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Discord Discussions

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On The Definition of a Fully Half Emptied Glass or Something

Language is one of the major methods of human communication along with hand signals, mimics, art and other anthropic phenomena. Local human communities have developed their own language systems in terms of sounds and grammar in order to better express their own culture and identity, as well as express solid and abstract concepts. As of today, there are around 7000 of those active languages around the globe (Lewis, 2016). This diversity of languages even creates differences in comprehension of universal concepts between different areas, even within the same language. This paper focuses heavily on full and empty glasses and how English language works to express a fully half emptied glass or something. To achieve this, the concept will be broken apart and examined to have a better understanding of the concept as a whole.

DEFINING “GLASS”

Conventionally, a glass is an amorphous solid that has been quenched from the liquid state (Micoulaut, 2011). Its transparent nature allows the usage of see-through walls, called windows. A glass is an important material in food industry too, as it was proven to be healthier in preserving food (Flanagan, 2015). On the contrary, a glass can also refer to a glass object which is hollow inside and has at least one hole in any direction, and which is designed as a container for liquids. Modern-day usage of this word is quite flexible; so for this paper, a glass refers to any mobile and (semi)transparent object that is designed to hold liquids inside until it is consumed by a human using no external tools, except for a pipette.

Examples of glass	Examples of not-glass	Why not?
A transparent, plastic water bottle	*A Coca Cola can*	*Not transparent*
A glass cup	*A porcelain cup*	*Not transparent*
A bowl if you are a barbarian and drink directly from it	*A bowl if you are civilized enough to use a fork or spoon*	*Requires external tools to consume the liquid*
An aquarium if you drink the water from it because both you and the designer mistook it as a huge cup and not an aquarium	*An aquarium staying in your living room for its intended usage*	*Not designed for human consumption*
A soda bottle that is made of that green, thick glass	*A lawnmower. I mean, why would it be anyways What were you thinking? You fool! You absolute moron!*	*Listen; if you demand an explanation for this, we need to talk.*
A tea cup made of an amorphous, *transparent solid that has been quenched from the liquid state*	*A carboy*	*Not intended to drink from directly, but rather to pour the liquid on another container*

Figure 1: What is a glass and what is not

As seen in Figure 1, a glass has a specific description which is definitive. Any violation in the major rules of being a glass results in the object being identified as not-glass. It is also notable that an object can be both glass and not-glass, depending of the intended usage. To avoid confusions in this paper, a glass will refer to "*A water cup made of an* amorphous, *transparent solid that has been quenched from the liquid state, and overall designed for a human to consume a liquid from inside*" for the rest of this very serious essay.

DEFINING "FULL"

Being full is a state in which a container has no physical volume left for an increase in the amount of matter inside. To link with the definition of glass, a full glass implies to "*A water cup made of an* amorphous, *transparent solid that has been quenched from the liquid state, and overall designed for a human to consume a liquid from inside, which is filled in to the*

point where increasing the volume of the drink inside is impossible." Again working from this definition, even though a glass in a room is filled with air, the drink (liquid) volume can still be increased. Therefore, a glass with no drinks inside is not full, while a 500mL glass containing 500mL of water is full.

Full can be used for processes that can be measured. An athlete planning on running 1000 meters can say they are "fully" done with this process when they reach at the 1000^{th} meter milestone.

DEFINING "HALF"

A half of a measurement is its magnitude divided by two, in the same direction if applicable. For instance, half of 400 meters is 200 meters. For some real-life measurements, this description is highly flexible. As in, half of six kilograms of apple is three kilograms of apple; however six apples halved is not necessarily leave two equal weight measurements on each side. One half can have 356 grams and the other can have 387 grams, despite having an equal number of apples on both sides. In such cases, the measurement method has to be specified in getting the half of six apples in order to avoid confusion.

Since this essay is interested in liquids, the problem above is not applicable. In English language a liquid is not an object a human can count visually, so another measurement like weight or volume must be used. Assuming that the density of the liquid will be equal on both sides, using weight for the halvation process will give the exact same amount of water on both sides as using volume for the same process. Hence, the half of a liquid is the same liquid of same physical properties (including density and excluding position), but of the volume and weight divided of the original by two. For example, half of the water in a full 500mL glass will result in a glass containing 250mL water.

It is also important to note that the word “half” can be used for processes. If a person starts to pour water inside a glass containing no water, but has a capacity of 500mL water, and if the person stops at exactly 250mL, then the filling process is done half. Thus, the glass is half filled.

DEFINING “EMPTY”

Empty (as an adjective) can be defined as the absolute inverse of the concept of being full. If a container of inner volume X m^3 can still take X m^3 of intended matter, then the container is completely empty. Considering the previous concepts of glass and full, a glass filled completely with air must be regarded as empty too, as there is no visible water inside. An important distinguishing factor is the ratio of volume of intended water to inner volume (capacity; the maximum volume of the intended liquid that can fit inside the container) of the container. If a 500mL container contains 300mL water, it is 60% full and 40% empty. Hence, a half full glass refers to the same object as a half empty glass.

The distinction becomes clearer when the initial state of the glass is known. If the glass starts empty and gets filled halfway through, then the glass must be referred as half full. If the glass starts full and gets halfway full, then the glass must be referred as half empty.

Empty (as a verb) can be defined as the absolute inverse of fill. Contrary to filling, an emptying process decreases the amount of intended matter in a fixed area or volume, e.g. a container.

DEFINING “SOMETHING”

Something is a set of objects, ideas, abstract concepts, or anything that can be named and/or expressed in any way. Any thought-provoking concept (e.g., words) fit into this category. Therefore, every instance of any concept is something.

FULLY HALF EMPTIED GLASS

In order to use those terms together, one has to group them step by step. Since the glass could be emptied in the process, a safe assumption is to tell that the glass was not empty in the first place. The second word “half” can be used to support this claim. As mentioned before, “half” can also be used for processes. If a glass is then “half emptied” then the glass became 50% empty from its initial state. Lastly, as the process is “fully” done, then the effect of the process must have been maximized. Starting with a full glass is the only explanation. If the glass was neither full not empty initially, half-emptying the glass would not be done “fully” when the entire glass is concerned.

	Glass capacity (mL)	*Initial amount of water (mL)*	*Final amount of water (mL)*	*Is it fully half emptying?*
Glass A	*100*	*100*	*50*	*Yes*
Glass B	*100*	*80*	*40*	*No*
Glass C	*100*	*100*	*60*	*No*
Glass D	*100*	*100*	*40*	-

Figure 2: Examples of fully half emptying

Figure 2 gives four examples that can be used as an example to the fully half emptying process. This list focuses on why the glass is or is not fully half emptied:

- Glass A is fully half emptied as it initiates full, and the half emptying process is complete. Plus, that process is “fully” done as the initial glass has the maximum amount of water. (No greater emptying is possible for this instance)
- Glass B is not fully half emptied. Even though it has been successfully half emptied, it is “partially” half emptied. As in, there is a half-emptying process which has a greater impact. (See Glass A)
- Glass C is not fully half emptied. The half-emptying process must have resulted in 50mL water, whereas the glass has 60mL water in its final state.

- Glass D is open for debate. It can be seen that the emptying process gets the glass to at least half empty. The glass is partially emptied, but neither half emptied nor fully half emptied.

The explanation above (also see Figure 2) shows a clear understanding of the subject of fully half emptying a glass. The rest of this paper will use propositional logic in order to determine what "fully half emptied glass or something" evaluates to.

FULLY HALF EMPTIED GLASS OR SOMETHING

We have previously discussed what can be considered as a fully half emptied glass and what cannot. We have also defined "something" as a set of every instance. With the help of truth tables, this concept can be evaluated.

g: The given instance is [g]lass

f: The given instance is [f]ully half emptied

s: The given instance is [s]omething

As we search for a fully half emptied glass, the instance has to conform both f and g. Thus we need a logical conjunction:

I_1: Is this instance a fully half emptied glass

I_1: $f \wedge g$

As two concepts are linked to each other with a language constructor *or*, we will need a logical inclusive disjunction:

I_2: Is this instance a fully half emptied glass or something

I_2: $(f \wedge g) \vee s$

Lastly, we will use a truth table to inspect all possible outcomes:

f	g	f ∧ g	s	(f ∧ g) ∨ s
1	1	1	1	1
1	1	1	0	1
1	0	0	1	1
1	0	0	0	0
0	1	0	1	1
0	1	0	0	1
0	0	0	1	1
0	0	0	0	0

Figure 3: Truth table for fully half emptied glass or something

Data on Figure 3 suggests that "I_2: Is this instance a fully half emptied glass or something" is indefinite as the outcome can be True or False. However, by definition, s: 0 cannot exists. Every instance must be something.

f	g	f ∧ g	s	(f ∧ g) ∨ s
1	1	1	1	1
1	0	0	1	1
0	1	0	1	1
0	0	0	1	1

Figure 4: Truth table for fully half emptied glass or something, with fixed s

Data on Figure 4 shows that regardless of the value of f and g, "I_2: Is this instance a fully half emptied glass or something" evaluates to True. Hence, it is proven that any given instance I will be classified as a True.

CONCLUSION

Because every instance of a glass is something, the propositional logic element "disjunction" forces the statement to return True in any case. In short, I have wasted an entire day typing this and my life choices need to be reevaluated.

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