

People:
Free Electricity!

Electricity Free for All: Everybody Everywhere

By Moshe Zalman Davis

A man of more varied interests than there are colors in the rainbow.

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Free, who doesn't want to receive something free, but what do we suspect when we see such advertisements? What I'm saying here is plain and simple. Electricity Free for All: Everybody Everywhere, for as long as the sun will shine! All the electricity you need for your household free, forever, and the Electric Company will buy your extra leftover after the household needs, once upon a time at a good price. This document is being prepared so the reader can imagine the reality, and get through the bureaucracy; ergo, procedures involved to bring these events to implementation, to overcome the bureaucratic malingering common to the governments in general and anti-alternative energy conglomerations. Let's start on the fact factories can reduce their prices and any money people save on electricity and fuel they can spend to bolster the economy.

Herein, I shall account for the process of research and the actions necessary to achieve the worldwide transition from Oil Pollution to Sustainable Electric Construction. This information is part of a greater dream of giving the Earth Citizen a generic model suitable for the research, instruction, initiation, maintenance, and operation of a solar industry. This vision includes employment in a production factory in which solar panels, solar cooking ovens, and solar dishes will be manufactured. The objective is to provide Electricity-free installation on residential apartment buildings; a solar park that produces electricity to cover the cost of city citizenry services, such as needed to care for the well-being of the citizenry. The people who graduate training and licensing courses for solar manufactures, installers, and service oriented maintenance will be making the installation market accessible to the residents of the global community throughout the world. That's a lot of jobs being created, and there's no end to the work.

I have depicted the outrage of Urban Aggravation, the frustration of crowded dehumanized living, intensified over the 20th Century; world governments in the year 2011 are sputtering through a hurricane of inner city turmoil, "the only way out is in." Conflict resolution strategy would begin with revamping streets and vacant buildings in order to initiate Urban Agricultural Resource Distribution, and Creative Potential Instruction (arts and crafts and other cultural pursuits each in accordance to tenets of lifestyle); conduct that restores meaning to the purpose of human being. We are experiencing, in the 21st century, a demographic influence on worldwide population shifts that will put to test the feasibility of human governments. Employment and daily occupation of people will be the key to future stability of the international community.

We have large roofs on apartment building, expansive parking lots, individual residences, and public institutions upon which Sustainable Energy can become a viable reality. A single-family dwelling requires 2.5 kW for optimum efficiency, and Small Systems up to 5 kW (requires thirty-six square meters of roof space). I have an installation on the rooftop of the apartment building in which I reside and earn a modest monthly income, as a non-taxable Private Enterprise. At the time of this writing, the Israeli Electric Company subsidized installations; Middle-sized Systems are relegated to the status of a Business Venture and the profits are taxable.

The Israeli Electric company will provide an additional meter to the consumer's household meter such that the electricity produced by a Solar Electric Rooftop Installation (SERI) will be bought while the quantity of electricity measured on the first meter will be paid for by the consumer. The Israeli Ministry of National Infrastructure has required the Electric Company to pay reimbursements for no

less than twenty years. At a time when governments should be offering financial encouragement to citizens for the installation of solar systems, despite the aforementioned, the Israeli government has going in the exactly opposite direction. In the year 2016, one may see newspaper clippings about exciting developments in the field.

What I went through was atypical, for instance, my personal endeavor to receive a building permit for an installation on the roof of an apartment building in which dwell another nine residents. Six of them expressed their opposition to the Building Department in Arad, Israel, on which basis they refused to provide a building permit. The city council denied my request on grounds that more than fifty percent of there the apartment owners in my Common Dwelling were in opposition, ergo, the decision to thwart my efforts my arrived at before the hearing took place. It was considered downright audacious on part of the Israeli citizen to dare request (from the City Department of a Building) a permit to be issued for a solar installation on the joint residential rooftop of a Common Dwelling anywhere in Israel. This project, however, was well researched and the legal precedent in my favor. My trekking through the byways of this event expressed an impeccably fiery unremitting devotion to achieve the aforementioned goal of, "Electricity Free for All" accessible to every tenant in any dwelling everywhere upon the face of the earth. There I sat, in the council chambers; I made a solemn commitment to express neither arrogance nor impetuosity, nor to yield to fear of degradation that would likely be heaped upon me.

During that council session, I availed myself of the opportunity to teach the higher echelon of the city government the particulars of the Nano Solar photovoltaic cell employed as the generator of electricity from reflections of sunlight concentrated on a parabolic dish, an option for the city, which speaks of erecting installation on public buildings and building a solar park. Exactly then, the clerk from the Environmental Department felt an urgency to believe that the contents of my lecture have practical application. Presuming to have garnered support, I returned at the matter at hand by quoting the law that stands as a precedent in issuance of a building permit for a solar installation on a multi-tenant apartment building (Common Dwelling) as established by the governmental authority to whom appeals are made against the decisions of the local council.

It was my good fortune that the Appeals Board included Eilat, and the Negev city if Arad from which my appeal was launched. They had already decided as precedent that local councils have no authority to base their decisions on the economic arguments majority of apartment owners' against the individual tenant who wished to make a solar electrical installation. Thus, the case of the Attorney General fell, and the public significance of Sustainable Energy won out. The singular issue upon which the City Building Department would ultimately reject my request was hysterical if not delusional complaints by the aforementioned majority in my Common Dwelling that Solar Electrical Rooftop Installation (SERI) could cause damages to the roof.

In the request for a Building Permit itself, I quoted the Southern District Department of Building Appeals Board, "it is a matter of National urgency to encourage Renewable Energy and Solar Installations particularly in the arid regions of Israel." In fact, the Israeli government has recently passed into law the requirement for city councils to do all necessary to expedite these requests by answering favorably and quickly to requests for Building Permits. The mayor could have prided

herself in being amongst the first in the country to heed the call for Solar Energy at the residential level. I am still gloating in the aura of the universal force of time and space that encompassed me during the moment where I addressed the authorities as to the culmination of my forty years of research and that in the year 2016 bI see Hashem brings (these thoughts) to fruition.

I emphasized that my request was to place panels in an area restricted to no more than my equal share of the roof, and would sign that any damage that could be caused would be my financial responsibility to address. I exclaimed that these provisions would include anybody who thereafter owned my apartment, (which by the way would sell for more: solar installation enhances property value)! The Arad Department of Building rejected my petition as parcel to habitual corruption, me not being a Proper Installer who knows how to (grease the right palms) get things done. No thought whatsoever to the precedent of the Appeals, in which was quoted assertions by the Israeli Supreme Court; ergo, urging upon the City Building Department to encourage the Renewable Energy.

The Appeal's Vaad strengthen the justice of social movements striving to mandate courageous strides to bring solar installation down to the residential level so that citizens, and not only banks and industry may benefit from Free Electricity from Renewable Energy. I BEAT CITY HALL! The text of Southern District Building Department Appeals Board decision preserved for history in black on white: Moshe Davis against the City of Arad: Appeal 6083/11 Hearing No. 60013, dated October 5, 2011. I bring this to the attention of the reader so that any resident can feel empowered to achieve the same.

The last stage of the application process is providing the Electric Company with photocopies of the ludicrous documents not even required by the City (Vaad) Building authorities, without which the Electric Company refused to issue a permit for my Residential SERI (Solar Electric Rooftop Installation). As alluded to previously, the neighbors with whom I share the Common Roof opposed my receiving a Building Permit and from the moment I entered to the Israeli Electric Company, I felt prejudice against my efforts to be licensed. That Building Permit is the legal documentation on which basis the citizen is entitled to the issuance of his permit for connection to the grid.

The legal documentation upon which the City Hall issues the building permit is of course the blueprint upon which the architect makes a sketch of the SERI upon the existing blueprint held in the City Archives. Somebody in the Electric Company had been made aware of the "Neighbor's" wrathful intent to prevent my mission, and the officials handling the case required me to bring the redesigned Architect's Blueprint, as though they didn't honor the permit fully. It was the days of Chanukah and machinations of society were grinding my bones to make a loaf of bread. Light is created by strenuous pressure being applied to the olive; the tiniest spark ignites it to radiate gloriously for eight days. The plot thickens.

At shity Hall, they wouldn't let me remove the official blueprint from the building, but only to copy it therein. This document is a singular page of paper at least one meter wide and three meters long. I cursedly sang my way through the three hour procedure of copying it in sections; the top, middle, and bottom rows each requiring nine pages -- from one slice to the next until I had 26 puzzle pieces made of A3 size pages, each with a numeric symbol of its proper placement. At home, I had to stick the pages together and secure them into a single document that adequately represented the

original. The local architect (the type of professional, always on good terms with the government officials in City Hall) wanted \$450.

I took a three and a half hour bus trip to a friend of mine that knew how to make this thickly unbalanced mess into a printable document, that could only be replicated in a special printing shop (that had mercifully agreed to remain open a little late that night), and thusly I arrived home after a sixteen hour day. These friends from Jerusalem, Israel worked this miracle with me, something that when I started was not within the realm of possibility. This revised sketch included professional diagrams of the SERI placement. It must be reemphasized; the CITY HALL does not require more than a simple semblance of same to be drawn in the sketch. Here the story takes a turn of spiritual worth that hereby I inscribe into Jewish history.

Much of the joy of life is invested in, anticipation: Its process of arrival, not only satisfaction of meeting ones expectations. So let me tell you, my soul was like a high-tension wire, with the multiplicity of dark forces and alone facing this social strangulation. As such, preparation for Chanukah this year included the hope I'd meet the demands, because I had filled most of the requirements placed on me, though, unfortunately, there was always a way to come up with new revelation about what I was required to do (besides the ingrained practices instituted so as not to break the "contractors" monopoly). Yet, the seed had been correctly panted and this wait didn't necessarily imply there would be no go-ahead - simply - the joy was yet to blossom.

Morning after return from Jerusalem, still Chanukah but I'm not hurrying with the ludicrous document to be the first in line at the Electric Company, 45 minutes by public bus from my home. As usual, I will offer my morning prayers, say the Hallel as an expression of gratitude for Hashem's miraculous salvation in every generation, hear the Torah reading, and then participate in a Talmudic lesson. It might be beyond the scope of the reader's comprehension how this may be considered a celebration. Chanukah during my youth, in a "conservative" Jewish family consisted of events whose intrinsic value was competitions against making parties like the Gentiles have at that time of the year, not to envy their thing with everybody getting presents. It was very much in the spirit of assimilation to be undistinguished from those whom despise the Jewish Holidays.

Do It Consistently

Having dragged within my soul through the unpleasanties of circumstances; aware of dimensions of neither time nor space, as here now though in spiritual harmony to the oneness of all universal being. I shall record here that the event took place Sunday night, the 24th of July in the year 2011, a day on the Hebrew Calendar. This, as pertains to efforts I expended the extent of months energizing unfaltering academic research, making written notes in order to organize my thoughts and enhance the speedy retrieval from memory during the Beat City Hall Presentation wherein I might become flabbergasted; like a stage actor rehearses before the curtain rises. I practiced each nuance expressed impeccably to communicate a fiery unremitting devotion to achieve the aforementioned goal of

making Free Electricity accessible to every tenant in any dwelling everywhere upon the face of the earth.

The backdrop to this drama is a large chamber in the Arad Municipality; the table set to a length of fifteen some meters around which were unnecessarily expensive executive chairs, and modern video apparatus to screen presentations. I took the first seat next to the head table, and arrived early enough to fleece some information from the city officials before anyone knew that this was determined where I would face off against the enemy. The two ladies, required by law to be impartial in such decision-making processes were outwardly hostile to the likelihood of my request being accepted. They leaked the fact that a majority of neighbors opposed my private installation being erected on the communal roof; whereas I had previously managed to sign the majority, the tenants in opposition persuaded some of them to retract. I was feeling reticent but quickly became depressed in face of the imminent defeat.

It's interesting to note, this involvement of mine, with city hall, was a lesson in civics but I'll spare the reader much of the detail. The suspense kept us attentive, as I held high the photocopy of the appellate court's previous decision; that later would be held as proof to the correctness of my litigation. In the closing moments of the council meeting, the mayor informed me I had but three minutes left to speak. Exactly then, the clerk from the Environmental Department offered a remark that the contents of my lecture have practical application. I had initiated contact with this city clerk two years ago when she participated in a meeting organized by Zolshine Shemesh Solar, unlted.. In conclusion, my Solar Installation had been operative for several years, caused no problems on the roof, and has been profitable for me.

I knew, on the other hand, that once the opposition would make their entrance into the council chambers their malignant hatred would kindle the flames of the volcano dormant in my spirit. I was somewhat of a stage actor during my youth and soon would be strutting across the stage, determined not to culminate this process in a whimper but a vociferous bang, with a solemn commitment to express neither arrogance nor impetuosity, not to yield to fear of degradation that would likely be heaped upon me. In 1973, I authored a thesis that was the basis of my mandate to be elected as Mayor of East Lansing, Michigan called Political Intellectualism Ecology. For decades, I was as though having gone underground and my activism had sprouted roots that are full bloom trees stretching their leaves. I had failed the only course in the Ecological Psychology department at the MSU graduate school in which I was entitled to enroll, but did my research in the school of hard knocks.

It is most certainly a viable platform for candidates to political office to use Free Electricity as a platform in local elections, and with Facebook and the social media, sometime later I acted as if I were doing so in an election to the position of Mayor in Arad in the Negev Desert. It was these ideas that would propel me into the council meeting, and launch my presentation as considerate and deliberate. The wheel of conflict resolution has made an incremental spin in the direction of Solar Energy becoming an effective alternative to depletion of the oil resources and the dastardly outcome of generations upon generation of the occident exploiting the globe and its inhabitants at a destructive pace. During that council session, I managed to teach the higher echelon of the city government the

particulars of the photovoltaic cell employed as the generator on a parabolic dish, an option for the city, which is on the verge of erecting installation on public buildings and building a solar park.

Years later, I took the owner of a solar installation firm to an appointment with the elected Mayor and we discussed converting the City Hall rooftops into Renewable Energy production. The unfortunate truth is that, in the present situation the roofs are made from dangerous material (asbestos) which requires both professional handling and expensive disposal, so the plans never got onto the negotiating stages, and the city workers are still exposed to the dangerous working conditions. There's a lot of money to be earned by initiating and carrying out such a grand scale enterprise, alas, people are looking to make the easy buck. It might be some time before the City of Arad government workers will get reprieve.

In the 70's, as the protagonist of Political Intellectualism Ecology, nowadays I aim my strivings to publicize the idea of building a Solar Industry as the most promising way to help the Earth establish Renewable Cities. Electricity Free for All: Everybody Everywhere, for as long as the sun will shine! The first objective is to provide Electricity-free installation on residential apartment, and municipal buildings, and thus all residents will have cash to spend in the marketplace. A solar park that produces electricity to cover the cost of city citizenry services. Educational institutions and factories training and licensing courses for solar manufactures, installers, and service oriented maintenance. Waste recycling on a grand scale to produce fuel. Community gardening in empty lots and dilapidated buildings. Hey people, it's 2016.

I AM a revolutionary leader without a following; yet still produce revolutionary literature for those who wish to accept it as a code of leadership on the path to secure freedom for earthly inhabitations. In an effort to explain what this story has to do with the state of Jewishness as depicted by the Judaic Tradition and the state of Solar Energy, so in the State of Israel we exert strenuous devotion to the flavor if the pleasure of cooking chulents', everything into the pot and left on the slow bun until delectable. Like having the days of Chanukah for the span of time through which I addressed bureaucratic malingering as the enemy against whom we battle in every generation. The menorah adds light to the enriched moment of purposefulness that inspired my victory, the victory of academic pursuit in the application of civil justice to achieve my rights.

To offer a parable most fitting of the situation where the lights of the Menorah remind us of "times long ago," I offer the assertion that renewable energy installations offer candle-lights' to power electric generations far into the future. Every action towards "Electricity Free for All" will be included in heaven as spiritual connotations from pure energy radiating salvation, which is the message of Chanukah. Throughout the generations and in every abode throughout the world, faith in the Tradition has infused the Jewish People with strength to live our tribulations as part of reparation of the world created less than perfect. The significance of one vial of consecrated oil inculcated righteous persuasion of surviving the darkness and machinations of those who tumble about therein until light shines forth.

I have this to remark about Arad, in the Negev Desert of Israel. In this city, there are many hundreds of strictly observant religious (Charedi) families and thousands of Bedouin families living below the poverty level. The President of Israel, Mr. Shimon Peres has encouraged the development

of systems to create jobs for unskilled, and underprivileged residents, and to allow those with wealth to invest and utilize their share of the income; reduction of taxes, or increased availability of municipal services. There would obviously be a reduction in the cost of electricity for personal, costs of running a business, or municipal buildings, and reduce the cost of production, thus lower prices of consumer good. All those saved outlays would enable the citizenry to strengthen local economies.

Free Electricity as Long as the Sun Will Shine

People realize that the efficiency of producing solar power from flat panels is around 18% and inventors have come up with alternatives from sterling engines that are better at around 22%. Solar cells that are triple junction can have efficiencies of 40%, and may reach 72% efficiency. 16 panels (4 kW total), each at the cost of \$600, plus accessories have been marketed at an exorbitant price in Israel, but even for someone who can afford it, there is an issue of space allocation.



SolarTron Energy Systems, SolarBeam (pictured here): uses a 10' x 10' surface area for producing up to 4kW of electricity, or 44,000 BTU's per hour thermal power, the solar concentrator can provide up to with less than 1% heat loss in the cold winter months. However, the reality is that if you do not install the system correctly, you will drop by half, the efficiency of the system. The author urges upon the multitudes to learn an installers training course. If you are interested in broadening your skill set and getting into the solar power sector, then it is a worthwhile investment.

Zenith Solar from Kiryat Gat, Israel has plans to market dishes that produce 5.5 kW and cost \$25,000 - billed as the "most efficient clean energy solar generator in the world." Free electricity in the home, and profit from the extra sold back to the grid. Their installation at Kibbutz Yavne park is 3 dunams. The Z20 solar Solar cell dishes produce thermal heat that could cause "overheating" and is preferred to "not waste" by putting it to the use of heating water. Pairs of Z20 solar dishes can be placed on residential buildings and the thermal heat ventilated by the water from all the solar-thermal, water heaters (kolteim). The regular kolteim (solar water heating units) will continue to work as usual but receive heat form the Z20. The tenants would arrange distribution of the shared income through contractual arrangements. New construction - no need for kolteim.



The idea I wish to promote is not only a theoretical outcome of devoted intellectual research. After consultation with a thermodynamics expert in hope to design a protective shield for the Solar Energy Dish, I must add the warning that there are real threats resultant from the intense (900 degrees Celsius) heat and blinding rays of light produced by concentration of the solar power on the mirrored surface of the parabolic dish.

Production Initiated

After experimentation, I have procured and prepared an "antenna" disk with a vinyl mirror surface at the cost of 300 IS., and am searching for a suitable Triple Junction Cell for \$1000 (~3500 IS), and

can estimate \$500 will be my cost for this system; after wiring, diodes, charge controller, and inverter (\$3,000) at \$5,000, not including a tracking device. Individuals will be able to procure a Solar Energy Dish, pay the wages of an electrician, and a roof worker to set it up. The system needs to be mounted in a way that causes damage neither to the rooftop, nor by reflection of blinding sunrays, and to assure the exact fixation of the tracking device to the rotation of the earth around the sun.

The Inverter

In this section, we'll learn how to pick the right inverter for the job. The next step is to determine with which devices you plan to power the inverter. Look for a label somewhere on each device that tells you the wattage it requires to operate. The wattage rating of your inverter must exceed the total wattage of all the devices you plan to run simultaneously. For instance, if you wanted to run a 600-watt blender and a 600-watt coffee maker at the same time, you'd need an inverter capable of a 1,200-watt output. However, if you knew you would never be making coffee and fruit smoothies at the exact same time, you'd only need a 600-watt inverter. The larger the installation needs a bigger capacity, within one half kilowatt of the size of the installation.

Another specification to look for is the wave output of the inverter. If you'll be powering any of the equipment that is sensitive to square waves, look for an inverter with a "perfect sine" wave output. Be prepared for sticker shock -- a perfect sine inverter can cost almost 10 times as much as the same wattage inverter with a modified sine output. Modified sine means that the current is run through some filtering, so it isn't a square wave, but it isn't very smooth either.

The inverter's input cables can be connected by a meter to the Electric Company and/or have clips that can be attached to the terminals of the battery, similar to a set of jumper cables. If the installation is to be permanent, the cables can be bolted to the terminals. The inverter itself can be mounted anywhere, although it should be in a place with good airflow. Inverters generate a fair amount of heat, and they may use cooling fans and heat dissipation fins to prevent overheating. Larger, heavier inverters have mounting holes in their chassis so they can be bolted to any surface. It's possible to simply place the inverter in a secure, stable position, clip the leads to the battery, and plug in.

The grid-tied inverter differs from the stand-alone variety in that the control circuit has to be able to operate in the presence of the existing grid voltage and force the grid to accept power instead of providing it. Because the grid is essentially a very low impedance voltage source, the inverter must be able to act as a current source, only allowing the desired amount of current to be sent into the grid. This process requires close control of the inverter output voltage. Generally, the inverter will control its bulk DC input voltage and use this to determine the output power level. The power level signal is then used to determine the output power, and the inverter output will be adjusted upward until this amount of power is delivered to the grid. Grid tie Inverter - nowadays there are optimizers that act as individual inverters for each panel separately.

If one connects a 300 w panel directly to grid, it can be supplemented with a plug and play inverter plugged into any home socket, so it infuses the electricity into the system such that less is drawn from the Electric company. By placing a battery between the electricity Inverter/Charger and the grid,

energy can be stored for blackout; once the batteries fill the inverter directs flow into grid. The XW Hybrid Inverter/Charger (XW) is a true sine wave, 120/240-volt AC, split-phase, inverter/charger that incorporates a DC to AC inverter, a battery charger, and an AC auto-transfer switch. It is the foundation for battery-based residential and commercial applications up to 18 kilowatts (kW). Capable of being grid-interactive or grid-independent, the XW can operate with generators and renewable energy sources to provide full-time or backup power.

A solar micro inverter can be attached to each solar panel and it will produce into alternating current (AC) that can be fed into a commercial electrical grid or used by a local, off-grid electrical network. A regular inverter lasts about ten years and is expensive, so with my own installation, if the need arises I probably go over to micro inverters. Battery backup inverters are special inverters, which are designed to draw energy from a battery, manage the battery charge via an onboard charger, and export excess energy to the utility grid. These inverters are capable of supplying AC energy to selected loads during a utility outage, and are required to have anti-islanding protection

What this means in practical terms is that a person could be running-consistently twenty, 10 w bulbs on the amount of energy the Inverter \ charger is producing and thusly preventing the utilization of electricity from the grid. Theoretically, one would strive to produce a large enough charge on a 24 volt battery configuration on a daily basis to operate off the Grid time Inverter all night and recharge the batteries on the morrow. A 500W Grid Tie Inverter for... US \$ 146.55 / piece. The Renewable Energy industry is making daily advances in the arena of battery storage. The system can be set such that connected to a Battery Monitor, once it falls below 27.6 volts when the batteries will recharge, this may include a 200 amp relay PAC battery isolator.

The AC coupling system is made of the Rooftop Inverter (battery-less) and Grid Tie inverter/charger (battery-based) resulting in a system that is more easily upgraded and expanded than a DC coupled system. AC coupling accommodates multiple charging sources on the AC side of the system and does not require a charge controller to regulate DC power. For some applications, AC coupling has advantages over DC. Inverters can get extremely expensive, even costing thousands of dollars, that is, if you're looking for an inverter with a smooth sine. The good news: Given a large enough budget, you can purchase an AC power inverter that produces virtually perfect AC sines. In fact, some high-end DC to AC inverters can make sine waves that are even smoother than the AC power supplied to your house

Been There and Got it Done

An example of the Citizen Employment Projects includes the Solar Cooker Oven I produced using a parabolic mirror, old barbecue pit, a discarded metal display stand, and mirror quality aluminum foil. The system is constructed onto an upside down table that rolls on wheels. I'll list certain details below. The dish (seen here) is a regular radar antenna covering with sticky mirrored coating. It has to be lined up exactly to the midpoint of the sun, the exact distance from the oven floor.



Since the earth is circulating in a dual rotation, there are different angles to calculate during the seasonal changes, and concerning its position between the hours of sunrise and sunset. While the focal point of the concentrated solar power is pointed to the center of the bottom of the cooking area, I have arranged it (as may be seen @ <https://www.youtube.com/watch?v=BY4VZQvdwFA>) so that it may be simply adjusted to differing angles and heights. The oven is a rectangular metal box unto which are fitted mirror covered flaps to reflect sunrays from atop of the cooking unit, and then again from with the oven itself. My first design did not succeed because the oven was made of carton material that explode into fire when I was baking a bread (nice crust).

One must also avoid shade being cast unto the parabolic mirror and for the time being the height and positioning on the mirror unit were adjustable. The parabolic unit will add heat at a slow rate so that even in the open air the sunrays will to cook bread to a lovely crust. I am imminently in pursuit of a 2.5 - 10 kW Stirling Solar Engine to attach to the solar parabolic unit, and thus produce electricity that can be converted and utilized to run households. It would be possible to charge a battery system for use on cloudy days or at night, enable city residents to never again pay an electric bill, and most certainly reduce pollution from fossil fuels in the Asian Peninsula of the Far East. As of October 2013, I have yet found a supplier but the time will come.

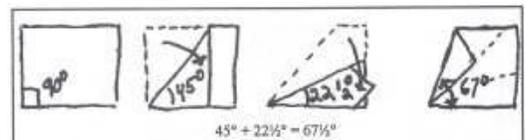
As regards the Davis Solar Cooking Oven, I completed my first unit in June 2012. The "How to Construct" is available at: <http://www.backwoodshome.com/articles/radabaugh30.html>. This is the digital level of academic liberty now familiar to the intellectuals who will never say fail. As mentioned, the oven unit consists of the rectangular box that for thermodynamic properties thereof is best fitted with a copper bottom. The maiden adventure was a fabulous demonstration, and in particular because the concentrated ray had started the carton on fire and the oven was consumed instantaneously, burned to ash and buried. There was no better proof than that of the feasibility of the system, and the rebuilding from scrap metal took months.



For the four mirrored-panels, I used not carton, but slender wood that I cut away from a rusted bed frame. After cutting to size and shape they were covered with a coat of black high temp flat paint, and cut to size top quality mirror sheeting (not aluminum foil), the expense of which is part of the reason which I wanted sturdy material for the panels (not paper easily spoiled by contact with moisture). A picture is worth a thousand words.



I used simple geometry to produce a measured simulated version the exact size of the rectangular perimeter of the long and shorter edges of the inner oven with pages of A4 sheet paper taped together, big enough in height to refract a larger quantity of sunrays. I first sketched the two wings' base line their exact lengths and chose a height of thirty centimeter. At the end-points of the base line, I drew 67 degree angles until I had only the top line which at a 90 degree angle from the midpoint of the base line stretched thirty centimeters upward. I cut and taped the pages into a solid



form for the larger and smaller panels and traced around them; first on the wood and then the mirrored paper, of course using a straight line for precision.

In order to connect panels I wet some bed linen strips in diluted wood glue at the corners of the three panels by laying two of them next to each other (about 1/4" apart), and a cloth about 18" x 4" along the length of the outside, and then the bond reinforced with more strips. The last joint remains open, it will be held close with elastic. It's probably a good idea to paint the wood flat black and then sand it down before applying the adhesive mirror. Now cut a cloth about 18" x 4" and glue it over this corner, as shown. When



the glue is nearly dry, stand the panels gently bends of the side flaps, and temporarily tape the last two segments tightly together with elastic material. This will allow these corners to separate slightly when the collectors are folded flat, but pulls the corners together when unfolded.

The inner box is the secret of solar cooking so to get it to fit right, and be sufficiently insulated to prevent heat loss into the outer box, such that it's contained in the closest proximity to the food being cooked. This example is custom made, and instead of adding scraps, etc. to fill the spaces between the inner and outer and having to deal with such a hassle, I incorporated the insulation unto the inner and it fits snugly into the outer. To the right is the cooking pot that I engineered with the idea for the best radiation of heat into the midpoint of the pot, and the least heat loss to walls or empty inner space. After painting black and glazing in a kiln, it can't be bettered.



In the first trial I covered the oven unit with the glass shelf so that it lays firm atop to afford secure closure. As seen in the photo above, the inner box receives the tempered glass shelf, according to which measurement the boxes were constructed, and the glass rests at the height of the upper edge so that only the spaces to the sides have to be stuffed with insulating materials, if at all. This links to other sites where my production can be researched: www.englishquyickly.com. Many scholars do research hoping to be discovered; in the academic world, and become wealthy overnight. I was particular that the result of my experimentation would prove the viability of the Combined, Parabolic and Insulated-Oven Solar Cooker. Throughout the summer of 2013 I ate only whole grain breads I baked bread in the Davis Solar Cooking Oven, but there was room for getting the angles more exactly focused so the parabolic mirror increased heat with out being shaded by the cooker, a problem easily solved, had there been a metal shop in the city where I lived.

Perhaps one day, I'll reinvest the earnings into the manufacture of my solar oven, which as you recall was sacrificed on the altar of academic experimentation. I have drawn up the plans to make the oven parts from metal that has good thermodynamic properties and if possible, mirrors from professionally buffed aluminum. The stand should be engineered like a camera tripod to allow manually adjusted dual axis tracking, raised to the exact height and enabled with moving the cooking utensil to a forty-five degree incidence angle to the midpoint of the sun. The construction would require nothing more than a simple mechanism, like that used to open horizontal windows between

90 to 180 degrees. It seems like a good idea to engineer cooking surface platter with especially powerful heat transfer metal and design in order to achieve maximum absorption from the mirrored dish. This said platter and the ovens should be changeable between milk and meat dishes. I can imagine the possibility of direct cooking, like frying an egg or roasting, a marshmallow but these ideas may involve danger, and one must be fervent to be not adversely affected by the blind rays of sunlight.

Nothing Under the Sun that Isn't Renewable

After all thought is communicated into truth there is still the lifelong dream I had of hands on experience constructing a solar panel, and so I found myself traveling to the first and only solar panel factory opened in Israel. Luggage packed already for two weeks when the call came to come, and by six AM, I was at the bus stop ready to alight. The morning news reported flooding in Europe and blackout along the East Coast of America, going into a number of days, so I knew I was headed in the right direction to avert environmental destruction and promote residential installation of Renewable Energy. I baked on the stretch of roadway at the southern tip of the Negev until my boss picked me up at 11:00 AM whereupon I had debarked. I put my shoulder to the soldering iron and soldiered solar cells together until completing five strings of five rows with all the busses and other electronic machinations necessary before lamination. My panel qualified as a high standard; was taken to exemplify to what the factory is capable of, and I returned home.

I harbored the hope to arrive at a contractual agreement for employment as was offered the deal to produce 1000 panels and receive 50,000 shekels, but the boss had placed his cart before the horse and we soon discovered that we had bad chemistry and would best avoid one another, so it's left for somebody else to accomplish. I have done research on geothermal capture of heat transfer from wind turbines according to the piezoelectric theorists but going so far to say the heat radiation is motion that can be apprehended within the nanotech realms of solar engineering. It is not the responsibility of research scientist to create market condition for their life saving inventions but today we are all encumbered with doing something to preserve the environment for the generations to follow in our footsteps. This concludes my thoughts. May the good will and energy of those who love and feel connected to the earth have the outcome of saving or just restoring the natural harmony the planet, and may mankind find its ways to keep functioning healthfully.