



THE VANISHING BOWL OF WATER

EFFECT:

A bowl full of water you are carrying vanishes in mid air.

DESCRIPTION:

A bowl sits on a tray carried by your assistant. You pour a glass of water into the bowl, cover the bowl with a cloth, and lift it from the tray. You step forward carefully with the cloth covered bowl, so as not to spill a drop. Suddenly you toss the cloth into the air, and the bowl and the water disappear right in front of your audience's eyes.

HOW IT WORKS:

This is a classic of stage magic, updated to use the latest in polymer chemistry. There are two elements to the trick: some secret engineering to make the bowl vanish, and some clever chemistry to take care of the water.

Let's explore the engineering first. The bowl is actually permanently attached to the tray; this can be done simply using a drill and a bolt, or even using some high strength glue. What this means is that the bowl will remain attached to the tray even if the tray is turned on its side. The cloth you use to cover the bowl also has some secret engineering built in. A loop of stiff wire, the same diameter as the bowl, is attached to the underside of the cloth. This means that if you hold this wire loop it will look as if the bowl is there, under the cloth. This is what magicians call a 'form' – a simple wire shape to make people believe a whole object is there, when in fact it's not.

What these two bits of engineering allow you to do is show the bowl, cover it with the cloth (ensuring the form is

aligned with the actual rim of the bowl as you 'arrange' the cloth) and pretend to lift the bowl off the tray (actually just lifting the form in the cloth), while your assistant takes away the now supposedly empty tray. The way for the assistant to do this is by switching from the original two-handed hold on the tray to a single-handed hold, casually carrying the tray and bowl at their side, with the back of the tray to the audience so they don't see the bowl. We've now taken care of the bowl, but won't the water spill out when the tray is flipped?

Chemistry gets rid of the water problem. Secured in the bottom of the bowl is a disposable baby nappy (or diaper for any American readers). Modern nappies contain an amazing chemical: a harmless

superabsorbent polymer called sodium polyacrylate, $[-CH_2-CH(COONa)-]_n$, also known as 'wetlock' or 'waterlock'. A polymer is a long chain of repeating molecules (monomers) and in the case of sodium polyacrylate, because of the sodium, each of these molecules just loves to bond with water. The crystals of sodium polyacrylate can absorb around 200 times their mass in water, turning the crystals into a gel. Sodium polyacrylate was used by NASA in developing suitably absorbent long-term underwear for astronauts in space, so it can easily soak up and hold all the water you pour in from your glass, even if the bowl is upside down.





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This effect is a lovely way of showing how 'magic' comes from combining different science and engineering areas. Many of the most important research projects being carried out today also relies on this sort of interdisciplinary blending.

HINTS AND TIPS:

It's best to attach the bowl towards one edge of the tray, it looks more natural but also gives you space to carry the cloth and the glass of water on the same tray.

The bowl can't be see-through, or else the audience will spot the nappy. If you use a cheap plastic bowl, make sure it doesn't let light through before you attach it.

When selecting a tray, steer clear of stainless steel. It's too hard to drill through, so use a cheap metal tray instead.

You can secure the nappy inside the bottom of the bowl by using plastic cable ties to attach it to the bolt.

Make sure the nappy is pressed down as flat as possible in the bowl. This increases the area that catches the water, and prevents the nappy ends peeking over the sides of the bowl!

Don't pour the water from too high up or it will splash all over the place.

Make sure you give the sodium polyacrylate time to absorb the water before tipping the tray/bowl on its side. Stall for time. For example, make a show of checking that every drop of water from the glass went into the bowl.

Practise the tray/bowl removal move with your assistant. Make it quick and natural looking.

When you're ready to move the tray and bowl out of sight, get your assistant to move quickly. Do it while everyone is watching you move forward with the cloth and wire form.

