

MORE EFFECTIVELY CONVERTING TECHNOLOGY INTO JOBS

MY PRESENTATION WILL BEGIN WITH A DISCUSSION OF TWO INTER-RELATED IDEAS: ONE, THE LACK OF ADEQUATE PROGRESS IN SOLVING SOCIETY'S MAJOR PROBLEMS; AND SECOND, THERE ARE PRACTICAL MEANS AVAILABLE TO BEGIN TO ATTACK THESE PROBLEMS MORE EFFECTIVELY NOW BEFORE THEY GROW TO DISASTROUS PROPORTIONS.

THE NUMBER ONE PROBLEM IS UNEMPLOYMENT. NOT ONLY NEEDED ARE MORE JOBS, BUT ALMOST AS IMPORTANT, MORE SKILLED JOBS AND REDUCTION OF UNEMPLOYMENT AMONG THE YOUNG. OTHER PRESSING PROBLEMS INCLUDE THE ACHIEVEMENT OF MORE ABUNDANT SOURCES OF ENERGY, IMPROVEMENT IN ENERGY CONSERVATION, GREATER ENVIRONMENTAL PROTECTION, NEW MATERIALS, INCREASED FOOD PRODUCTION, MORE EFFICIENT WATER CONSERVATION, BETTER EDUCATION, BETTER HEALTH CARE AND IMPROVED PRODUCTIVITY.

SOLUTIONS TO THESE OTHER MAJOR PROBLEMS WOULD PROVIDE THE JOBS NEEDED IN THE YEARS AHEAD, NOT ONLY FOR THE YOUNG PEOPLE ENTERING THE LABOR FORCE EACH YEAR, BUT ALSO NEW JOBS TO REPLACE THOSE THAT ARE LOST BECAUSE OF CHANGING CONDITIONS.

LAGGING PROGRESS

BUT PROGRESS IN MEETING THESE MAJOR NEEDS IS WOEFULLY SLOW. ONE REASON IS THAT FOR THE FIRST TIME IN MANY GENERATIONS THE UNITED STATES DOES NOT HAVE THE TECHNOLOGICAL RESOURCES TO SOLVE ITS MANY URGENT PROBLEMS IN A TIMELY MANNER. THESE ARE MASSIVE PROBLEMS AND TECHNOLOGICAL RESOURCES ARE REQUIRED THAT NO SINGLE COUNTRY CAN MARSHAL, EVEN THE UNITED STATES. YET THERE IS AN ENORMOUS AMOUNT OF UNPLANNED DUPLICATION OF TECHNICAL EFFORT THROUGHOUT THE INDUSTRIAL WORLD AND VAST AMOUNTS OF EXISTING TECHNOLOGIES ARE UNDER-UTILIZED.

THE THIRD MAJOR REASON FOR LACK OF PROGRESS IS THAT BUSINESS HAS BEEN MOSTLY CONCERNED WITH WHAT IT CAN SELL THAT WILL PROVIDE ADEQUATE RETURN ON INVESTMENT IN RESEARCH AND DEVELOPMENT. AS A CONSEQUENCE, SOCIETY IS GETTING FROM BUSINESS THE PRODUCTS AND SERVICES THAT MEET THE BUSINESS BEST RATHER THAN THOSE THAT ADDRESS THE MORE FUNDAMENTAL NEEDS OF SOCIETY.

STILL ANOTHER REASON IS LACK OF WIDESPREAD UNDERSTANDING OF THE CENTRAL ROLE OF TECHNOLOGY IN THE ECONOMIC PROCESS, AND PARTICULARLY THAT NEW JOBS ARE DERIVED FROM THE APPLICATION OF TECHNOLOGY.

MOREOVER, JUST THE USE OF THE WORD "TECHNOLOGY" OFTEN CAUSES PEOPLE TO TURN OFF WITH THE ATTITUDE THAT TECHNOLOGY IS FOR THE LONG-HAIRS -- DON'T BOTHER ME -- OR WORSE AND MORE RECENTLY, TECHNOLOGY HAS BEEN THOUGHT OF BY SOME PEOPLE AS ANOTHER WORD FOR ENVIRONMENTAL POLLUTION.

UNEMPLOYMENT

ALL IS NOT GLOOMY BECAUSE THERE IS A DEEPLY-ROOTED AND GROWING CONCERN IN OUR COUNTRY, AND INDEED WORLDWIDE, OVER UNEMPLOYMENT AND EFFORTS, ALBEIT TOO SMALL, ARE BEING MADE TOWARD MORE PERMANENT AND LONG-RANGE SOLUTIONS AS OPPOSED TO THE SHORT-TERM JOB CORPS/PUBLIC WORKS TYPE OF STIMULANT.

MOST OF THE EFFORT AIMED AT LONGER RANGE SOLUTIONS HAVE BEEN CONCENTRATED ON FACILITATING THE FORMATION, DEVELOPMENT AND MORE EFFICIENT OPERATION OF SMALL BUSINESSES FOR ACHIEVING ECONOMIC GROWTH AND CREATING NEW JOBS.

ONE SUCH EFFORT IS INNOVATION CENTERS AT MIT, CARNEGIE-MELLON AND OREGON STATE. THE NATIONAL SCIENCE FOUNDATION HAS PROVIDED PARTIAL FUNDING FOR THEM.

ANOTHER IS SPONSORED BY THE SMALL BUSINESS ADMINISTRATION. THIS AGENCY HAS MADE \$300,000 AVAILABLE IN 1977 TO TEST THE CONCEPT OF ESTABLISHING SMALL BUSINESS DEVELOPMENT CENTERS AT EIGHT COOPERATING UNIVERSITIES TO AID SMALL BUSINESSES WITH THEIR MANAGEMENT PROBLEMS, PARTICULARLY THOSE INVOLVED IN STARTING NEW COMPANIES AND IN FINDING AND APPLYING TECHNOLOGIES REQUIRED FOR NEW OR IMPROVED PRODUCTS AND SERVICES IN EXISTING ORGANIZATIONS.

THERE HAVE BEEN A NUMBER OF ORGANIZATIONS SIMILAR TO THE SMALL BUSINESS DEVELOPMENT CENTER ESTABLISHED AT THE STATE LEVEL. ONE EXAMPLE IS THE NEW ENTERPRISE INSTITUTE IN MAINE, STARTED IN 1974 WITH THE BELIEF THAT ENTREPRENEURSHIP AND INNOVATION IN THE SMALL BUSINESS SECTOR WAS THE FASTEST ROUTE TO HEALTHY ECONOMIC GROWTH IN MAINE. THE FUNDING LEVEL IS ABOUT \$700,000 OVER FIVE YEARS, AND IS PROVIDED MOSTLY BY A GRANT FROM THE KELLOGG FOUNDATION.

THE STATE OF CONNECTICUT HAS ESTABLISHED A SIMILAR ACTIVITY. ANOTHER IS PENNTAP, A TEN YEAR OLD STATE OF PENNSYLVANIA PROGRAM.

ALL OF THESE EFFORTS ARE SUCCESSFUL BUT ON TOO SMALL A SCALE. THEY DO NOT INVOLVE BIG BUSINESS, LOCAL LABOR AND GOVERNMENTAL UNITS SUFFICIENTLY AND HAVE LOW VISIBILITY. THEY ARE MICRO SOLUTIONS TO MACRO PROBLEMS.

URBAN

AN ENCOURAGING DEVELOPMENT IN ADDRESSING SOCIAL PROBLEMS IS THE EMERGING COMMITTEE OF URBAN PUBLIC UNIVERSITIES. THIS ORGANIZATION'S OBJECTIVE IS TO MORE EFFECTIVELY ORGANIZE AND APPLY UNIQUE RESOURCES IN COOPERATION WITH OTHER PUBLIC AND PRIVATE ORGANIZATIONS TO HELP SOLVE URBAN PROBLEMS.

AGRICULTURE EXTENSION SERVICE

FREQUENT REFERENCE IS MADE TO THE SUCCESS OF THE

AGRICULTURAL EXTENSION SERVICE WHERE FARMERS ARE SERVICED BY SMALL OFFICES AND THE TOTAL COST IS COVERED BY GOVERNMENT FUNDING. IT IS OFTEN SUGGESTED THAT THIS IS A MODEL TO BE APPLIED TO THE INDUSTRIAL AND URBAN AREAS. WHILE THERE ARE SOME PARALLELS, THERE ARE VAST DIFFERENCES IN THE RANGE AND COMPLEXITY OF TECHNOLOGY. THE EXTENSION SERVICE IS DEALING MOSTLY WITH THE APPLICATION OF TECHNOLOGY AND PRODUCTS IN ESSENTIALLY ONE FIELD, WHEREAS IN INDUSTRY THE THRUST IS RESEARCH AND DEVELOPMENT AND THE APPLICATION OF TECHNOLOGY TO DERIVE PRODUCTS AND SERVICES IN MANY FIELDS. EVEN IN AGRICULTURE, THE EXPANSION OF TECHNOLOGY REQUIRED TO MEET CHANGING CONDITIONS AND GROWING WORLD FOOD NEEDS WILL EVENTUALLY OUTSTRIP THE PRESENT EXTENSION SERVICE RESOURCES. PRESENT EVIDENCE IS THE LACK OF AVAILABLE INFORMATION BY FARMERS TO IMPROVE ENERGY-USE EFFICIENCY.¹

IN INDUSTRY THEN, THE SCALE OF ACTIVITY MUST BE VASTLY LARGER TO ENCOMPASS THE MUCH BROADER RANGE OF TECHNOLOGIES.

THERE ARE MANY OTHER ORGANIZATIONS ADDRESSING MAJOR SOCIETAL PROBLEMS THAT COULD BE MENTIONED, HOWEVER THE POINT IS THAT IN TOO MANY AREAS THE EFFORT IS INSUFFICIENT, FRAGMENTED AND DUPLICATIVE. IN ADDITION, THERE ARE VAST RESOURCES UNDER-UTILIZED.

AREA DEVELOPMENT OFFICE

WHAT IS NEEDED IS A PULLING TOGETHER OF AVAILABLE RESOURCES ON A REGIONAL SCALE TO IDENTIFY, PRIORITIZE AND

1 Impacts of Energy Uncertainties on The Food System in the Upper Midwest -- Upper Midwest Council

FACILITATING SOLUTIONS. THE ACTUAL IMPLEMENTATION OF PROBLEM SOLUTIONS WOULD BE DONE IN THE TRADITIONAL MANNER.

THE MAJOR FOCUS WOULD BE ON UNEMPLOYMENT BOTH IN IDENTIFYING AND PROMOTING MEANS OF CREATING NEW JOBS AS WELL AS TO FACILITATE THE TRAINING AND PLACEMENT OF THE YOUNG ENTERING THE LABOR FORCE.

ALTHOUGH MAIN EMPHASIS IS ON UNEMPLOYMENT, OTHER SOCIETAL PROBLEMS WOULD BE ADDRESSED WHOSE SOLUTION WOULD HELP TO CREATE JOBS.

PRIMARY FOCUS ON THE NUMBER ONE SOCIETAL PROBLEM OF UNEMPLOYMENT HAS SEVERAL ADVANTAGES. OBVIOUSLY BETTER PROGRESS CAN BE ACHIEVED BY CONCENTRATION OF ATTENTION AND RESOURCES. A SECOND ADVANTAGE IS THAT OF SOCIETAL CONSENSUS -- ALL CAN AGREE THAT THE NUMBER ONE NEED IS MORE JOBS; E.G., MANY WOULD REJECT OUT OF HAND PROPOSALS FOR INCREASED GOVERNMENT INVESTMENTS IN RESERACH AND DEVELOPMENT FOR ALTERNATE ENERGY SOURCES BECAUSE OF THE POSSIBILITY OF INCREASED POLLUTION OR UNJUST ENRICHMENT OF BUSINESS. HOWEVER, THEY WOULD AT LEAST SERIOUSLY AND OBJECTIVELY STUDY AND THEN MORE LIKELY SUPPORT ACTIONS LEADING TO MORE JOBS.

ANOTHER ADVANTAGE IN PLACING EMPHASIS ON UNEMPLOYMENT IS THAT MORE JOBS ALLEVIATE THE ADVERSE EFFORTS OF SOME OF THE OTHER MAJOR PROBLEMS AND MAKING THEM LESS URGENT.

THE VEHICLE IS THE AREA DEVELOPMENT OFFICE. THIS WOULD BE A HIGHLY VISIBLE ACTIVITY INVOLVING ALL SEGMENTS OF SOCIETY. ITS PRINCIPAL OBJECTIVE WOULD BE THAT OF IDENTIFYING

AND HELPING TO PROMOTE MEANS OF CREATING NEW JOBS, PARTICULARLY BY ENCOURAGING LARGE BUSINESSES TO ASSUME LEADERSHIP IN HELPING TO SOLVE MAJOR SOCIETAL PROBLEMS WHICH IN TURN WILL CREATE JOBS AND IN HELPING TO STIMULATE AND HELP IN THE FORMATION AND GROWTH OF SMALL BUSINESSES.

MORE SPECIFIC FUNCTIONS WOULD INCLUDE:

1. SELECTION OF APPROPRIATE SOCIETAL PROBLEMS FOR ATTACK.
2. ENCOURAGEMENT OF BUSINESSES TO ASSUME THE LEADERSHIP OF PROJECTS FOR SOLVING THE PROBLEMS.
3. ENCOURAGE COOPERATION AMONG BUSINESSES AND BETWEEN BUSINESS AND UNIVERSITIES IN IMPLEMENTING THE PROJECTS.
4. DISSEMINATION OF INFORMATION ON RESEARCH, DEVELOPMENT, SERVICES AND PRODUCTS REQUIRED TO HELP MEET MAJOR SOCIETAL NEEDS.
5. ENCOURAGE COMPANIES TO MAKE THEIR TECHNOLOGIES AVAILABLE TO OTHERS FOR NON-COMPETITIVE USES.
6. ENCOURAGE NON-RESEARCH INTENSIVE COMPANIES TO UPGRADE THEIR TECHNICAL CAPABILITIES.
7. ASSIST ASPIRING ENTREPRENEURS AND INVENTORS IN EVALUATIONS AND PREPARATION OF BUSINESS PLANS AND IN CONTACTING FINANCING SOURCES AND IN START-UP.

8. ASSIST SMALL BUSINESS IN ACQUIRING NEW PRODUCTS.
9. PROMOTE STATE LEGISLATION FOR INCREASING SUPPORT FOR TECHNOLOGICAL INNOVATION.
10. PROMOTE FEDERAL LEGISLATION AS REQUIRED.

THE AREA DEVELOPMENT OFFICE IS MANNED BY A SMALL PERMANENT STAFF. PROFESSIONAL EXPERTISE NEEDED FOR PROGRAM SELECTION AND PROMOTION WOULD BE FILLED BY VOLUNTEERS EMPLOYED BY OTHER ORGANIZATIONS AND BY RETIREES.

FINANCING: THE COST OF SUPPORTING THE PERMANENT STAFF AND A LIMITED NUMBER OF RESEARCH STUDIES WOULD BE BORNE BY ANNUAL CONTRIBUTIONS FROM THE PARTICIPATING ORGANIZATIONS. COSTS OF ANY RESEARCH STUDY REQUIRING A VERY LARGE EFFORT WOULD BE COVERED THROUGH FEDERAL OR STATE GOVERNMENT GRANTS.

POTENTIAL PROGRAMS

THE CONTEMPLATED MODUS OPERANDI OF AN AREA DEVELOPMENT OFFICE IS BEST EXPLAINED BY LOOKING AT A NUMBER OF PROGRAMS THAT MIGHT BE UNDERTAKEN. SIX PROGRAMS RANGING FROM SMALL TO VERY LARGE WILL BE BRIEFLY EXAMINED.

ENTREPRENEURIAL ENTERPRISE: THE SIMPLEST YET IMPORTANT TYPE OF PROGRAM IS THAT OF FOSTERING THE START-UP OF NEW AND SMALL ENTERPRISES. A NEW BUSINESS MEANS NEW JOBS. AN INVENTOR HAS AN IDEA FOR A NEW PRODUCT OR SERVICE, AND WANTS TO START A COMPANY TO DEVELOP AND MARKET IT. FINANCIAL BACKING FROM THE USUAL SOURCES IS NOT AVAILABLE. VENTURE

CAPITAL IS USUALLY NOT INTERESTED IN UNPROVEN IDEAS. THE AREA DEVELOPMENT OFFICE AGREES TO PROVIDE ASSISTANCE. FIRST A VOLUNTEER TEAM OF EXPERTS ARE ASSEMBLED FROM LOCAL BUSINESS AND UNIVERSITIES TO REVIEW THE IDEA. IT IS DETERMINED TO BE SOUND. HELP IS PROVIDED IN DRAWING UP A BUSINESS PLAN. \$500,000 IS REQUIRED FOR INITIAL CAPITAL. LOCAL MONEY SOURCES ARE APPROACHED FOR FINANCING. SINCE THERE IS SUBSTANTIAL RISK, THE TOTAL AMOUNT REQUIRED IS SPREAD AMONG A LARGE NUMBER OF INVESTORS. INVESTORS INCLUDE ALL TYPES OF BUSINESSES, INCLUDING BANKS, INSURANCE COMPANIES, VENTURE CAPITAL, LARGER INDUSTRIAL COMPANIES, LABOR UNIONS, RELIGIOUS ORGANIZATIONS AND CITY AND COUNTY ORGANIZATIONS WITH REVENUE BOND ISSUING AUTHORITY.

LARGE-SCALE ENERGY PROGRAM: A NUMBER OF SOCIETAL NEEDS SUCH AS CERTAIN ALTERNATE SOURCES OF ENERGY CAN ONLY BE MET WITH LARGE PROJECTS. ONE OF THE MOST CRITICAL ENERGY NEEDS THAT COULD DEVELOP IN THE FUTURE BECAUSE OF SHORTAGES OR EMBARGOES WOULD BE PETROLEUM FOR TRANSPORTATION AND AGRICULTURE.

LIQUEFICATION OF COAL IS A POTENTIAL SOURCE OF THIS FUEL, HOWEVER OUR POLITICAL LEADERS ARE UNABLE TO EVEN FORMULATE, LET ALONE ENACT, A MEANINGFUL ENERGY PROGRAM AND THE AMERICAN PUBLIC DO NOT UNDERSTAND THE DANGERS AHEAD. THUS, CONGRESS DRAGS ITS FEET IN PROVIDING INDUSTRY WITH LOAN GUARANTEES TO CUSHION FINANCIAL RISK IN DEVELOPING SYNTHETIC FUEL. WITH LEAD-TIMES OF TEN TO TWENTY YEARS

REQUIRED, DECISIONS AND ACTIONS TO GET MEANINGFUL ACTIVITY UNDER WAY ARE CRITICAL.

CONCERTED AND TIMELY ACTION IN THE UPPER MIDWEST COULD BE CRUCIAL BY GETTING PILOT SYNTHETIC FUEL PRODUCTION STARTED THROUGH EXISTING ENERGY COMPANIES OR BY FOSTERING THE ESTABLISHMENT OF NEW JOINT VENTURE COMPANIES. THERE WOULD BE ENOUGH POLITICAL CLOUT TO GET THE REQUIRED GOVERNMENT PARTICIPATION.

SOLAR ENERGY: IN VIEW OF THE CRITICAL IMPORTANCE OF ALTERNATE SOURCES OF ENERGY, MORE EFFORT IS NEEDED TO DEVELOP VARIOUS FORMS OF SOLAR ENERGY.

SOLAR ENERGY CAN BE MORE DECENTRALIZED THAN MANY OTHER SOURCES AND HENCE CAN BE PARTICULARLY APPLICABLE TO AGRICULTURAL NEEDS -- AN AREA OF PRIME IMPORTANCE TO THE UPPER MIDWEST.

SOLAR ENERGY IS AN APPROPRIATE FIELD FOR EFFORT IN THE UPPER MIDWEST BECAUSE OF THE REGIONAL SERI ACTIVITY.

THE APPROACH IS TO IDENTIFY THE PROJECTS WITH THE BEST POTENTIAL AND ENCOURAGE IMPLEMENTATION BY EXISTING COMPANIES. WHEN THE RISK IS TOO HIGH, OR FINANCIAL COMMITMENT BEYOND INDIVIDUAL COMPANIES, THEN JOINT VENTURES SHOULD BE ENCOURAGED -- EITHER COLLABORATIONS BY EXISTING COMPANIES OR THROUGH THE FORMATION OF NEW COMPANIES; E.G., BATTELLE

AND NORTHWESTERN MUTUAL LIFE INSURANCE ARE ENGAGED IN A SOLAR ENERGY IRRIGATION PROJECT, AND MIGHT BE CANDIDATES.

FAIR BREAK: REDUCING UNEMPLOYMENT AMONG THE MINORITY AND DISADVANTAGED YOUNG IS ANOTHER PROGRAM TO BE CONSIDERED. THE PRESENT FORTY PERCENT RATE OF UNEMPLOYMENT AMONG THE MINORITY YOUNG IN MOST OF OUR LARGE CITIES IS NOT ONLY SHAMEFUL TO OUR SOCIETY, BUT DANGEROUS.

IT IS CERTAIN THAT DEDICATED AND COORDINATED LARGE-SCALE COOPERATION AMONG BUSINESS, GOVERNMENT, ACADEMIA AND LABOR CAN MAKE A VAST IMPROVEMENT. THIS IS BASED ON CONTROL DATA'S SUCCESS IN PLACING PLANTS IN POVERTY AREAS WITH OUR COMPUTER BASED-EDUCATION BASIC SKILLS TRAINING, COUNSELING AND PLACEMENT SERVICES. THE SUCCESS OF 70001 LTD. PROVIDES ADDITIONAL EVIDENCE. THIS IS A NON-PROFIT ORGANIZATION THAT IS OPERATING WITH CETA (GOVERNMENT) FUNDS AND PROVIDES A MEANS BY WHICH OUT-OF-SCHOOL UNEMPLOYED YOUTH CAN GET IMMEDIATE EMPLOYMENT ALONG WITH ON-THE-JOB TRAINING, EDUCATION AND DEVELOPMENT OF SELF-CONFIDENCE AND MOTIVATION TO ENTER AND ADVANCE IN THE FIELD OF MARKETING AND DISTRIBUTION. THERE IS EXTENSIVE COOPERATION AND SUPPORT BY THE AMERICAN RETAIL FEDERATION AND RELATED NATIONAL BUSINESS FIRMS. THE 70001 PROGRAM IS PRODUCING SIGNIFICANT RESULTS, HOWEVER, IT IS LIMITED TO THE RETAIL FIELD, THE EMPHASIS IS ON PERSONNEL GUIDANCE AND COUNSELING AND DOES NOT DEAL WITH THE HUGE BULK OF THE MORE SEVERELY DISADVANTAGED. EVEN SO, IT

IS A GOOD START AND IT DOES SHOW THAT MEANINGFUL COOPERATION CAN OCCUR AMONG MAJOR SECTORS OF SOCIETY. THE NEXT STEP IS A MUCH MORE COMPREHENSIVE PROGRAM WHICH CAN BE IMPLEMENTED NOW.

BACK TO THE COUNTRYSIDE: A LONGER RANGE PROGRAM TO BE CONSIDERED IS ONE THAT STIMULATES AND SUPPORTS MIGRATION BACK TO RURAL AREAS. THERE IS A TREND STARTED IN THIS DIRECTION, BUT IT IS NOT A BACK TO THE FARM MOVEMENT. THIS TREND WILL NO DOUBT CONTINUE -- EVEN ACCELERATE. WITHOUT PROPER PLANNING, FUEL SHORTAGES, UNEMPLOYMENT, LACK OF ADEQUATE EDUCATION AND HEALTH CARE AND OTHER PROBLEMS WILL DEVELOP. THUS, A NUMBER OF URBAN PROBLEMS WILL SPREAD INTO THE COUNTRYSIDE AND BECOME EVEN MORE DIFFICULT TO SOLVE.

MIGRATION BACK TO THE COUNTRYSIDE, INCLUDING BACK TO THE FARM, IF ENCOURAGED AND PROPERLY MANAGED AS PART OF A NATIONAL PROGRAM AND ACCOMPANIED WITH APPROPRIATE BROAD-BASED RESEARCH AND DEVELOPMENT WOULD HAVE GREAT BENEFITS FOR OUR SOCIETY. UNEMPLOYMENT WOULD BE MATERIALLY REDUCED, FOOD PRODUCTION INCREASED, FOOD COSTS DECREASED, AND GREATER CONSERVATION OF NATURAL RESOURCES AND MORE ENVIRONMENTAL PROTECTION WOULD BE ACHIEVED ALONG WITH PROVIDING A GREATER AVAILABILITY OF A LIFE STYLE OF GROWING POPULARITY. VIRTUALLY ALL SEGMENTS OF SOCIETY WOULD PROFIT IN ONE WAY OR ANOTHER.

THERE ARE MANY ELEMENTS OF CHANGE ALREADY IN TRAIN, EFFECTING AGRICULTURE AND FOOD PROCESSING THAT NOT ONLY SUPPORT THIS THESIS, BUT DICTATE ITS ADOPTION. THESE INCLUDE THE INEXORABLY RISING COSTS OF ENERGY, DECREASING AVAILABILITY OF FOSSIL-BASED FUELS AND FERTILIZER, RISING EQUIPMENT AND LAND COSTS, THE GROWING SCARCITY OF WATER, ENVIRONMENTAL DEGRADATION AND DIMINISHING RETURNS FROM MANY OF THE PRESENT DIRECTIONS OF AGRICULTURAL CROP BREEDING RESEARCH. THE PRESENT HIGHLY CENTRALIZED, HUGE CAPITAL EQUIPMENT INTENSIVE, FOSSIL FUEL DEPENDENT AND ENVIRONMENTALLY DESTRUCTIVE METHODS SHOULD NOW START TO GIVE WAY TO MORE DECENTRALIZED APPROACHES WITH NATURE.

THIS SCENARIO DOES NOT REPRESENT THE MOST PREVALENT VIEWS WHICH EXTRAPOLATE THE PAST INTO THE FUTURE AND PREDICT THE EVENTUAL EXTINCTION OF THE SMALL FARMER.

THE MOST SUCCESSFUL IMPLEMENTATION OF THESE KINDS OF PROGRAMS WILL REQUIRE EXPANDED COOPERATION AND VOLUNTEERISM WITHIN THE COMMUNITY, LEGISLATION AND THE ESTABLISHMENT OF MUCH MORE EFFECTIVE NATURAL AND REGIONAL COMMUNICATIONS AND INFORMATION EXCHANGE NETWORKS.

EXPANDED COOPERATION

WHILE MANY EXAMPLES CAN BE CITED TO PROVIDE AMPLE EVIDENCE THAT COOPERATION AND VOLUNTEERISM WITHIN COMMUNITIES CAN BE EXPANDED, THERE ARE TWO WHICH ARE PARTICULARLY PERTINENT.

UPPER MIDWEST COUNCIL: ONE IS THE UPPER MIDWEST COUNCIL, WHICH WAS CREATED IN 1959 IN RESPONSE TO NEEDS FOR MORE INFORMATION ON REGIONAL SOCIO-ECONOMIC TRENDS AND OPTIONS TO STIMULATE GROWTH AND IMPROVEMENT IN THE UPPER MIDWEST.

THE COUNCIL HAS A CURRENT MEMBERSHIP OF 232. ALL SECTORS OF SOCIETY ARE ENCOURAGED TO PARTICIPATE. A FULL TIME DIRECTOR AND THREE STAFF ASSISTANTS MAKE UP THE ADMINISTRATIVE OFFICE. THE COUNCIL IS GOVERNED BY A BOARD OF TWENTY-EIGHT DIRECTORS, ALL OF WHOM SERVE WITHOUT PAY. MANY STUDIES HAVE BEEN MADE AND REPORTS PUBLISHED.

CONTRIBUTIONS FROM MEMBERS FINANCE THE SMALL ADMINISTRATIVE OFFICE AND SOME OF THE STUDIES. GOVERNMENT, FOUNDATION AND MEMBER GRANTS ARE OBTAINED FOR UNDERWRITING THE COSTS OF THE LARGER PROJECTS.

PRISON INDUSTRIES' TASK FORCE: IN MID-1975, MINNESOTA STATE COMMISSIONER SCHOEN APPROACHED CONTROL DATA WITH A REQUEST FOR ASSISTANCE IN DEVELOPMENT OF A PRISON INDUSTRY PROGRAM IN MINNESOTA'S CORRECTIONS SYSTEM. A TASK FORCE OF CONTROL DATA EMPLOYEES WAS FORMED, HEADED BY E. W. KRAMER. ITS PURPOSE WAS TO RECOMMEND ALTERNATIVES FOR ESTABLISHING A PRISON INDUSTRY PROGRAM AFTER REVIEW AND ANALYSIS OF CURRENT CONDITIONS, OPPORTUNITIES AND CONSTRAINTS AT THE PRISON, INMATE SKILLS, AND PRODUCT MARKETABILITY. THE TASK FORCE

COMPLETED ITS ANALYSIS AND PRESENTED ITS FINDINGS AND RECOMMENDATIONS TO COMMISSIONER SCHOEN IN JANUARY, 1976.

THE TIME OF ALL EMPLOYEES WAS PROVIDED AT NO CHARGE AND MUCH OF THE WORK WAS ACCOMPLISHED DURING EVENINGS AND WEEK-ENDS. THIS IS BUT ONE OF MANY EXAMPLES OF VOLUNTEERISM BY EMPLOYEES.

LEGISLATION

THE INITIAL LEGISLATIVE ACTIONS SHOULD INCLUDE THE FOLLOWING:

THAT CONGRESS SHOULD DECLARE IT TO BE IN THE PUBLIC INTEREST THAT COMMUNITY RESOURCES OF BUSINESS, UNIVERSITIES, LABOR UNIONS, GOVERNMENTAL UNITS, AND OTHER ORGANIZATIONS SHOULD BE USED TO HELP SOLVE MAJOR SOCIETAL PROBLEMS; AND THAT THE USE OF THOSE RESOURCES SHOULD BE COORDINATED BY REGIONAL ORGANIZATIONS, EACH OF WHICH WOULD BE CALLED AN "AREA DEVELOPMENT OFFICE."

AREA DEVELOPMENT OFFICES ARE MANNED BY A SMALL PERMANENT STAFF WHOSE SUSTAINING COSTS ARE SUPPORTED BY CONTRIBUTIONS FROM THE LOCAL PARTICIPANTS. A PRIORITY PROGRAM FOR THESE OFFICES SHOULD BE THE ESTABLISHMENT OF REGIONAL COMMUNICATIONS AND INFORMATION EXCHANGE NETWORKS TO OPTIMIZE THE ECONOMY OF THE REGIONS IN THE AREAS OF ENERGY, AGRICULTURE, HEALTH CARE AND JOB CREATION.

FURTHER LEGISLATIVE ACTIONS WOULD INCLUDE:

1. APPROPRIATION OF FUNDS FOR REGIONAL INFORMATION EXCHANGE NETWORKS AND STUDY PROJECTS.
2. PROVISION OF FINANCIAL INCENTIVES (TAX) FOR INDUSTRY TO INVEST IN SELECTED COOPERATIVE PROJECTS.
3. PROVISION OF FINANCIAL INCENTIVES (TAX) TO ENCOURAGE INDUSTRY TO SHARE TECHNOLOGY.
4. REQUIREMENT FOR GOVERNMENT LABORATORIES TO ASSIST INDUSTRY IN FINDING BROADER USES FOR ITS TECHNOLOGY.

EFFECTIVE COMMUNICATIONS: THE MECHANISM FOR EFFECTIVE AND EFFICIENT COMMUNICATIONS AND INFORMATION TRANSFER IS NOW AVAILABLE THROUGH THE USE OF COMPUTER-BASED DATA BASE STORAGE AND RETRIEVAL SYSTEMS AND COMPUTER COMMUNICATIONS.

THE MAJOR STUMBLING BLOCK TO ITS USE IS THE LACK OF INCENTIVE IN INDUSTRY, ACADEMIA AND GOVERNMENT TO MAKE INFORMATION READILY ACCESSIBLE.

EDUCATION AND THE AFOREMENTIONED LEGISLATION IS NEEDED TO BRING THIS ABOUT.

CONCLUSION