GLASSWARE STYLES AND PRESENTING DRAUGHT BEER

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TOPICS...

• Brief History
• Art vs. Science
• Structural Attributes
• Hygiene, Storage, and Testing
• Pouring and Profitability
GLASSWARE HISTORY

• **1500 BC** – The first glass vessels come from Egypt and Mesopotamia – likely used for rituals and celebrations

• **50 BC** – Glassblowing is invented in Egypt
GLASSWARE HISTORY

• **1500’s** – We start to see transparent blown glass vessels that begin to resemble what we see today.

• **Late 1600s** – Lead oxide is added to glass resulting in a heavier glass. This allows for ease of cutting and additional glass styles.

  c. 17th century Berkemeyer
GLASSWARE HISTORY

• **1600s to 1800s** – Roemers and Berkemeyers popular in Europe for beer and wine.
  - Wide bowl
  - Hollow stems
  - Green or yellow due to the iron impurities

C. 17th – 19th century Roemers
GLASSWARE HISTORY

• **1825** – Pressed-glass machine is invented in the U.S. making glassware more prominent and less expensive.

• **Mid 1800s** – Breweries started using glassware as a point of differentiation in the market place.

Pre-prohibition glasses from Anheuser-Busch, Foss Schneider Brewing, and Lion Brewery
GLASSWARE HISTORY

- **Mid 1900s** – Use of obscure glass styles wane in the U.S. as beer becomes homogenized by national breweries.

- **Today**…

  [Image of a vintage Coors glass from the 1970s and a modern shaker pint glass]
SPECIALITY CRAFT GLASSWARE
ART VS. SCIENCE
A number of studies have shown that the shape of the glass influences:

- How rapidly consumers drink
- Post-consumption satisfaction
- Likelihood to re-purchase
- And how consumers feel about the entire meal experience

But is it
External Perception or
Physico-Chemical?
Studies have shown that people are willing to pay “significantly more” for beverages if the glassware is consistent with the style.

*Does the Shape of the Drinking Receptacle Influence Taste/Flavour Perception?*

*Influence of the Glassware on the Perception of Alcoholic Drinks, Food Quality Preference Journal*
More specifically, matching the beer to the correct branded glassware can *increase sales by as much as a third*. “Forward-thinking drink brands would be well advised to take heed of the latest research in order to develop signature glassware for their products. In the best-case scenario, this glassware should also deliver some kind of functional benefit in terms of the consumer’s product experience.”

*Beer Matters: How Miller Brands Partners with Licensees to Drive Sales.*

*Does the Shape of the Drinking Receptacle Influence Taste/Flavour Perception?*
The appearance and texture of a glass can even have an impact on the perception of a beverage.

Two vessels were 3D printed: one with an angular texture and one with a rounded texture.

Bitterness ratings were 27% higher for the angular pattern.

Sweetness ratings were 18% higher for the rounded pattern.

There was no physico-chemical influence
Infrared imaging can be used to show CO$_2$ concentrations.

In this example, it shows that CO$_2$ is more concentrated above the narrow opening than above the wide opening.
A gas chromatograph can also be used to sample the headspace of different glass shapes to analyze CO$_2$ and ethanol.

CO$_2$ acts on both gustatory receptors (taste) and trigeminal receptors (feel)

- Feel: CO$_2$ is an irritant (feel)
- Taste: CO$_2$ enhances the sour and suppresses sweetness
Using a specifically designed camera, Japanese researchers were able to map “aroma” in varied glass shapes and temperatures. Their research demonstrated that both glass shape and temperature have a large impact on aroma...

Alcohol will compete with and suppress desired aroma compounds. A more narrow opening in relation to the belly, will concentrate desired aromas to the center of the glass.

*A Sniffer-Camera For Imaging of Ethanol Vaporization From Wine: The effect of wine glass shape, Analyst Journal*
Sensory Evaluation methods will also have a large impact on the perception.
ART VS. SCIENCE CONSIDERATIONS

- Different beverages will be impacted by glassware in different ways.
- For example, concentrating CO$_2$ and aroma may be great for beer and wine, but for champagne CO$_2$ can be a trigeminal irritant.

*Does the Shape of the Drinking Receptacle Influence Taste/Flavour Perception? A Review, Beverages
While we can’t say all glasses have been scientifically designed to perfectly show off the sensory properties of specific beers, we do know that the geometry of the glass has an impact on consumers’ buying habits…
STRUCTURAL ATTRIBUTES
GLASS STRUCTURE

• Stemmed or homogenous foot
• Bowl or belly (contains, collects, captures)
• Inverted or everted mouth (flavor release)
• Thickness (heat transfer)
• Effect on foam stability
• Effect on nose & tongue delivery
• Spread/distribute

What characteristics are lifted or suppressed?
FUNCTION AND DURABILITY

**Dimple Mugs:** Thick glass for durability and "clinking" glasses - Prost!

**German Stein:** Lid to seal in aromas and carbonation

**Nonick Pint:** Bump keeps rim from chipping and allows a more stable hand hold
WIDE BOWL

Captures and concentrates aromas
INVERTED NARROW OPENING

Concentrates foam and directs aromas to the nose
EVERTED OPENING

Outward flare supports the head. Fits the mouth to evenly disperse the beer.
TAPERED ANGLE

Serves as a wedge to support long lasting head

Releases delicate hop aromas
LIP AND MOUTH

**Laser Cut Rim** for a appealing mouthfeel and a clean delivery

**Beaded Lip** for durability and creates one last nucleation point as beer enters the mouth
RELEASING AROMAS AND REPLENISHING THE HEAD

Laser Etching maintains constant stream of CO2 to maintain head and deliver aroma.

Wave Pattern aerates the beer releasing aroma compounds.

When glass is half empty, beer will tumble to reactivate the head releasing aromatics.
HEAT TRANSFER

Thin wall maintains proper beer temperature longer.

Stems and narrow openings prevent unintentional heat transfer from hand to beer.
HYGIENE, STORAGE, & TESTING
CLEANING AND SANITIZING

Dedicated glasses & cleaning equipment

- **Soil & marks** – previous contents, lip cosmetics, fingerprints
- **Residue** – fat, grease, oil/soap
- **Germs** – no lingering chemical smell
CLEANING AND SANITIZING

THREE SINK SYSTEM:
• **Clean**: Brushes and warm water
• **Rinse**: Cold water
• **Sanitize**: Warm sanitizer
• Ensure proper ratio of chemical to water – too much chemical can be worse than not enough
CLEANING AND SANITIZING

CLEAN:

- Warm water
- Clean (non-petroleum based detergent)
- Ensure brush height is appropriate for the glass style
- Vigorous motion, periodically turning glass 45°
- Ensure complete scrubbing coverage including the bottom of the glass
RINSE:
- Cold water
- Heel-to-toe action to get a complete rinse and no air-bubbles
CLEANING AND SANITIZING

SANITIZE:
- Cold water with trichloromelamine
- NOT hypochlorite – do not use bleach or quats
- Improper sanitizers will leave residual aromas, are deadly on head retention, will kill desired aromas
- Heel-to-toe action to get a complete rinse and no air-bubbles
STORING

- Glasses need time to dry
- Glasses need time to cool down
- Space needs to be free of odors, smoke, dust
- Maximize air circulation
- No smooth surfaces
STORING

- Chilled glasses 36° F
- Never frozen/no freezers
- Ice crystals carry unwanted flavors
- Nucleation
- Dry glasses completely
- Chill in dedicated refrigeraton
Sheeting Test  
Salt Test  
Lacing Test
GLASS HYGIENE TESTING

Bubble patches are bad. Residue causes foam collapse
POURING AND PROFITABILITY
The CO$_2$ content is part of a beer’s recipe.
So what does carbonation contribute to a beer?
POST SERVING

Carbonation dynamics: The importance of CO2

• Carbonation Dynamics
• Head of foam-volatile release & flavor delivery
• Taste-releases carbonic acid
• Mouthfeel-tingly, prickly, spritzy, fizzy, effervescent
• Bubbles-scrubbing & palate-cleansing
PROPER POURING TECHNIQUE

1. Hold glass at 45º angle
2. Control faucet at base
3. Gradually tilt glass upright once beer has reached about the halfway point in the glass.
4. Pour beer straight into the glass, working the glass to form a one inch collar of foam ("head"). For Presentation as well as Carbonation Release.
5. Close faucet quickly to avoid overflow.
PROPER POURING TECHNIQUE

- Ownership of the glass: Pourer: Bottom/Exterior, Customer: Top/Interior
- In no instance should a faucet touch the inside of the glass.
- Nozzles can potentially transfer germs from one glass to another.
- In no instance should the faucet become immersed in the consumer’s beer.
- Nozzles dipped in beer become a breeding ground for microorganisms.

(pages 56-57)
Which is more cost effective for the Retailer?

- 18 oz of Flat and Off-Flavor Beer
- 16 oz of Carbonated and Full Flavor Beer
DOES A 2 oz. OVERPOUR REALLY COST ME THAT MUCH?

- 124 Pints/Keg
- 124 x $6 = $744
- $744 - $160 keg = $584
- $584 Net Profit

- 142 Pints/Keg
- 142 x $6 = $852
- $852 - $160 keg = $692
- $692 Net Profit

- $692 - $584 = $108 / keg
- At a keg per week = $5,616 / year
- For a 10 line system:

Additional Annual Profit:

$56,160 / year
POURING TECHNIQUE & GAS BREAKOUT
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Q & A

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