Re: A Bare Analogy

Source: http://sci.tech−archive.net/Archive/sci.physics/2005−08/msg01122.html

- *From*: The Ghost In The Machine <ewill@xxxxxxxxxxxxxxxxxxxxxxx>
- *Date*: Sun, 07 Aug 2005 04:00:04 GMT

In sci.physics, Douglas Eagleson
<eaglesondouglas@xxxxxxxxx>
wrote
on 6 Aug 2005 14:02:09 −0700
<1123358999.360121.83590@xxxxxxxxxxxxxxxxxxxxxxxxxxxx>:
> A small analogy of odd kind. I have
> a system to describe and then code.
>
> As computer code.
>
> So here is the analogy to help me
> code it.
>

Computers don't do analogies very well.

>
>
> A ship is to move across the Atlantic
> ocean. And to let the water displace
> while the ship moves is to allow it
> to work.
>
> And to displace and exactly replace
> the exact water appears the analogy.

Eh?

Here's a thought for you. Stick your foot into a full
bucket of water. (Do this in a bathtub for obvious
reasons.) Withdraw your foot. What happens to the
water level? What happens to some of the water?

Now stick your foot in again. What happens to the water
level?

In short, if one has a ship on, say, a ramp, and the ship
slides into the water, the water in the oceans will rise
a teensy tiny amount to compensate.

>
> A ship is therefor the element to
> cause the water to move from the front
> to the rear of the ship.

Now you're talking about propulsion. This is fine, but remember that there are other methods by which one can get the ship to move −− hovercraft in particular move *air* around. Sailing vessels are quite complicated, especially if the wind is not at the back of the craft. (The keel is key to the ability of the ship to sail into the wind, or even into any other direction other than the way the wind is blowing.)

>
> A floating barrel is set for every ten ship
> lengths and the numbers on the
> barrel alter while the ship moves.
>
> A ten changes to the number of the
> barrel, x number back in line.
>
> And the number of the water is as
> follows.
> A single ship's worth is labeled
> one to the distance across the Atlantic.
>
> And the ship loads the water and moves it
> to the ten spot and dumps it. Making
> a line of water ten long displace back
> to fill the hole from filling.
> **a transient hole is required****

Liquids don't do transient holes well, either.
What does the water do after removal of your foot?

It would be interesting to contemplate a tubular affair with a movable partition. (We'll assume a 10 m^3 affair for simplicity, with a 1 m^3 affair that can be filled with water from the sea, shaped a bit like a piston.)

```
stern bow
−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−
| |.....||+−−−−−+
|*===wormgear=drive=======================|.....|=|motor|
| |.....||+−−−−−+
−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−−
```

Figure 1. Boat or submarine with movable, waterfilled chamber

Initially, the frontward partition is empty. It is then filled from the sea with 1 m^3 of water. (This is about 1 metric tonne of sea water.) We assume for simplicity that the draught of the ship is 100%, and neglect fluid friction. This means, of course, that the total weight of ship + water is about 10 metric tonnes −− were it weighed out of the water.

The motor has sufficient power to move the piston, allowing it to travel 9 meters to the other end of the boat.

The water is then pumped into the ocean (it has to be pumped, for hopefully obvious reasons), and the motor moves the piston back to the front of the boat, allowing for refilling.

Two problems immediately, erm, surface.

[1] The ship, with just a touch extra weight, becomes a submarine. This will help in the analysis for various reasons. However, with the movable chamber empty the ship will want to surface; with the movable piston being filled, the ship will want to sink. The bouyancy of the ship is constant at all times (neglecting effects such as pressure on the hull) but the weight varies depending on the amount of water in the piston.

[2] The bouyancy will manifest as a uniform force vector on all of the points on the ship. (At least, I think it does.) Since the bouyancy upforce is evenly distributed, but the weight is not, the ship will tilt upward or downward depending on the piston position. Under idealized conditions the ship will rotate 180 degrees.

A better model might simply be to ask the question: under what conditions will the craft assume minimum energy, given a position of the piston?

Bear in mind that water has potential energy (E = mgh). The water in the partition will want to go as low as it can, within the constraints of the problem. Air in the craft displaces water outside, which means that the outside water will sink, causing the air to have effective negative force, which means the air will rise, given the constraints of the problem.

So the craft, upon launch (assuming 100% draft/neutral bouyancy once the cylinder is filled), will immediately sink bow first. Assuming sufficient depth the motor now effectively functions as an elevator lift. If the bouyancy is not sufficient the

ship will touch its nose to the ground. (We assume sufficient
channel depth for this problem.)

The piston/lift now starts to rise. The motor will
require more power to operate under these conditions.
At a certain point −− when the piston passes the halfway
mark, or somewhere near −− the affair becomes unstable,
and the ship will tip over, much like a disturbed domino.
The nose will now lift and point upward, if sufficient time
is given, and the motor will reclaim part of the energy
lost, if the system is designed in a certain fashion.
(It won't regain all of it.)

If the ship is equipped with small hydrojets at its stern
it may be able to control which direction it tips over, but
as soon as the water is pumped out (displaced with air) the
ship will surface anyway, as it has that much less weight
(about 9,800 Newtons) with the same amount of bouyancy.

The best way for this rather silly craft to travel is with
hydrojets and diving vanes. The ship will sink but it can
sink non−vertically; it can also rise non−vertically,
with careful piloting. With such a travel consideration there's
no real need for the wormgear, and one gets rather standard
ballast tanks on a conventional submarine, albeit without a
screw drive.

If one does *not* assume 100% draught then one gets the
rather interesting spectacle of a ship sticking its stern
out of the water, once the piston is filled. As the piston
moves back, the affair becomes unstable again (somewhere
before the halfway point), and the ship will preferentially
rotate. The piston's continued movement will of course
now stick the bow out of the water. The pumping out of
the water from the stern will probably cause the ship to
rotate again, and if one pumps out too fast, the ship
may crash into the water.

The submarine mode of transport for this hypothetical craft
might work; the surface mode doesn't look too practical.

Might be interesting to simulate, though. The main problem I
would have is modeling the water friction properly.

>
>
>
>
>
> note: The code is a real oddity so
> the analogy make sense hardly. I write it

> publiclly to assist in accuracy.
>

--
#191, ewill3@xxxxxxxxxxxxx
It's still legal to go .sigless.
.

- ***References***:
    - ***A Bare Analogy***
        - *From:* Douglas Eagleson

- Prev by Date: ***Re: TJ atoms push themselves? UFO flys away***
- Next by Date: ***Re: A Fine Null Theory Example***
- Previous by thread: ***Re: A Bare Analogy***
- Next by thread: ***A Fine Null Theory Example***
- Index(es):
    - ***Date***
    - ***Thread***