



Hurva Synagogue, Jerusalem, Israel © 2015 Ladd P. Ehlinger



HURVA SYNAGOGUE

The Hurva Synagogue in the Jewish Quarter of the Old City of Jerusalem is emblematic of Israel itself, as well as the Old City. This synagogue has a long and colorful history, though this specific building doesn't since it is practically brand new, having been re-built from scratch only four years ago. What was re-built faithfully reproduces the original 18th /19th century Byzantine design edifice that was destroyed in the 1948 war by the Arab Legion and Jordanian forces when the Haganah Israeli forces refused to vacate it. This building is emblematic because of the timelessness, endurance and rebirth that it has exhibited over millennia. This issue's limited edition print of a sketch by Ladd P. Ehlinger is from the open square in front, another benefit of the 1967 war, since there are so few open spaces in the Old City.

"Hurva" means "ruin" in Hebrew. The building came to be called that even

before the latest rebuilding and the destruction that preceded this latest rebuilding. It was dubbed Hurva in the late 18th century because of the ruins that occupied the site at that time. This synagogue was founded on property that had always been the site of a synagogue and yeshiva in the very early 18th century by followers of Judah he-Hasid, but it was destroyed only a few years later in 1721 by Muslims. It lay in ruins for over 140 years and it was during this period that it acquired its name as Hurva (ruin). Then the Perushim rebuilt it in 1864, and although they also named it the Beis Yaakov Synagogue, it still informally retained the name Hurva. It was Jerusalem's main Ashkenazic synagogue until the Arab Legion and Jordanian forces deliberately destroyed it after the Israeli forces withdrawal in 1948. Upon the recapture of East Jerusalem in the 1967 war, plans were sought for a new design amid much dithering and indecision.

When no decisions could be reached, a commemorative arch that mimicked one of the four main monumental dome support arches, 52 feet high, was built. It stood for years with a few plaques and the remains of the building as a stark reminder of what was.

The argument raged for years about what to do to replace the Hurva. An English Architect, Sir Denys Lasdun was commissioned to design a replacement building that closely followed the original, and even drew up construction plans for this building.

Ya'acov Salomon upon recommendation of Ram Karmi, commissioned Louis I. Kahn, Architect and Professor at the Pennsylvania School of Architecture to design the replacement Hurva synagogue. Kahn's schemes between 1968 and 1973 included a memorial garden incorporating the original Hurva ruins, a new synagogue on an adjacent lot, and a promenade "Route of the Prophets" leading to the Western Wall of the Temple Mount. When the then Mayor of Jerusalem, Teddy Kollek, learned of the full import of Kahn's vision, he opposed it stating: "Should we in the Jewish Quarter have a building of major importance which competes with the Mosque (al Aqsa) and the Holy Sepulcher and should we have any building which would compete in importance with the Western Wall of the Temple?" Boston Architect Moshe Safdie supported Kahn also, but it was rejected.



Finally, the plan to rebuild the synagogue in its original 19th Century Byzantine style was approved by the Israeli government in 2000. Jerusalem Architect Nahum Meltzer had proposed adhering to the original Ottoman building and was given the commission. The Israeli government paid about half the cost and the rest was donated by private individuals, the largest contributor of which was Ukrainian businessman and philanthropist Vadim Rabinovitch. The keystone of the dome was placed on 8 April 2008, and the facility was dedicated on 15 March 2010.

Water, Water, Everywhere...

By R. Perrin Ehlinger

The average American uses between 80-100 gallons of water per day; mostly it's for flushing the toilet, then showers/baths, then cleaning (dishes & laundry), and then, least of all, for cooking & drinking. For most, it's not a large concern - water is supplied municipally at minimal expense. In other areas there are drought concerns, quality concerns, and health concerns. Many people are concerned enough to add filters to their water supply.

One of the problems with filter systems is that they are targeted to specific issues; one type will remove chlorine, another sulfur, another heavy metals, etc. If your water supply has multiple quality issues, filtering and treating it can become an expensive proposition on the individual level.

What if there were equipment to ensure a safe water supply, competitive with current filter systems, and cleaner than municipal sources? One inventor, Dean Kamen (best known for the Segway), believes he has created a machine capable of just that, and it is currently in field testing. Called the "Slingshot", it is a vapor compressor distillation system, and is capable of distilling 250 gallons of water/day from any water source with any level of contamination. Unfortunately, it's not available to the general public, but the target price is \$2000 when it is. Using about a kilowatt of power, it cleans water at 1.16 cents/gallon. Still 10 times more expensive than a municipal water supply, at 0.15 cents/gallon, compared to bottled water or the cost of replacing filters, it's very competitive. As a quick comparison, most commercially available water distillers of a similar size can only produce about 10 gallons/day at 15.0 cents/gallon.

What if you have no source of water? What if there's a drought, your well has run dry, or your source has been contaminated? Well, there's improved technology along the way to solve this issue as well: dehumidifiers. A common and widespread technology, it's rarely used as a water source because of cost, quality, and ambient conditions. Most dehumidifiers won't work in colder temperatures (<40 F), and don't work in dry conditions (<30% relative humidity). Even under optimal conditions, they will only produce a couple of gallons/day. One company, SunToWater, may have solved these issues. They have a refrigerator sized machine that can produce up to 100 gallons/day, works in subzero temperatures, and in humidity levels as low as 14%. In addition, their target price is in the \$2000 range, and uses about as much power as a refrigerator, producing at about 0.15 cents/gallon - the same as municipal costs, plus, it will work nearly anywhere.

While having a plentiful source of water is nice; you may need to use more water than can be made available at once from these new appliances. So a storage tank would be in order. Depending on your

needs and the size of your household, a 1,000 - 2,000 gallon tank would likely be enough to handle large demand loads, as well as provide a couple of days of stored water in the event the equipment needs servicing.

If it's to become your primary water source, then how healthy is drinking distilled water on a long-term basis? There are concerns about demineralization and acidification from long-term use. In Nature, water is mineralized as it soaks through the ground to the water table and then back up through springs, or during its trip down the sides of mountains before collecting in larger rivers. A possible solution will present itself.....

Water needs pressure to be of use. Appliances run on 20-30 psi, while a shower is about 50 psi. The simplest solution is to elevate a storage tank high enough to provide the pressure desired. A minimum height of 60 feet is required to provide 20-30 psi household demand, and greater pressure needs could be solved with flow constriction or assist-pressure pumps.

So long as we're building a tower for our distilled water tank, we can use the support tower itself to solve the mineral water question with an entirely new design element, which I'll call a water chimney. Similar to the filtering/mineralization process that water takes on its long journey through the ground, we fill up our tank's tower with a variety of rocks and sands, and let the drinking water trickle down through it from the tank to the kitchen. Along the way, it will naturally absorb a variety of trace minerals similar to the natural process. Since the source water is already distilled and sterile, this "filter" will never need to be changed or cleaned.

The rest of the house can be supplied directly with distilled water from the tank, and any surplus water produced can be used for irrigation (or sold). As a bonus, there's a plentiful supply of water and pressure to add a sprinkler system.

A further advantage of is that this equipment can also be used to treat waste water, and allow disconnecting from a sewage system, or avoid installing a costly septic system.

Once these devices are available to the general public, there is the possibility that water sourcing and treatment slowly moves from the municipal level to the individual level out of preference for individual security and control of the water, similar to the adaptation of solar power. Like solar, converting your house would be a big investment. Similar to the solar power prices; it would be somewhere in the \$20,000 range.

Unfortunately, and unlike solar power, there isn't a good 'break-even' on such a water system; it's in the 50-75 year range. What it will buy, however, is peace of mind on water quality, and water security against droughts or in areas with water scarcity, and against potential disaster scenarios (contamination, long-term power outages, etc.) For a growing portion of the population faced with water insecurity from current municipal sources - this may very well be worth the cost.

WATER CHIMNEY

