounds like a good idea. This could help to solve the controversial issue about the manufacture of cage cups. But aren't there enough significant manufacturing marks already known?

Abb. 2016-1/01-01
Whitehouse, Cage Cups - Late Roman Luxury Glasses
The Corning Museum of Glass Corning 2015
www.cmog.org/publication/cage-cups-late-roman-luxury-glasses-0; Einband

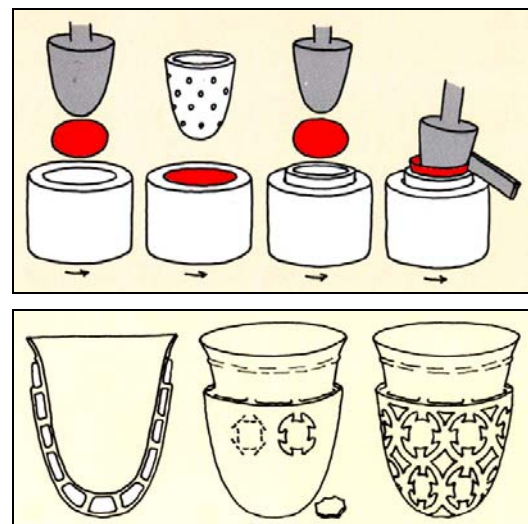


David Whitehouse with the assistance of William Gudenrath & Paul Roberts
Cage Cups - Late Roman Luxury Glasses
Editor Richard W. Price
The Corning Museum of Glass Corning,
New York 14830-2253, Copyright © 2015
255 Seiten, 69 Kat.Nos., 199 Illustrations
ISBN: 978-0-87290-200-8
www.cmog.org/publication/cage-cups-late-roman-luxury-glasses-0

The finishing of the chapter on the manufacture of cage cups in the book of Whitehouse was entrusted to **William Gudenrath**. He **favours the manufacture by cutting a thick-walled blank**, in short “the cutting theory”. Literally according to Gudenrath: “The evidence seems clear. The strongest arguments based on analytical observation of artifacts were made by **Brill** (1964) [2] and **Kappes** (2011) [3] ... All of this evidence points unambiguously to the cold-working of thick-walled blanks as the manufacturing process of ancient cage cups” [4].

- [1] Cage Cups - Late Roman Luxury Glasses, David Whitehouse with the assistance of William Gudenrath and Paul Roberts, The Corning Museum of Glass, 2015, pp. 255. Short: “Whitehouse 2015”
- [2] R. H. Brill, An Observation on the Corinth Diatretum, Journal of Glass Studies 6, 1964, p. 56-58
The same result for another example achieved before H. Hannes, Technische Beiträge zur Archäologie 1, 1959, p. 78-80 (these investigations were initiated by T. E. Haevernick).
- [3] M. Kappes, Les fragments d'un verre diatrète de Grenoble: Eléments technologiques, Journal of Glass Studies 53, 2011, p. 93-101
- [4] Whitehouse 2015, p. 67

Here erred Gudenrath. Brill investigated **1964** the fragment of a cage cup beaker from Corinth with the adhering end of a bridge. He found out that the bridge (or “strut”) was not subsequently applied to the beaker as assumed. Bridge and fragment were instead one piece of glass, and this complies with a manufacture by cutting a thick-walled blank. However, this fragment with a homogeneously adhering bridge could also have been made by the “pressed blank theory”. If that is correct, the “clear evidence” would not at all present an unambiguous proof for the application of the cutting theory. With the same right it could be counted as proof for the pressed blank theory.



By this **pressed blank theory**, at first an outer vessel is pressed which will be cut later to become the net of the cage cup. Then a perforated mold is inserted. Finally the inner cup is pressed with bridges through the perforations to the outer cup. Naturally, the bridges pressed from the inner beaker through the perforations are always homogeneously connected with the inner beaker. **Brill's investigation result is indeed also in perfect agreement with a manufacture according to the pressed blank theory.**

But **H. Hannes** published already **1959** (note 2) his investigation of a cage cup fragment consisting of a bridge with a fragment of the beaker on one side and of the net on the other. While the bridge was homogeneous connected to the beaker as confirmed later by Brills example, **Hannes found a stress area** - obvious the sign of a junction - between bridge and net, and this could not be explained by the cutting theory.

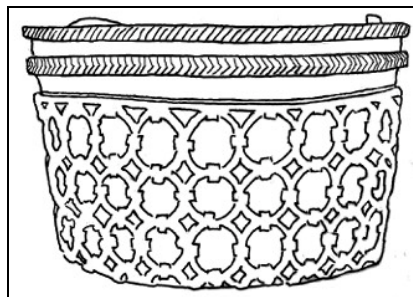
While this way one of Gudenrath's "**strongest arguments**" **already failed**, we will look at the other. Strange fragments of an unfinished cage cup were found in **Grenoble** (note 3, Whitehouse 2015 no. 68). They are mostly **thick-walled**, one of them features part of the net with a **solid direct connection** to the beaker (note 3, fig. 10, 1/2). That means the net is here not connected to the beaker by bridges only as is the case for any other 'ordinary' cage cup. To clear the possible making of the unfinished cup, **M. Kappes** presented (note 3, p. 97) a **misleading "étude comparative des deux hypothèses"** (attempt to compare the two manufacturing theories). She checked the fragments alternately against the cutting or the pressed blank theory. Naturally, a solid connection excludes the use of a perforated mold. **Kappes therefore concluded that the Grenoble cage cup must have been made by cutting from a thick-walled blank, or at least that someone has tried to make it by cutting - until it broke.**

This result was celebrated by some, including Gudenrath, as a **triumph of the cutting over the pressed blank theory**. However, it concerns only the making of the special **Grenoble fragments**, and **M. Kappes vividly denied that it was her intention to disregard the pressed blank theory** [5].



Surprisingly, her result was a confirmation of a statement from **T. E. Haevernick** on the **bucket of San Marco** and the **fragmentary bucket of Termantia** [6]. Cage cups usually are very thin-walled and bell- or bowl-shaped, they are dated to the **3rd / 4th century**. The buckets are thick-walled, have a straight conical corpus, a flat bottom and either at top or bottom a solid connec-

tion between internal beaker and net, like one of the Grenoble fragments. In addition, the buckets are **dated late**, at least to the **5th c. AD** just **like the fragments**. According to T. E. **Haevernick**, the **buckets are different from all other known cage cups**. She assumes they were really **cut from a thick-walled blank**. Buckets and fragments are obviously related. Even the assumed shape of the Grenoble cage cup may be compared to the buckets. That is at least suggested since it was possible to affix the fragments to a steep-walled vessel for display (note 3, fig. 9; Whitehouse 2015 no. 68). We know therefore **3 examples of those mainly bucket-shaped cage cups** with special features, but there are almost **70 others** known. (Figs. after Haevernick, note 3).



Whether these other cage cups have been **cut or not cut from a thick-walled blank** depends on their **manufacturing marks**. Fortunately, I can refer to the common manufacturing marks which I have **investigated and published several times within the last 20 years**. I was criticized already for my **numerous publications**, now again by Gudenrath. But it seems that he has not really noticed what I have published for him "**too often**". For instance my contribution to a **British Museum research** publication [7], where I wrote on the **buckets** and the **Grenoble fragments**, proposed a manufacture of the **Lycurgus cup** by undercutting and engraving a strongly protruding pressed high relief, and listed without comments at least a dozen manufacturing marks of cage cups. All turned out to **comply with a manufacture by cutting a pressed blank**, or to contradict the cutting theory. I restrict myself here to repeat **5 examples** [8].

- [5] www.pressglas-korrespondenz.de/aktuelles/pdf/pk-2012-2w-kappes-diatretglas-grenoble-2011.pdf
- [6] T. E. Haevernick, Zu dem Diatret von Termantia, Beiträge zur Glasforschung Mainz 1981, p. 211-214
- [7] R. Lierke, On the Manufacture of Diatreta and Cage Cups - from the Pharos Beaker to the Lycurgus Cup; in: Chris Entwistle and Liz James eds., New Light on Old Glass - Recent Research on Byzantine Mosaics and Glass, British Museum Research Publication No. 179, 2013, p. 89-102
- [8] More examples with English comments: www.rosemarie-lierke.de/English/Cage_Cups/cage_cups.html#survey
more examples with German comments: www.pressglas-korrespondenz.de/aktuelles/pdf/pk-2016-1w-lierke-whitehouse-cage-cups-diatret-2015.pdf

Five examples of manufacturing marks in favor of the “pressed blank theory”

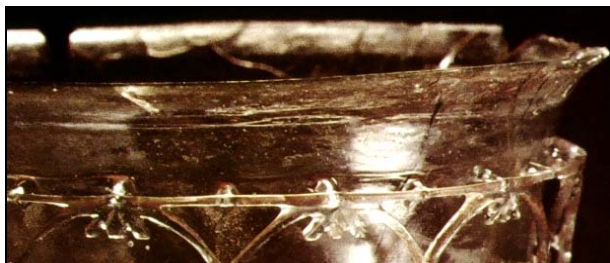
1. Struts. Most striking are cage cups which have among their bridges (or “struts”) some which were not cut with edge and irregular facets while they were slimmed, but which are perfectly or at least partly round [9]. It is absolutely un-realistic to assume that the ancient glass cutters were able to cut round bridges under the net meshes. These round bridges were not cut at all. But a cage cup could impossibly be made by cutting a thick-walled blank with-out to cut all the bridges.

Fig. 1. „The cut net shell is [partly] connected to the vessel body by struts, which are not cut.
Detail of the cage cup from Cologne / Braunsfeld.“
Wikipedia DE “Diatretglas” (Translation from German)
Compare Whitehouse 2015, no. 22
<https://de.wikipedia.org/wiki/Diatretglas> (2016-06)



2. “Cutting Flaw”. Almost all known cage cups show a protruding ridge under the rim. In case of the **Niederemmel cup**, this ridge is in part accidentally doubled (see **Fig. 2**). Such a severe flaw could not be explained by laboriously cutting a thick-walled blank.

Fig.2. Detail Niederemmel Cup. LM Trier.
Compare Whitehouse 2015, no. 36; Detail of: photo Th. Zühmer



3. Cords. Cords in glass follow the flow of the hot glass during its manufacture. In the **Daruvar cage cup**, the cords are almost horizontal parallel in the rim, but below that they are extremely disturbed by the letters of the inscription. This cannot be explained by carving the

cup with its inscription from a solid cold thick-walled blank! (see **Fig. 3**)

Fig. 3. Detail Daruvar Cage Cup, Wien KHM
Compare Whitehouse 2015, no. 27; Detail of: photo Museum



4. Bubbles. Cage cups often contain many bubbles. However, cut open bubbles are missing. This is hard to explain with the cutting theory. Flat round corrosion pits are not cut open bubbles.

Large flat bubbles can be found in the thin cage cup walls (see **Fig. 4 a, b, c**) [10]. These bubbles are a significant feature to clear the manufacturing method of cage cups. All bubbles in a thick-walled blank would be globular and evenly distributed within the glass. There is no force to squeeze a bubble flat against the inner wall of such a blank. To get flat bubbles, the glass has to be thin-walled blown or pressed - not cut.

Fig. 4. a. Cage Cup Munich Antikensammlung
Compare Whitehouse 2015, no. 24
Detail from Museum photo



- [9] Lierke, Antike Glaspöferei, Mainz 1999, Abb. 296 (after Haevernick)
Lierke, The non-blown Glass Vessels, Offenbach 2009, p. 81
Annegret Gerick, Restaurierung und Archäologie 3, 2010, Abb. 14
- [10] Examples are taken from Lierke 2009, note 9, p. 80, 85
another example: Gerick 2010, note 9, Abb. 4, more are mentioned by Gerick.



Fig. 4. b. Cage Cup Cologne RGM; Detail from Museum photo
Compare Whitehouse 2015, no. 22



Fig. 4. c. Lycurgus Cup London BM
Details from Museum photos
Compare Whitehouse 2015, no. 13



5. Scratches. Blowing or mold blowing can be ruled out because the bridges are pressed without traces (ghosting) inside, and because of another cage cup manufacturing mark: the typical horizontal rotary scratches. Those scratches are well known from earlier pre-blown or non-blown vessels. Blown vessels definitely have no scratches on their inside. The scratches in cage cups are often rather faint, or they are obliterated by corrosion, but they exist and are documented in the literature [11]. Just as the rotary traces of early pre-blown or non-blown vessels, the internal rotary traces of cage cups obviously are traces of rotary pressing. They may be less pronounced since improved tools, materials and methods may have been used in late antiquity.

Fig. 5 a The cage cup in Munich, Antikensammlung
Compare Whitehouse 2015, no. 24
insides with faint horizontal-parallel scratches; photos Lierke

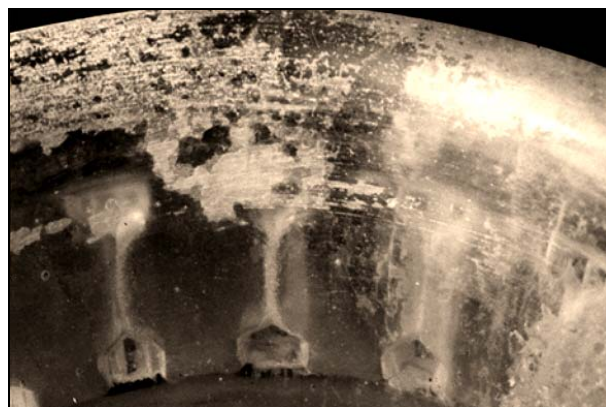
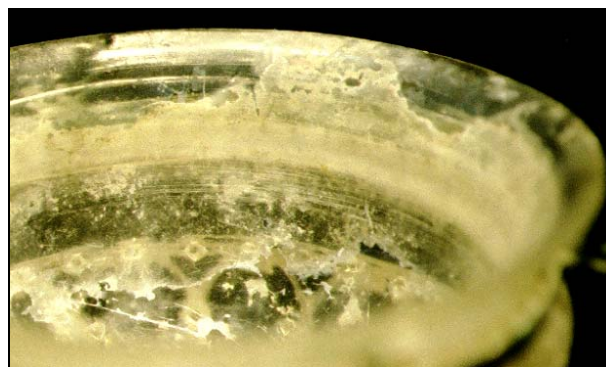


Fig. 5 b The cage cup in the Corning Museum
Compare Whitehouse 2015, no. 10
insides with faint horizontal-parallel scratches; photos Lierke



[11] O. Doppelfeld **precludes grinding marks** but **mentions faint traces of scratches**, Germania 38, 1960, 3/4, 408
Gerick 2010, note 3, mentions “horizontal-parallel traces” p. 123, 128, or traces of scratching p. 131



In view of the **great risk** and the **often extremely thin cage cup walls** it is especially inappropriate to explain the **rotary traces** of cage cups as **grinding marks**. Sometimes this is still erroneously practiced for the earlier examples of those scratches, but it **contradicts in any case 3 independent scientific investigations**, which confirmed for other examples that the typical rotary scratches are not grinding marks [12].

The illustrated cage cup examples here exclude with their manufacturing marks an application of the cutting theory. At most other cage cups, a close-up look would also reveal telling signs: bridges with edgy cut facets beside some uncut round bridges, or a perfectly flat rear-side of the net meshes, perfectly parallel to the inner beaker of the cage cup, with an acute angle and an always sharp edge toward the mesh sides. The bridges were often cut to disappear behind the net crosses, leaving grinding marks all around them. But how was the rear side of the net made so even and parallel to the beaker wall? Albert **Revi discovered no grinding marks** on the even rear side of the net of a cage cup, and the same observed T. E. **Haevernick** at a tiny net fragment of the **Niederemmel Cup** [13]. **Marianne Stern** published the **diatretum fragments from Athens** with a leaf fragment showing no signs of cutting or grinding on its reverse, and I was permitted to show the reverse of the **bearded man in Mainz**, which is partly untouched by any grinding tool [14]. All these examples must have been made by the proposed hot forming method: **pressing a double-shell blank**.

With the generous help of my former Studio Glass friends [15] **I was able to test every key step of the proposed manufacturing method.** Pressing is not popular, it reminds of mass production. However, **plaster molds** are not reusable, and their evaporating water content creates a shiny glass surface. The heat weakens the stability of the plaster molds, therefore the finished piece could easily be taken out of the outer mold, while the perforated mold could be left in the blank as support during the cutting of the net. Cutting a cage cup from a double-shell blank instead of cutting from a thick-walled blank dramatically reduced the problems of the cutting process. **Far less grinding action was required**, the **waste of glass material** was reduced from about 75% (!) to very little grinding dust beside cut-out shards which were fit for recycling.

In an appendix of Whitehouse 2015, **David Hill** describes the cutting of a thick-walled blank as we know it from **Josef Welzel** or other replica makers. However, it can't be explained why neither here nor anywhere else in Whitehouse 2015 the **serious main problem of this procedure in antiquity is described or at least mentioned!** Any glass cutting blank - even today - has to be **perfectly stress free** before a cutting wheel can touch it. To be stress-free, it has to be cooled in a defined cooling cycle to remove the stress from the manufacture, and to avoid new stress from cooling to fast. The cooling time depends mainly on the wall thickness and the size of the vessel, but it does not grow proportional with the wall thickness, the dependence is exponential. That means for instance: a cutting blank of about 2 cm wall thick-

ness instead of the 2 mm wall-thickness of a pressed outer shell needs a temperature-controlled cooling cycle which is not 10-times but 100-times as long [16]. However, a long temperature-controlled cooling cycle is inconceivable in a time when high temperature measurement and regulation was a matter of lucky chance.

The expert **Wilhelm van Eiff**, a famous German glass cutter and engraver of the 20th century, was therefore convinced that it **was not possible in antiquity to cut cage cups from a thick-walled blank**. Naturally, all modern replicas are made from professionally stress-free cooled blanks - even the most admirable of them are therefore no proof for the ancient cutting process.

Another big problem are the necessary vibration-less tools, interchangeable grinding wheels etc. According to David Hill, the ancient tools were assumed to be "the equal of our modern equivalent, the glass-cutting lathe". However, the archaeological evidence is missing. Only rather primitive tools became known so far. Stone vessels are no proof for sophisticated grinding equipment, they could be micro-chipped which is impossible for glass [17]. Not one single fragment of a real stone cage cup is known.

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- [12] M. R. Lindig, Untersuchung der umlaufenden Spuren auf antikem Glas; in Lierke et al. Antike Glastöpferei Mainz 1999, p. 15-16
H. Römich, G. Maas, P. Tur, Untersuchungen der Oberfläche an einem römer-zeitlichen Glasfragment. Fraunhofer Institut für Silikatforschung, Internal Report, 2002, Wertheim-Bronnbach
S. Greiff, Mainz, RGZM-Werkblatt-Nummer 07/150, siehe auch Lierke 2009 (note 9), p. 57
- [13] A. Revi 1967, see Whitehouse 2015, p. 57
Haevernick NH 4613, Wertheim Glasmuseum
see Lierke 2013, fig. 17e
- [14] G. D. Weinberg, M. Stern, Athenian Agora XXXIV, Vessel Glass, 2009, p. 174
Lierke 2013 (note 7), p. 89, fig. 1c
These features are not mentioned or illustrated in Whitehouse 2015, see no. 16 (Athens), and no. 52 (Mainz).
- [15] Mainly Werkstatt Molnar, Hamburg
Bild-Werk und Eisch Factory Frauenau
Werkstatt Ittig, Wertheim.
- [16] I'm grateful to Prof. I. Conrad-Lindig and M. R. Lindig for in-depth information on the requirements of stress-free cooling.
- [17] E.g.: M. Sax, N. D. Meeks, Methods of Engraving Mesopotamian Quartz Cylinder Seals. Archaeology 37/1, 1995, p. 25-36
-

While a double-shell blank certainly also caused cooling problems, the minor wall thickness decidedly reduced the stress. The majority of 3rd/4th century cage cups obviously must have been made by cutting a pressed double-shell blank. But the **buckets** and the fragments from **Grenoble** finally seem to witness that the growing experience in handling the hot glass and the firing and

cooling conditions may have permitted that cutting a thick-walled vessel was tried at a **late stage** of cage cup history. However, there are many questions left. We should discuss these questions openly and not hide or suppress any inconvenient arguments.

Appendix

It is recommended in Whitehouse 2015, p. 60, to read the **review** of my book “**Antike Glastöpferei**” (1999) by **Birgitta Hoffmann** (Journal of Roman Archaeology 17, 2004, p. 621-630) to get “a comprehensive review of [my] work”.

There are numerous reviews of “Antike Glastöpferei”, but only this one gives with more than **2 dozen grave errors a severely distorted impression**. I therefore decided in **2006** to provide on my website www.rosemarie-lierke.de/English/Glass_Pottery/glass_pottery.html ... **Comment 1, Concerning a review of ‘Antike Glastöpferei’ by B. Hoffmann**, at least **10 corrections** for the most severe of Hoffmann’s errors. I like to believe that B. Hoffmann has adapted her views in the meantime. However, because of the recommendation above and since they concern cage cups or cameo glass, I repeat here 3 of them.

Short comment on a review of Lierke, Antike Glastöpferei by Birgitta Hoffmann

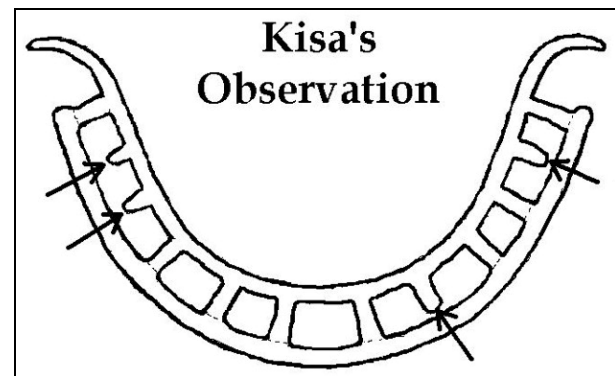
On p. **628** of her review B. H. claims that I missed to regard the publication of **G. Scott** about the **Lycurgus Cup**. But I actually treat this paper - and almost nothing else - on 2 pages (p. 126-127) and I cite one of Scott’s illustrations (fig. 311).

Scott provided **extensive evidence for the survival of cutting marks throughout the cup both inside and outside**, thus - according to B. H. - contradicting my theories. But, I’m definitely aware of the cutting and polishing marks all over the Lycurgus Cup, including the fracture faces of the **broken limbs and branches**. The **polished stumps** clearly indicate that the polishing took place **after this vessel was damaged** - most certainly while it was mounted as chalice in the **19th century**. **Scott’s detailed observations support my own theories substantially**, I only disagree with some of his conclusions.

On p. **625/626** B. H. presents **her own theory** about the making of the **Auldjo Jug** - with lots of courage, but obviously without any practical experience, experimental verification, or at least a close-up investigation of the original. B. H. assumes that her theory will be verified by the existence of a **pontil mark on the inside of the jug**. With the friendly permission of V. Tattoon-Brown, I privately had investigated the Auldjo Jug twice, but, I did not remember the unlikely appearance of a pontil mark on its inside. With the friendly support of Paul Roberts, and in the presence of E. Marianne Stern, this investigation was repeated on 13.03.06. **None of the three persons present could discover a trace of a pontil mark on the inside of the Auldjo Jug.**

B. H. proposes to start with a **mould-blown blue vessel** which is then flashed with white glass. **After** the ‘creation’ of rim and handle (how?), a **pontil is fixed to the inside (!)** of the narrow-necked vessel, and finally, a separately made foot is applied. This procedure is partly unrealistic and it is **not supported by the existing manufacturing marks**. The inside of the Auldjo Jug does **not show the usual negative relief from the assumed mould-blowing** - not even on its thin-walled middle part (only rim and bottom of the jug are thick-walled). Flashing a mould-blown relief with a white glass layer would create bubbles between the layers - unless the work is done in vacuum. The very peculiar handle of the Auldjo Jug would require the blowing of a vessel of about 50 cm height (!). By cutting the decor from the white layer, a continuous white ring would appear between vessel body and applied foot.

On p. **628** B. H. cites **Kisa** absolutely wrong: “**Kisa says that the stubs did not touch the inner cup**” (italics according to B. H.). She concludes from this wrong quotation that Kisa contradicts my experimental results. [www.rosemarie-lierke.de/Diatretglas/Kisa-Text/kisa-text.html]



But, **Kisa said exactly the opposite!** I quote Kisa literally about the cage cup from Hohensülzen (Kisa, Das Glas im Altertum, 1908, p. 621): „Einzelne **an dem Kern anhaftende Stege** sind zu kurz geraten, aber nicht etwa abgebrochen, denn sie haben eine rundliche Spitze, welche offenbar **das Netzwerk gar nicht berührte.**“

[Translation: “**Individual struts which are attached to the core** are to short, how-ever they are not broken off since they have a rounded tip which obviously **did not touch the net at all**”] (Drawing by Lierke).

My **very first cage cup** resp. **double-shell vessel experiment** was far from being a perfect success. I got a small thick-walled double-shell cup (Lierke 1999, fig. 304, or here **fig. j** [www.rosemarie-lierke.de/Glastoepferei/glastoepferei.html#Abb.j], showing this cup sawn through) with some struts not touching the outer shell. They ended instead with a rounded tip under this shell - and **this is exactly what Kisa had observed** (the outer shell is supposed to become the net after cutting). Should I be proud that the facts have to be turned upside down to tell that I’m wrong?



SG: In her German commentary on the book of Whitehouse et al., Cage Cups, CMOG 2016, Lierke has documented many other manufacturing marks - that suggest grinding cage cups from a two shell blank - against grinding them from a thick-walled blank:

[In ihrem deutsch-sprachigen Kommentar zum Buch Whitehouse u.a., Cage Cups, CMOG 2016, hat Lierke viele weitere Herstellungsmarken dokumentiert, Merkmale, die für das Schleifen der Diatretgläser aus einem zwei-schaligen Rohling bzw. gegen das Schleifen aus einem dickwandigen Rohling sprechen:

PK 2016-1, Lierke, David Whitehouse, „Cage Cups - Late Roman Luxury Glasses“, Corning Museum of Glass, Corning, New York 2015, und die Theorien zur Herstellung der Diatretgläser

www.pressglas-korrespondenz.de/aktuelles/pdf/pk-2016-1w-lierke-whitehouse-cage-cups-diatret-2015.pdf

siehe auch:

www.rosemarie-lierke.de/Diatretglas/diatretglas.html

www.academia.edu/20970778/On_the_Manufacture_of_Diatreta_and_Cage_Cups_-_from_the_Pharos_Beaker_to_the_Lycurgus_Cup_in_Chris_Entwistle_and_Liz_James_eds._New_Light_on_Old_Glass_-_Recent_Research_on_Byzantine_Mosaics_and_Glass_-_British_Museum_Research_Publication_No._179_2013

www.academia.edu/21058289/Some_remarks_concerning_rotary_scratches_protruding_ridges_and_lan_Freestones_Review_of_Chris_Entwistle_and_Liz_James_eds._New_Light_on_Old_Glass_-_Recent_Research_on_Byzantine_Mosaics_and_Glass_

Siehe unter anderem auch:

- PK 2000-2** SG, Eine Polemik: Köpfe von Pharaonen und Cäsaren aus Glas: gegossen, geschmolzen, gepresst, gedrückt, überfangen und dann geschnitten, geschliffen, poliert oder was?
- PK 2000-2** SG, Köpfe ägyptischer Pharaonen aus Glas:
immer noch ein Geheimnis der ägyptischen Glasmacher
- PK 2000-2** SG, Literatur-Angaben zu den Artikeln über antikes Glas (Stand 2000)
- PK 2000-3** Lierke, Ein paar Randnotizen zum Ausflug ins Altertum; Nachtrag zu PK 2000-2
- PK 2000-5** SG, Form-geblasenes Glas (Schale Ennion, 1 Jhdt. n.Chr.)
- PK 2001-3** Lierke, Mit 'Versuch und Irrtum' durch die Geschichte der antiken Glastechnologie
- PK 2001-3** SG, Rosetten und Glasperlen aus dem minoischen Kreta
- PK 2001-5** Lierke, Ägyptisches Glas aus Amarna; Nachtrag zu PK 2001-3
- PK 2002-2** SG, Kamen die ägyptischen Glasmacher der Amarna-Zeit aus Mitanni?
- PK 2002-3** Lierke, Edles Pressglas - ein Irrtum wird geklärt
- PK 2002-3** SG, Zur Herstellung der achaemenidischen Schalen aus Glas: „Cast and Cut?“
Literaturangaben zu antikem Glas (Stand 2002)
- PK 2002-3** Seipel, Achaemenidische Schale aus Glas im Glas- und Keramik-Museum Teheran
- PK 2002-3** Stern, Achaemenidische Glasschale im Inventar des Parthenon in Athen
- PK 2002-3** Triantafyllidis, Funde zur Herstellung von Glas im klassischen & hellenistischen Rhodos
- PK 2002-3** Makharadze & Saginashvili, Eine achaemenidische Glasschale aus Sairkhe, Georgien
- PK 2002-3** Stiegemann u.a., Glasfunde (formgeblasen und gepresst) aus byzantinischem Herrschaftsbereich (Auszug aus Wamser 1998 und Stiegemann 2001) (Glasgewichte)
- PK 2003-1** SG, Reflections on Ancient Glass from the Borowski Collection -
Bible Lands Museum Jerusalem [Überlegungen zu antikem Glas ...]
- PK 2003-1** SG, Eine in einer Hohlform geprägte Schale aus Quarzkeramik aus dem Iran (Chorasan)
- PK 2003-1** SG, Türkis und Azur. Quarzkeramik im Orient und Okzident (Chorasan)
Ausstellungskatalog Kassel 1999 von Ralf Busz und Peter Gercke (Hrsg.)
- PK 2003-2** Carboni, Verwendung von Glas als Dekoration in der Architektur der islamischen Welt
- PK 2003-4** SG, Beispiele für geschliffenes islamisches Glas 9. - 10. Jhdt. - Auszug aus Carboni,
Glass from Islamic Lands, Al-Sabah Collection Kuwait National Museum, London 2001
- PK 2003-4** Carboni, Drei Medaillons mit eingepressten Motiven und Inschriften - Islamisches Glas
- PK 2003-4** Whitehouse, Zwei Formen aus Metall für form-geblasenes Islamisches Glas
[Molds for Mold Blown Glass]
- PK 2004-1** Lierke, Über Diatrete und andere geschliffene antike Gläser -
Spurensuche und Folgerungen
- PK 2004-3** SG, Kongress der Association Internationale pour l'Histoire du Verre (AIHV) 2003



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