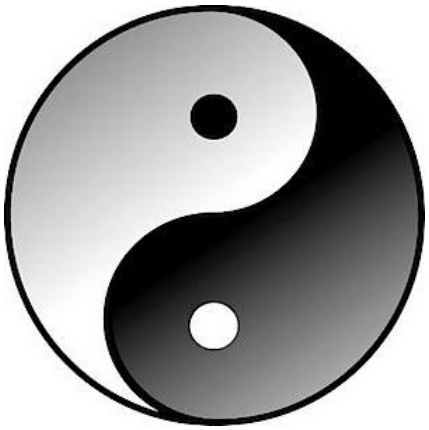
THERMO-KINETIC DRIVE!

RADIOMETER



TAO SYMBOL - PRIME MOVER

What if….there once was a device that converted direct sunlight into rotational kinetic energy on a scale many orders of magnitude greater than a radiometer and for which the Tao Symbol is mankind's last surviving cultural artifact?

What follows is an imagined description of its design.

Measuring 2 meters in diameter, the prime mover is positioned near the prime focus of a giant radial parabolic mirror, but offset slightly to evenly illuminate its entire mirror facing surface with concentrated sunlight. The mirror facing surface of the prime mover is designed to have the appearance of the Tao Symbol such that it is divided into the two equal but opposite shapes that we recognize today as the yin and the yang. The yin is black; its design optimized for absorption of focused sunlight and its conversion to thermal energy. The yang, instead of being white would have a mirror finish, and have a design that is optimized for reflecting sunlight. The yin and yang would be separated a by super insulator preventing significant conduction along the edge they share in common. The yin absorber would be designed to minimize the loss of thermal energy via conduction, convection or radiation by enclosing its structure within a thin concentric vacuum chamber and have a mirror surface on its backside to minimize black body radiation . The albedo of Its black surface could be increased by modifying its surface with conical shaped nano-dimples to capture light, increaing light absorption. The yang reflector would be designed to minimize the accumulation of thermal energy and would therefore not be enclosed in a vacuum chamber; its back side would be black to maximize IR radiation losses, thus facilitating an extreme temperature differential between the yin and yang from which a hypothetical thermo-kinetic driving force might be derived; a force of greater magnitude than the extremely weak rotational driving force produced by the design of the Crookes Radiometer when exposed to intense light.

Given a primary parabolic mirror aperture of 100 meters in diameter, with a cross sectional area of 7,850 m^2, the intensity of the sunlight concentrated upon the 3.14 m^2 surface area of the

prime mover would be the equivalent of 2,500 suns. At just over 1,000 watts per square meter of primary mirror aperture (at sea level), approximately 7.85 megawatts of light energy would be concentrated on the prime mover. Assuming a 50% sunlight to thermal energy conversion efficiency, if 3.93 megawatts of light energy were focused on the prime mover for 1 hour, then up to 14.2 gigajoules of thermal energy would be available for direct conversion to rotational kinetic energy per hour. The exact power output would would vary slightly depending on the efficiency of the light reflecting surface of the primary mirror and yang reflector, the albedo of the yin absorber and IR energy loss from the prime mover.

A drive-shaft could be coupled to the mirror facing side of the prime mover at its center point, extending down through a portal in the vertex of the parabolic mirror to where its opposite end could be coupled to either an electric generator or a mechanically driven machine.

Bart Orlando 2014
For All Mankind!

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