

AFTER THREE MILE ISLAND - WHAT?
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JUNE 10, 1979

I HAVE BEEN ASKED TO SPEAK THIS AFTERNOON ON THE PARTICIPATION OF THE CITIZENRY IN PUBLIC POLICY. I WANT TO DIRECT MY THOUGHTS TO THE MOST COMPLEX AND PRESSING MATTER OF PUBLIC POLICY AND ONE THAT HAS GONE TOO LONG UNATTENDED BY THE PEOPLE OF THIS COUNTRY. I AM SPEAKING OF NUCLEAR POWER AS A DOMESTIC ENERGY SOURCE.

MY MIND GOES BACK TO ANOTHER ~~SPRING~~ AFTERNOON IN ANOTHER STATE IN ANOTHER SETTING, WHERE I SHARED THE PLATFORM AT ANOTHER COMMENCEMENT WITH THE THEN CHAIRMAN OF THE ATOMIC ENERGY COMMISSION. WE WERE BOTH BEING AWARDED HONORARY DEGREES. I LISTENED AWED AT THE SCIENTIFIC CREDENTIALS OF MY COLLEAGUE AS THEY WERE BEING READ. HOWEVER, A THOUGHT PERSISTED IN MY MIND THAT I COULD NOT ERASE. I WONDERED DURING THAT RECITAL OF ACHIEVEMENT AND HIGH HONORS IF THE WORD HUMANITARIAN WOULD EVER BE MENTIONED. IT NEVER WAS. OF COURSE THE RECITATION EXPRESSED THE PREVAILING SPIRIT OF OUR SOCIETY, SCIENCE-ALL POWERFUL, AND UNRELATED TO OTHER VALUES.

IN 1896 HENRI BECQUEREL DISCOVERED RADIOACTIVITY IN URANIUM. IN 1902, MARIE AND PIERRE CURIE ISOLATED RADIUM. IN 1934, USING NEUTRON BEAMS, ENRICO FERMI AND JOLIOT-CURIE MANAGED TO SPLIT THE ATOM BUT THEY DIDN'T KNOW IT. IN 1938, HAHN AND STRASSMANN BOMBARDED URANIUM WITH NEUTRONS AND PRODUCED BARIUM. IN 1939, HITLER HAD SEIZED CZECHOSLOVAKIA AND THE ALLIES FEARED THAT THE NAZIS WOULD CREATE THE FIRST ATOMIC BOMB. THE DEVELOPMENT OF THE BOMB WAS CONSIDERED A MATTER OF UTMOST URGENCY AND HIGHEST PRIORITY. IT'S CODE NAME WAS THE MANHATTAN PROJECT. ON DECEMBER 2, 1942, THE FIRST SELF-SUSTAINED CHAIN REACTION WAS ACHIEVED IN CHICAGO, AND ON JULY 16, 1945 THE FIRST ATOMIC BOMB WAS TESTED IN THE DESERTS OF NEW MEXICO. ONE MONTH LATER ON AUGUST 6TH AND ON AUGUST 9TH WE DROPPED ^{ATOMIC} ~~THE~~ BOMBS ON JAPAN. THIS IS HOW NUCLEAR POWER AS A WEAPON SOURCE CAME INTO BEING AND THE NUCLEAR AGE WAS BORN.

IN THE 1950'S THE SCIENTIFIC AND TECHNICAL CADRE ESTABLISHED TO PRODUCE THE ATOMIC BOMB WAS READY AND EAGER TO DEMONSTRATE THAT THE ATOM'S DESTRUCTIVE FORCES COULD BE USED FOR "PEACEFUL PURPOSES." THE CORPORATIONS AND INSTITUTIONS WERE ALREADY IN PLACE TO CONCENTRATE ON URANIUM ENERGY. EXISTING ENERGY COMPANIES COULD MINE AND MILL URANIUM ORE, AND PREPARE IT FOR FURTHER PROCESSING. THE FEDERAL GOVERNMENT'S URANIUM ENRICHMENT PLANTS, LEFT IDLE AFTER THE WAR, WERE AVAILABLE TO CONCENTRATE FISSIONABLE URANIUM FOR USE AS REACTOR FUEL. ONCE THE REACTOR FUEL WAS PRODUCED, URANIUM FIT EASILY INTO THE ELECTRIC UTILITY SYSTEM; HEAT FROM URANIUM FUEL RODS BOILED WATER TO PRODUCE STEAM, WHICH COULD DRIVE A TURBINE TO PRODUCE ELECTRICITY. URANIUM NEEDED ONLY TO REPLACE COAL OR OIL AS A HEAT SOURCE; THE STEAM SYSTEM AND TURBINE COULD REMAIN RELATIVELY UNCHANGED. FEDERAL GOVERNMENT AGENCIES WERE ALREADY IN PLACE TO EXPLOIT THE ATOM. IN 1946, FOLLOWING THE EXPLOSIONS ON HIROSHIMA AND NAGASAKI BOMBS, CONGRESS HAD ESTABLISHED THE A.E.C. *Atomic Energy Commission*

SOLAR ENERGY HAD NONE OF THESE INSTITUTIONS TO FOSTER ITS DEVELOPMENT. IN FACT, WITH ITS ABILITY TO BYPASS ENERGY CORPORATIONS AND ELECTRIC UTILITIES BY PROVIDING ENERGY AT INDIVIDUAL BUILDINGS AND SITES, SOLAR ENERGY COULD REDUCE THE INFLUENCE OF EXISTING COMPANIES. THE ENERGY ESTABLISHMENT WAS UNINTERESTED IN SOLAR TECHNOLOGIES.

IN THE EARLY 1950'S THIS NATION REACHED A CROSSROAD: IT COULD HAVE CHOSEN NUCLEAR POWER OR SOLAR ENERGY, AS REFLECTED IN THE MATERIALS POLICY COMMISSION REPORT. THIS COMMISSION WAS HEADED BY WILLIAM PALEY OF CBS. FROM THE PALEY REPORT I QUOTE: "EFFORTS TO HARNESS SOLAR ENERGY ECONOMICALLY ARE INFINITESIMAL. IT IS TIME FOR AGGRESSIVE RESEARCH IN THE FIELD OF SOLAR ENERGY- AN EFFORT IN WHICH THE UNITED STATES COULD MAKE AN IMMENSE CONTRIBUTION TO THE WELFARE OF THE FREE WORLD." SOON THEREAFTER THE FEDERAL GOVERNMENT BEGAN A PROGRAM TO DEVELOP ATOMIC ENERGY AND SEALED THE NATION'S ENERGY FUTURE FOR THE NEXT 30 YEARS.

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AT LEAST

THE FEDERAL GOVERNMENT SET THIS POLICY. POLICY DETERMINES A DIRECTION AND THEN THE DIRECTION APPEARS INEVITABLE. THE DECISION TO PURSUE NUCLEAR POWER INSTEAD OF SOLAR POWER WAS A POLICY DETERMINED BY THE GOVERNMENT IN PART AS AN OUTGROWTH OF WORLD WAR II TECHNOLOGY. NUCLEAR WEAPONRY REQUIRES NUCLEAR ENERGY.

THIS POLICY DECISION TO DEVELOP NUCLEAR POWER WAS NOT DEPENDENT ON ANY ONE POLITICAL PARTY NOR ANY PUBLIC DEBATE. ^{President} TRUMAN'S POLICY WAS CONTINUED UNDER ^{President} EISENHOWER WITH THE PUBLIC RELATIONS SLOGAN OF "ATOMS FOR PEACE." THIS INFANT INDUSTRY NEEDED A CUSHION AND THE GOVERNMENT OBLIGED WITH A SERIES OF ACTS DESIGNED TO ENCOURAGE NUCLEAR POWER DEVELOPMENT. FIRST, CONGRESS APPROVED THE PRICE-ANDERSON LEGISLATION OF 1957, LIMITING THE NUCLEAR INDUSTRY'S LIABILITY PROBLEMS ARISING FROM THE RISKS OF CATASTROPHE ASSOCIATED WITH NUCLEAR POWER GENERATION. SECOND, THE GOVERNMENT SUBSIDIZED OR PERMITTED THE INDUSTRY TO IGNORE THE COSTS OF CONSTRUCTING FUEL ENRICHMENT FACILITIES, OF REGULATION, OF WASTE DISPOSAL AND HEALTH COSTS ASSOCIATED WITH INCREASED ENVIRONMENTAL RADIATION.

THERE ARE THREE PERSISTANT PROBLEMS WE FACE WITH NUCLEAR ENERGY AND EACH REQUIRES IT'S OWN ANALYSIS. THEY ARE THE COST FACTOR, SAFETY FACTOR IN THE OPERATION OF PLANTS, AND NUCLEAR WASTE.

THE COST IS JUST OUT OF SIGHT. TWENTY-FIVE YEARS AGO THE ATOMIC ENERGY COMMISSION CHAIRMAN LEWIS STRAUSS PREDICTED THAT NUCLEAR POWER WOULD BE "TOO CHEAP TO MEASURE". THE NUCLEAR INDUSTRY CONTINUES TO SPEND MILLIONS OF DOLLARS EACH YEAR TO CONVINCE CONSUMERS THAT NUCLEAR ENERGY SAVES THEM MONEY. IT DOES NOT. NUCLEAR CONSTRUCTION COSTS ARE INCREASING SO RAPIDLY THAT ACCURATE ESTIMATES ARE DIFFICULT TO MAKE. IN 1967, THE A.E.C. PREDICTED THAT REACTORS WOULD COST \$134 PER KILOWATT OF GENERATING CAPACITY. BY 1976, CONSTRUCTION EXPENSES INCREASED TO \$645 PER KILOWATT AND CURRENT ESTIMATES ARE APPROXIMATELY \$1,000 PER KILOWATT.

THE DRAMATIC INCREASE IN NUCLEAR CONSTRUCTION COSTS CANNOT BE EXPLAINED BY INFLATION; SINCE 1964 NUCLEAR COSTS HAVE INCREASED MORE THAN TEN TIMES FASTER THAN THE CONSUMER PRICE INDEX. THE ONLY EXPLANATION FOR THESE SKYROCKETING COSTS IS THAT NUCLEAR REACTORS ARE DANGEROUS AND COMPLEX.

IN 1974, CARL J. HOCEVAR RESIGNED FROM THE AEROMET NUCLEAR CORP., THIS COMPANY PERFORMED REACTOR SAFETY RESEARCH FOR THE A.E.C. (NOW THE N.R.C.). HIS LETTER OF RESIGNATION STATES, I QUOTE: "IN SPITE OF THE SOOTHING REASSURANCES THAT THE A.E.C. GIVES TO THE UNINFORMED, MISLED PUBLIC, UNRESOLVED QUESTIONS ABOUT NUCLEAR POWER SAFETY ARE SO GRAVE THAT THE UNITED STATES SHOULD CONSIDER A COMPLETE HALT TO NUCLEAR POWER PLANT CONSTRUCTION UNTIL WE SEE IF THESE SERIOUS QUESTIONS CAN SOMEHOW BE RESOLVED."

IN SEPTEMBER OF 1975 A DISTINGUISHED PANEL OF 60 CITIZENS, INCLUDING 15 NOBEL LAUREATES AND 26 MEMBERS OF THE NATIONAL ACADEMY OF SCIENCES, NOTED THAT THE USE OF PLUTONIUM FUEL WAS AND I QUOTE: "MORALLY INDEFENSIBLE AND TECHNICALLY OBJECTIONABLE."

IN JANUARY OF 1976 ROBERT POLLARD, AN ELECTRICAL ENGINEER, RESIGNED FROM THE N.R.C., ^{Regulation} ^{Control} ^{Commission} HE LEFT BECAUSE HE FELT THE N.R.C. WAS AND I QUOTE: "BLIND" TO UNRESOLVED REACTOR SAFETY ISSUES.

IN DECEMBER OF 1976 RONALD FLUEGGE, AN N.R.C. ENGINEER WHO RESIGNED IN OCTOBER WROTE ^{that} THE N.R.C. AND I QUOTE: "COVERED UP OR BRUSHED ASIDE NUCLEAR SAFETY PROBLEMS OF FAR REACHING SIGNIFICANCE. WE ARE ALLOWING DOZENS OF LARGE NUCLEAR PLANTS TO OPERATE IN POPULATED AREAS, DESPITE KNOWN SAFETY DEFICIENCIES THAT COULD RESULT IN VERY DAMAGING ACCIDENTS."

THESE RESIGNATIONS SHOULD HAVE BEEN STRAWS IN THE WIND TO US, THE CITIZENRY, BUT WE CHOSE TO IGNORE THEM.

TIME DOES NOT PERMIT US TO DEVELOP A DISCUSSION OF NUCLEAR WASTE THIS AFTERNOON-- SUFFICE IT TO SAY AT PRESENT WE HAVE LEFT A LEGACY OF DEATH TO FUTURE GENERATIONS.

ON MARCH 28TH THE ACCIDENT AT THE THREE MILE ISLAND PLANT IN MIDDLETOWN, PENNSYLVANIA NEAR HARRISBURG, RAISED CONSIDERABLE CONCERN. FINALLY PUBLIC ATTENTION WAS RIVETED. AND THERE WAS A CONVERGENCE AND SPOTLIGHTING OF ALL THE PROBLEMS OF THE MUCH TOUTED TECHNOLOGY, INCLUDING THE CONFUSION, MISREPRESENTATION AND SECRECY; THE HAZARDS AND HARM LATENT IN THE OPERATION. LET ME CITE AN EXAMPLE:

AT THREE MILE ISLAND THE EVIDENCE WAS RAISED THAT THE PUBLIC WAS BEING LIED TO ABOUT THE ACTUAL LEVELS OF RADIATION IN THE HARRISBURG AREA DURING THE ACCIDENT. DR. ERNEST J. STERNGLOSS IS A PROFESSOR OF RADIOLOGICAL PHYSICS AT THE UNIVERSITY OF PITTSBURGH MEDICAL SCHOOL WHO WAS AT THE SITE AND TOOK HIS OWN READING OF RADIATION LEVELS. HE CLAIMS THAT THE PUBLIC WAS ONLY TOLD HALF OF THE STORY. HE SAID, I QUOTE: "THEY LIED ABOUT THE INTERNAL DOSES TAKEN IN BY THE 10 TO 20 MILE AREA- THE INHALED RADIATION." ^{I do not} ~~Without~~ ^{gamma rays + beta rays} ~~pretending~~ TO BE AN EXPERT ON THIS SUBJECT. THERE ARE TWO KINDS OF RADIATION: THE ELECTROMAGNETIC (GAMA RAYS), AND THE PARTICULATE (BETA RAYS). THE ELECTROMAGNETIC IS USED BY THE MEDICAL PROFESSION FOR THERAPY AND X-RAYS BECAUSE IT CAN PENETRATE THE SKIN AND THE BODY TISSUE. THE PARTICULATE IS MORE DIFFICULT TO DETECT AND CANNOT PENETRATE THE SKIN. HOWEVER, IF THE RADIO-ACTIVE PARTICLES GET INSIDE THE BODY THROUGH INHALATION THEY CAN BE JUST AS DANGEROUS AS THE ELECTROMAGNETIC. THE POINT DR. STERNGLOSS WANTED TO MAKE WAS THAT ONLY THE GAMA RAYS WERE MEASURED, MEANING THAT THE LEVELS OF RADIATION REPORTED BY THE OFFICIALS WERE INCOMPLETE.

Dr. STERNGLOSS CLAIMED THAT THE ACTUAL DOSE PEOPLE IN THE AREA AROUND THE THREE MILE ISLAND PLANT RECEIVED WAS 100 TO 150 TIMES GREATER THAN WHAT THE PUBLIC WAS TOLD. WHEN THE EXPERTS THEMSELVES DISAGREE, WHAT IS THE PUBLIC TO THINK?

WHAT WAS ONCE VIEWED AS A LIFE SAVING FORCE FOR OUR SOCIETY CAN NOW BE SEEN FOR THE DEATH DEALING FORCE THAT IT ALWAYS WAS. FOR NUCLEAR WEAPONERY AND THE "PEACEFUL" USES OF NUCLEAR ENERGY ARE TWO SIDES OF THE SAME COIN. AFTER THE WAR WE HAD

FIRST THE TESTING OF EVEN MORE POWERFUL BOMBS IN THE PACIFIC WITH TOTAL DISREGARD FOR HUMAN LIFE. THEN IN THE UNITED STATES- WITH VERY LITTLE CARE OR ATTENTION GIVEN HUMAN LIFE, THE DEVELOPMENT OF A NEW ENERGY SOURCE WITH UNQUESTIONED ZEAL, RATHER THAN WITH CARE AND RESPONSIBILITY WAS COMMENCED.

THIS IS TO YOU THE CLASS OF 1979- IT WILL REQUIRE MASSIVE EFFORT ON THE PART OF THE CITIZENRY TO STRIP AWAY THE WALL THAT WAS ERECTED TO CONCEAL THE RAMIFICATIONS OF NUCLEAR POWER FROM THE CITIZENRY.

WE CANNOT RUN AWAY FROM THE WORLD OF NUCLEAR POWER, WITH ALL OF ITS SHATTERING IMPLICATIONS. WE CANNOT SHUN IT BECAUSE OF ITS COMPLEXITY, OR BECAUSE OF ITS ENTRENCHED, POWERFUL SUPPORTERS. AS JONATHAN SCHELL SAID IN HIS BOOK, THE TIME OF ILLUSION : " THE QUESTIONS ARE UNPRECEDENTED, THEY ARE BOUNDLESS, THEY ARE UNANSWERED, AND THEY ARE WHOLLY AND LASTINGLY OURS."