

POLICY RECOMMENDATIONS FOR THE FUTURE

US TELECOMMUNICATIONS INFRASTRUCTURE

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Policy Recommendations for the  
Future US Telecommunications Infrastructure

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GOOD MORNING, THANK YOU ALL FOR COMING

I WISH TO THANK THE PARTNERSHIP FOR INVITING ME TO GIVE THIS TALK

WE'RE HERE TO DISCUSS THE FUTURE OF TELECOMMUNICATIONS AND ITS  
IMPACT ON BUSINESSES AND CONSUMERS, ESPECIALLY AS IT RELATES TO  
ECONOMIC PRODUCTIVITY AND INTERNATIONAL COMPETITIVENESS

I FOR ONE AM A STRONG BELIEVER IN THE POWERFUL POTENTIAL WHICH A  
TECHNOLOGICALLY ADVANCED PUBLIC COMMUNICATIONS INFRASTRUCTURE CAN  
PROVIDE, AND THIS IS THE PRIMARY FOCUS OF MY REMARKS

I AM ALSO SUPPORTIVE OF ADVANCED PRIVATE TELECOMMUNICATION<sup>A</sup>  
NETWORKS, WHICH MANY OF YOUR COMPANIES OWN AND OPERATE--HOWEVER I  
PLAN TO HIGHLIGHT THE POTENTIAL SYNERGIES MADE POSSIBLE BY  
INTERCONNECTION TO AN ADVANCED PUBLIC NETWORK

WHILE IT IS GOOD FOR BUSINESSES TO HAVE ADVANCED TELECOMMUNICATIONS  
CAPABILITY, IT IS MUCH MORE IMPORTANT THAT THEY ARE ABLE TO  
COMMUNICATE SIMILARLY WITH THE MASS MARKET, MEANING CUSTOMERS AND  
SUPPLIERS

ONLY WHEN THE DEMAND-DRIVERS OF THE MASS MARKET ARE UTILIZED, WILL  
THE POTENTIAL COST EFFICIENCIES OF ADVANCED NETWORKS BE REALIZED  
THROUGH SHARING OF HIGH-CAPACITY FACILITIES

THE GOAL OF THE RESEARCH I HAVE BEEN CONDUCTING FOR SEVERAL YEARS,  
WHICH APPEARS IN MY NEW BOOK, IS TWO-FOLD:

FIRST, I TRY TO EXPLAIN TRENDS IN TELECOMMUNICATIONS WHICH RESULT  
FROM THE SIMULTANEOUS INTERACTION OF TECHNOLOGY, ECONOMICS AND  
INSTITUTIONAL FACTORS--SUCH AS POLITICS AND REGULATION

SECOND, GIVEN THESE TRENDS, I TRY TO PREDICT THE FUTURE OF PUBLIC  
NETWORKS, AND IDENTIFY A NEW PUBLIC POLICY MIX WHICH PROMOTES BOTH  
COMPETITION, AND A STRONG, TECHNOLOGICALLY ADVANCED, INFRASTRUCTURE  
BY IMPROVING THE INCENTIVES OF BOTH PUBLIC AND PRIVATE NETWORK  
SUPPLIERS--I CALL THE RESULT "COOPERATIVE COMPETITION".

EVERY ONE OF US IS A BENEFICIARY OF EFFICIENT PUBLIC COMMUNICATIONS.

WORLDWIDE, IT IS BECOMING CLEAR THAT NOT ONLY IS ECONOMIC STRENGTH IN TERMS OF RAW NATURAL RESOURCE ENDOWMENTS AND PHYSICAL PRODUCTION IMPORTANT, BUT THAT SUBSTANTIAL ECONOMIC EMPOWERMENT DERIVES FROM THE EFFICIENT PRODUCTION AND DISTRIBUTION OF INFORMATION AND IDEAS

WE CANNOT OVERLOOK THE ADVANTAGES TO SOCIETY FROM UBIQUITOUS ADVANCED NETWORKS--THE ULTIMATE MOVERS OF INFORMATION.

THOSE SHORT-SIGHTED INDIVIDUALS THAT BASE FUTURE DECISIONS ON YESTERDAY'S TECHNOLOGY, WILL STRUGGLE TO SOLVE NEW PROBLEMS WITH OLD TOOLS. THOSE WITH FORESIGHT, WILL REALIZE THE IMPORTANCE OF THE TECHNOLOGICAL PARADIGM CHANGE, AND WILL WORK AGGRESSIVELY TO EMBRACE IT; GAINING A LONG-TERM GLOBAL MARKET ADVANTAGE.

THERE ARE EQUITY ISSUES AS WELL. NOT HAVING AN ADVANCED PUBLIC COMMUNICATIONS INFRASTRUCTURE MAY MEAN THAT ACCESS TO INFORMATION IS AVAILABLE ONLY TO THOSE WHO CAN AFFORD SOPHISTICATED PRIVATE NETWORKS AND CUSTOMER OWNED DEVICES.

THE SUBSTANTIAL SOCIAL INFORMATION "GAPS" WHICH ALREADY EXIST, AS EVIDENCED BY THE GREAT DISPARITY IN EDUCATION, BASED ON INCOME LEVELS AND GEOGRAPHIC LOCATION, WILL WIDEN.

THE SOCIAL RISKS FROM A SOCIETY OF INFORMATION "HAVES" AND "HAVE-NOTS" IS NOT KNOWN, BUT THE AVAILABILITY OF PUBLIC BROADBAND NETWORKS WOULD MINIMIZE WHATEVER RISKS THERE ARE.

BEFORE CONTINUING, I WISH TO ACKNOWLEDGE THE RECENT STUDY CONDUCTED BY BOOZ-ALLEN ON BEHALF OF THE PARTNERSHIP EMPHASIZING THE IMPORTANCE OF THE CITY'S NETWORK INFRASTRUCTURE IN SEVERAL DIMENSIONS, SUCH AS HOW TO PROMOTE INVESTMENT, IMPROVE RELIABILITY, AND STIMULATE GROWTH THROUGH CHANGES IN REGULATORY POLICIES

I MUST SAY AT THE OUTSET THAT I COULD NOT AGREE MORE WITH THE FINDINGS OF THIS STUDY AND URGE YOU TO READ IT IF YOU HAVE NOT ALREADY--THE REPORT ARGUES FOR INCREASED COORDINATION AND PLANNING AT THE STATE AND CITY LEVEL TO PROMOTE AND MONITOR THE COMMUNICATIONS INFRASTRUCTURE TO ASSURE IT REMAINS STATE-OF-THE-ART AND AS RELIABLE AS ANY NETWORK WORLDWIDE--IT RECOMMENDS CHANGES IN TAX, PRICING AND DEPRECIATION POLICIES TO STIMULATE PUBLIC NETWORK INVESTMENT AND USAGE

MANY OF THE CONCLUSIONS FROM MY RESEARCH ARE COMPLIMENTARY AND EXTEND THE DISCUSSION IN THE PARTNERSHIP STUDY--INCLUDING THE IMPORTANT IMPACTS OF FEDERAL POLICY, THE MASS MARKET, AND OTHER AREAS NOT SPECIFICALLY ADDRESSED

FOR THE REMAINDER OF THIS TALK I WILL DISCUSS TRENDS IN TELECOMMUNICATIONS TECHNOLOGY AND FUTURE DEMAND DRIVERS, AND HOW THEY ARE AFFECTED BY THE LACK OF CONSISTENT POLICY DIRECTION AT THE NATIONAL AND STATE LEVELS

I WILL END WITH POLICY RECOMMENDATIONS TO SOLVE SOME OF THE PROBLEMS AND PROVIDE INCENTIVES FOR COOPERATION AMONG THE INDUSTRY PLAYERS TO RAPIDLY ADOPT AND DEPLOY NEW TECHNOLOGY

1. TECHNOLOGY: A NEW PARADIGM

A NEW PARADIGM IN TELECOMMUNICATIONS TECHNOLOGY IS TAKING SHAPE; ONE THAT WILL TRANSFORM THE WAY WE USE COMMUNICATIONS TO ACCOMPLISH SUCH EVERYDAY ACTIVITIES AS WORKING, LEARNING, ENTERTAINMENT, TRAVELING, SHOPPING, NEWS AND INFORMATION--THE LIST GOES ON.

THE VEHICLE FOR THE NEW PARADIGM IS DIGITAL FIBER-OPTICS, A RELATIVELY NEW TECHNOLOGY THAT, ONLY NOW, ARE WE BEGINNING TO UNDERSTAND ITS POTENTIAL TO AFFECT OUR LIVES.

A WIDELY AVAILABLE NETWORK BASED ON DIGITAL FIBER-OPTICS REPRESENTS A COMMUNICATIONS SUPERHIGHWAY--A VERY SPECIAL TYPE OF SUPERHIGHWAY CAPABLE OF HANDLING SO MUCH TRAFFIC THAT CONGESTION WILL NOT BE POSSIBLE NO MATTER HOW MUCH TRAFFIC IS ON IT.

THERE IS A LOT OF WORK INVOLVED TO ADOPT TECHNOLOGY ON SUCH A MASSIVE SCALE, AND IT REQUIRES DILIGENCE ON THE PART OF ALL THE MAJOR PLAYERS TO HELP BRING IT ABOUT THROUGH A SPIRIT OF COOPERATION.

WITHOUT A CONCERTED EFFORT AMONG ALL THE MAJOR PLAYERS, THE POSSIBILITY FOR TIMELY ADOPTION OF NEW TECHNOLOGY IN THE PUBLIC NETWORK IS REMOTE.

IN FACT, THE CURRENT NATIONAL TELECOMMUNICATIONS POLICY MIX IS A RECIPE FOR DISASTER, AS FAR AS PUBLIC ACCESS TO ADVANCED INFORMATION SERVICES IS CONCERNED.

EVERYONE AGREES THAT AN ADVANCED PUBLIC COMMUNICATIONS INFRASTRUCTURE IS A GOOD IDEA, BUT MANY DO NOT AGREE THAT IT IS WORTH THE COST OF ACHIEVING IT. THIS IS THE KEY ISSUE FACING POLICYMAKERS, AND IT IS A SERIOUS "CHICKEN-AND-EGG" PROBLEM.

TWO THINGS ARE FOR SURE. THE TOTAL INVESTMENT COST OF BROADBAND TECHNOLOGY ADOPTION IN PUBLIC NETWORKS IS HIGH, AND THE ULTRA-HIGH CAPACITY AND SPEED OF THE TECHNOLOGY IS RELATIVELY MORE COST EFFICIENT WHEN SHARED AMONG A LARGER NUMBER OF USERS.

IT IS THE FUNDAMENTAL NATURE OF THE TECHNOLOGY ITSELF WHICH CALLS FOR A COOPERATIVE INFRASTRUCTURE APPROACH TO TECHNOLOGY ADOPTION. FURTHERMORE, THE VALUE OF SUCH NETWORKS IS DIRECTLY RELATED TO THE SIZE OF THE SUBSCRIBER BASE.

ALL OF THIS IMPLIES THAT WIDESPREAD SHARING OF THE COSTS OF TECHNOLOGY ADOPTION AMONG THE PUBLIC WILL YIELD THE GREATEST NET BENEFITS TO ALL, AND NO DOUBT WILL REDUCE SUBSTANTIALLY EACH SUBSCRIBERS COST OF PRIVATELY OBTAINING SUCH A POWERFUL COMMUNICATIONS CAPABILITY ON THEIR OWN.

CURRENT PUBLIC POLICY IS INCONSISTENT WITH A PARADIGM FOR SHARING AND INTERCONNECTION. REGULATORY AND LEGAL POLICIES ENCOURAGE STRUCTURAL SEPARATION OF NETWORKS THROUGH A HOST OF ASYMMETRIC RULES ACROSS INDUSTRY SEGMENTS.

RESTRICTIONS ABOUND ON COOPERATIVE ARRANGEMENTS, LINE-OF-BUSINESS ACTIVITIES, AND OWNERSHIP, SERVING TO SEGMENT INDUSTRY GROUPS ARTIFICIALLY; EACH ONE STRIVING TO PERPETUATE ITS OWN PROTECTIVE ARRANGEMENTS UNDER THE LAW.

## 2. DEMAND TRENDS

THERE IS MUCH DISAGREEMENT OVER THE FUTURE DEMAND FOR INFORMATION AND COMMUNICATION SERVICES. DEMAND-SIDERS CLAIM IT IS INSUFFICIENT TO JUSTIFY SPENDING FOR THE NETWORK INFRASTRUCTURE.

THEY BELIEVE THE AVERAGE CONSUMER DOES NOT REQUIRE ANYTHING MORE THAN BASIC TELEPHONE AND CABLE TELEVISION SERVICES AND POINT TO THE VERY LOW LEVELS OF INFORMATION SERVICES RELATIVE TO BASIC VOICE SERVICES, CLAIMING THAT IF DEMAND WERE TRULY HIGH, WE WOULD OBSERVE MORE WIDELY AVAILABLE SERVICE OFFERINGS FROM PRIVATE VENDORS, SUCH AS VIDEOTEX, AUDIOTEX, DISTANCE LEARNING, ETC.

IN ADDITION, ANYONE WHO WANTS SOPHISTICATED SERVICES HAS THE OPTION OF PURCHASING A PERSONAL COMPUTER AND MODEM.

THIS VIEW IS BASED LARGELY ON CASUAL OBSERVATIONS MADE OVER THE LAST DECADE, WHICH INDICATE THAT THE AVERAGE HOUSEHOLD DOES NOT CONSUME ANY SIGNIFICANT AMOUNT OF ADVANCED INFORMATION SERVICES. HOWEVER, THIS TREND WILL CHANGE IN FUTURE DECADES.

THE PERCEPTION OF LOW DEMAND OCCURS PRIMARILY FOR LACK OF AN AFFORDABLE VEHICLE THROUGH WHICH THE AVERAGE HOUSEHOLD CAN OBTAIN USEFUL INFORMATION SERVICES. THE TRADITIONAL TELEPHONE NETWORK WILL ONLY SUPPORT BASIC LOW-SPEED SERVICES, SUCH AS SIMPLE VOICE SERVICE, UNLESS A PRIVATE NETWORK AND/OR SOPHISTICATED DEVICES ARE PURCHASED.

THE PRIVATE COST OF OBTAINING MANY ADVANCED SERVICES IS SIMPLY OUT OF REACH FOR MANY HOUSEHOLDS.

FURTHERMORE, THERE IS AN EXTREMELY IMPORTANT INTERACTION OF SUPPLY AND DEMAND THAT IS GENERALLY OVERLOOKED BY THOSE WHO DO NOT SEE THE POTENTIAL NET BENEFITS.

PERHAPS THE LACK OF A GOOD DISTRIBUTION NETWORK IS PRECISELY WHAT PREVENTS PRIVATE SECTOR VENDORS FROM OFFERING NEW INFORMATION SERVICES.

IF THERE WERE EFFICIENT NATIONAL DISTRIBUTION CHANNELS IN PLACE, SERVICE OFFERINGS AND DEMAND WOULD TAKE OFF, AND THE SYSTEM WOULD THRIVE FINANCIALLY ONCE A CRITICAL MASS OF DEMAND WAS ACHIEVED.

THE POSSIBILITIES FOR NEW TELECOMMUNICATION SERVICES ARE TRULY EXCITING. THEY RANGE FROM KNOWN SERVICES SUCH AS: SHOPPING-AT-HOME, NEWS AND INFORMATION, VIDEO TELEPHONY, ENTERTAINMENT VIDEO, AND OTHERS, TO SERVICES WE HAVE NOT YET IMAGINED.

THESE SERVICES COULD FULFILL A WIDE RANGE OF EVERYDAY CONSUMER ACTIVITIES, SUCH AS: "TELECOMMUTING" (WORKING FROM HOME), DISTANCE LEARNING, SHOPPING, HOME HEALTH CARE, ENTERTAINMENT, MONITORING, RECORDING, ETC.

SOMEDAY, COMMUNICATIONS TECHNOLOGY WILL ALLOW US TO ENJOY THE WONDERS OF "VIRTUAL REALITY"; A MULTI-MEDIA ENVIRONMENT WHERE EXPERIENCES AND SITUATIONS MAY BE SIMULATED TO LET US KNOW ALL ABOUT THEM WITHOUT THEM EVER ACTUALLY OCCURRING. SIMULTANEOUS COMBINATIONS OF VIDEO, AUDIO, AND TEXT WILL BE AVAILABLE TO ACCESS OVER THE PHONE LINE.

WE ARE IN THE VERY EARLY STAGES OF THE USE OF MULTI-MEDIA TO ASSIST US IN EVERYDAY ACTIVITIES, AND GROWTH IN THIS AREA DEPENDS DIRECTLY ON THE RATE AT WHICH WE ADOPT NEW TECHNOLOGY.

INITIALLY, WE WILL EXPERIENCE "TELEPRESENCE"; A SITUATION WHERE VIDEO TELEPHONY ALLOWS US TO DIRECTLY INTERACT WITH ONE ANOTHER FROM GREAT DISTANCES, AS IF WE WERE ACTUALLY PRESENT.

THE SAVINGS IN TERMS OF TRAVEL TIME AND MONEY WOULD BE SUBSTANTIAL. AFTER WE ACHIEVE SUCH OBVIOUS THINGS AS SAVING ON TRAVEL COSTS, WE WILL BEGIN TO EXPLORE NEW WAYS OF USING THE TECHNOLOGY THAT WE CANNOT EVEN CONCEIVE OF TODAY.

ANOTHER IMPORTANT ASPECT OF UNIVERSAL ACCESS TO ADVANCED NETWORKS CONCERNS BUSINESSES AND THEIR INTERACTION WITH CUSTOMERS AND SUPPLIERS.

THROUGH THE USE OF INFORMATION SERVICES, "NARROWCASTING" IS POSSIBLE. IN OTHER WORDS, BUSINESSES MAY PURCHASE ADVERTISING MORE EFFECTIVELY BY TARGETING IT TO THOSE CUSTOMERS THAT ARE IN THE MARKET FOR PARTICULAR GOODS AND SERVICES.

ELECTRONIC COMMUNICATIONS WOULD SIGNIFICANTLY ENHANCE THE EFFECTIVENESS OF ADVERTISING AND WOULD DISPLACE LESS EFFICIENT FORMS, SUCH AS DIRECT MAIL, A \$25 BILLION DOLLAR A YEAR BUSINESS, AND GROWING.

TOTAL ADVERTISING EXPENDITURES IS ABOUT \$140 BILLION A YEAR AND COULD SERVE TO DEFRAY THE COST OF ADVANCED NETWORKS. THIS IS APPROXIMATELY EQUAL TO THE TOTAL TELECOMMUNICATIONS REVENUE.

ORDERS FOR PURCHASES, SALES, AND CUSTOMER SERVICE WOULD BECOME MUCH EASIER, REDUCING OVERALL TRANSACTIONS COSTS, STIMULATING SALES AND SERVICE QUALITY.

WITHOUT A NATIONAL INFRASTRUCTURE, SUCH EVERYDAY BUSINESS ACTIVITIES MUST TAKE PLACE OVER A PATCHWORK OF PRIVATE AND PUBLIC NETWORKS, WHICH MAY OR MAY NOT BE ABLE TO TALK TO EACH OTHER.

THUS, THERE IS TREMENDOUS POTENTIAL DEMAND FOR ADVANCED TELECOMMUNICATIONS SERVICES.

THERE ARE TWO CRITICAL PROBLEMS REGARDING THE DEMAND FOR SUCH SERVICES AND BOTH MUST BE ADDRESSED IF DEMAND IS TO REACH ITS FULL POTENTIAL.

TWO LINCHPINS AFFECTING THE GROWTH OF DEMAND--END-TO-END SERVICE CAPABILITY AND IMPROVEMENTS IN CONSUMER DEVICES.

COMMON TO BOTH OF THESE IS AN ESPECIALLY IMPORTANT PROBLEM--RAW SPEED. THIS IS WHERE ADVANCED DIGITAL NETWORKS ARE ESPECIALLY SUITED TO SOLVING THE PROBLEM OF LOW CURRENT DEMAND.

CONSUMERS' TIME IS VALUABLE. IF THEY CANNOT SAVE TIME BY USING COMMUNICATIONS AND INFORMATION SERVICES, THEY WILL OPT TO CONTINUE GETTING WHATEVER IT IS THEY NEED IN OTHER WAYS, IF AT ALL.

WE WOULD ALL APPRECIATE THE CONVENIENCE OF WORKING, LEARNING, ENTERTAINING, OR SHOPPING AT HOME, BUT ONLY IF IT IS MORE CONVENIENT OR ENJOYABLE THAT WAY.

IN SIMPLE TERMS, IF CONSUMERS HAVE TO SIT DOWN AT A TERMINAL DEVICE AND SPEND TEN MINUTES NAVIGATING THROUGH NUMEROUS DISPLAY SCREENS TO ORDER A PLANE TICKET, OR FIND A PHONE NUMBER, THEY WILL SIMPLY PREFER TO CALL BECAUSE, IT IS FASTER AND EASIER.

SIMILARLY, IF THEY CANNOT QUICKLY FIND AND EXAMINE THE SPECIFIC ITEM THEY'RE SHOPPING FOR, THEY WOULD RATHER GO TO THE STORE AND DO PRICE AND QUALITY COMPARISONS ALL AT ONCE.

UNLESS BOTH THE NETWORK, THE PHONE LINE, AND THE TERMINAL DEVICE ARE AS FAST AND CONVENIENT AS OTHER ALTERNATIVES FOR ACCOMPLISHING DAY-TO-DAY TASKS AND ACTIVITIES, ELECTRONIC INFORMATION AND COMMUNICATION SERVICES WILL NOT REACH THEIR DEMAND POTENTIAL.

THE REQUIREMENT FOR END-TO-END SERVICE CAPABILITY IS OBVIOUS.

IT DOES NO GOOD TO BE ABLE TO MAKE A DIGITAL CALL TO A NETWORK SWITCH. THE PERSON CALLED MUST ALSO BE HOOKED UP WITH SIMILAR CAPABILITY.

THUS, IT IS CRITICAL THAT THE PUBLIC NETWORK BECOME THE VEHICLE FOR TRANSPORTING ADVANCED SERVICES.

OTHERWISE, THE USE OF THESE SERVICES WOULD REQUIRE BEING CONNECTED TO PRIVATE NETWORKS, WHICH WILL NOT BE UBIQUITOUS AND WHICH MAY NOT BE ABLE TO COMMUNICATE WITH OTHER PRIVATE NETWORKS.

REGARDING THE SECOND ISSUE, THE TERMINAL DEVICE, IT MUST BE USER FRIENDLY AND RELATIVELY INEXPENSIVE.

A LOT OF RESEARCH AND DEVELOPMENT IS REQUIRED TO CREATE A DEVICE THAT AVERAGE AMERICANS WOULD BE WILLING TO USE, EVEN IF THEY HAVE NEVER USED A COMPUTER.

INITIALLY, THIS MEANS THAT THE DIGITAL TERMINAL BE AS EASY TO USE AS A FANCY TELEPHONE, OR A TELEVISION SET, AND REMOTE KEYPAD AND PERHAPS A KEYBOARD.

A PRIMARY REASON FOR THE ABYSMAL SHOWING THAT DEMAND FOR INFORMATION SERVICES EXHIBITS IN THE MASS MARKET IS DUE TO THE AVERAGE CONSUMER'S INEXPERIENCE REGARDING THE USE OF TERMINALS.

AS EVIDENCE OF THIS, ACCORDING TO MARKET RESEARCH, 50% OF AMERICAN VCR OWNERS DO NOT KNOW HOW TO USE MANY OF THE FEATURES OF THEIR OWN DEVICE, LIKE HOW TO PROGRAM THEM FOR RECORDING.

IT IS NOT LIKELY THAT A SOLUTION TO THE DEVICE PROBLEM WILL BE SOLVED BY GROWTH OF SUCH COMPLEX DEVICES AS PCs AND MODEMS. THEY ARE SIMPLY TOO EXPENSIVE AND SOPHISTICATED TO USE.

A WHOLE NEW LINE OF RESEARCH INTO "SMART" TERMINAL DEVICES MUST OCCUR; YET THE DEVICE SHOULD ACTUALLY APPEAR UNCOMPLICATED TO THE CASUAL USER.

IN OTHER WORDS, SUCH A DEVICE SHOULD SUPPORT THE ADVANCED REQUIREMENTS OF RELATIVELY SOPHISTICATED USERS (FOR EXAMPLE BY ALLOWING THEM TO SKIP CERTAIN UNNECESSARY STEPS THE WAY PC "HACKERS" CREATE PROGRAMS OR SHORT-CUTS TO ACCOMPLISH CERTAIN TASKS); YET, AT THE SAME TIME NOT INTIMIDATE THE UNSOPHISTICATED USER, WHO HAS NO DETAILED KNOWLEDGE OF HOW IT WORKS.

UNLESS THIS IS POSSIBLE, THEN EVERY USER IN A HOUSEHOLD MAY WANT A DIFFERENT DEVICE TO MATCH THEIR SKILLS.

IT IS NOT THAT IT IS BAD FOR DEVICES TO MEET THE SPECIFIC NEEDS OF INDIVIDUAL USERS, JUST THAT REQUIRING MULTIPLE DEVICES PER HOUSEHOLD MAY RAISE COSTS SIGNIFICANTLY; NOT TO MENTION THE FACT THAT THE VARIOUS DEVICES MAY NOT WORK TOGETHER.



AS PROGRESS IN MICROCHIP AND DIGITAL SIGNAL PROCESSING TECHNOLOGY INCREASES, THE COST OF HIGH-SPEED CHIPS WILL FALL AND THEIR CAPACITY WILL RISE TO SUPPORT ARTIFICIAL INTELLIGENCE SOFTWARE. THE SOFTWARE WILL ULTIMATELY CONSTITUTE A USER-FRIENDLY "FRONT-END" FOR THE DIGITAL TERMINAL DEVICE SUCH THAT ANY "COUCH POTATO" WOULD NOT BE AFRAID TO USE AND ENJOY IT.

EVENTUALLY, THE DEVICE MAY BE ABLE TO RECOGNIZE VOICE COMMANDS, AND EVEN TALK BACK. THIS WOULD BE A WELCOME DEVELOPMENT INDEED RESULTING IN THE ELUSIVE EFFORTLESS MACHINE/HUMAN INTERFACE.

ONE POSSIBILITY FOR THE EARLIEST DEVICES MAY BE TO INTRODUCE SOME TYPE OF "SMART TV", WHICH IS REALLY PART COMPUTER AND PART TV. ONE PROBLEM WHICH MAY ARISE, IF THIS DEVICE MUST IN FACT DOUBLE AS A REGULAR TV, IS THAT THE EXTENDED USES WOULD HAVE TO COMPETE WITH ITS USE AS A TV. CURRENTLY, THE AVERAGE HOUSEHOLD TV IS ALREADY TIED UP FOR ABOUT 7 HOURS EACH DAY JUST FOR VIDEO ENTERTAINMENT. OF COURSE, MOST HOUSEHOLDS HAVE MULTIPLE (TRADITIONAL) TV SETS, AND MANY INFORMATION SERVICES OBTAINED OVER THE "SMART" TV ARE FOR ENTERTAINMENT ANYWAY, THEREBY MITIGATING THIS ISSUE. ANOTHER POSSIBILITY WHICH HAS ALREADY BEEN DEVELOPED IS THE "SMART PHONE" WHICH AT&T AND OTHERS HAVE RECENTLY ANNOUNCED. HOWEVER, THESE PHONES ARE A FAR CRY FROM WHAT IS NEEDED TO HELP STIMULATE THE DEMAND FOR INFORMATION SERVICES.

ALL OF THE PROBLEMS OF LOW DEMAND WHICH WERE DISCUSSED APPLY TO BOTH BUSINESSES AND RESIDENCES; BUT PERHAPS MORE SO IN THE CASE OF RESIDENTIAL CUSTOMERS THAT CANNOT EASILY JUSTIFY SIGNIFICANT INDIVIDUAL INVESTMENTS IN COMMUNICATIONS CAPABILITY.

IN THE CASE OF BUSINESSES, THEY WILL LEAD THE MASS MARKET BECAUSE THE SPECIFIC TASKS THEY WISH TO PERFORM WILL OFTEN JUSTIFY THE INVESTMENT REQUIRED. HOWEVER, BUSINESSES ALSO WILL REALIZE THE GREATEST NET BENEFITS IF THEY ARE CONNECTED TO THE PUBLIC NETWORK.

NOT ONLY DO THEY SAVE ON COSTS BY SHARING THE HIGH-CAPACITY CORE NETWORK, BUT THEY ARE ABLE TO GENERATE SALES BY ACCESSING THEIR SUPPLIERS AND CUSTOMERS IN WAYS NEVER BEFORE POSSIBLE. MARKETING, ADVERTISING AND DISTRIBUTION FUNCTIONS ARE ENHANCED GREATLY BY PUBLIC HIGH-SPEED DIGITAL NETWORKS.

IN SUMMARY, IF THE COMMUNICATIONS AND INFORMATION SERVICES INDUSTRY IS TO GROW AND PROSPER IN AMERICA, PROVIDING FOR INCREASED PRODUCTIVITY, IT IS NECESSARY THAT BOTH CONSUMER TERMINAL DEVICES AND THE PUBLIC TELEPHONE NETWORK ITSELF BECOME MUCH FASTER IN PROCESSING THE ENORMOUS AMOUNTS OF SIGNALS AND DATA WHICH WILL BE REQUIRED TO MAKE NEW SERVICES AND APPLICATIONS ATTRACTIVE TO USE AND PURCHASE.

OTHERWISE THE INDUSTRY WILL LANGUISH DUE TO LACK OF EFFICIENT NATIONAL DISTRIBUTION NETWORKS, AND UNFRIENDLY CONSUMER TERMINALS

WITHOUT SOLVING SUCH PROBLEMS, WE WILL HAVE TO WAIT FOR THE AVERAGE AMERICAN CONSUMER TO OWN AND USE A PC OR SIMILAR DEVICE, AND WAIT FOR VERY HIGH-SPEED PRIVATE NETWORKS TO DEVELOP, THIS WOULD PROBABLY TAKE AT LEAST A GENERATION.

IT WOULD BE BETTER TO TAKE A COORDINATED PUBLIC NETWORK APPROACH TO THE PROBLEM. THIS APPROACH MAXIMIZES THE POSSIBILITIES FOR DEMAND-DRIVERS TO GET OFF THE GROUND AND ULTIMATELY REACH THEIR POTENTIAL.

### 3. INSTITUTIONAL CONSIDERATIONS

THE TRENDS IN INSTITUTIONAL ARRANGEMENTS AFFECTING TELECOMMUNICATIONS ARE IMPROVING, BUT STARTED YEARS AGO WITH A FAIRLY DISASTROUS BEGINNING FOR TECHNOLOGY ADOPTION.

JUST AS POLICY BECAME FRAGMENTED, INSTITUTIONAL STRUCTURES WERE FORMED WHICH HAMPERED THE NATURAL COURSE OF TECHNOLOGY ADOPTION.

INSTITUTIONAL HURDLES INCLUDE: A COURT SYSTEM THAT IS USED BY INTEREST GROUPS TO PREVENT OTHERS FROM TRESPASSING IN MARKETS WHERE THE INCUMBENT FIRM DOMINATES;

STATE AND LOCAL REGULATORS AND LEGISLATORS WHICH PREVENT COMPETITION IN TELECOMMUNICATIONS AND CABLE TELEVISION THROUGH COMPLEX AND RESTRICTIVE FRANCHISING REQUIREMENTS;

FEDERAL LEGISLATORS WHICH ARE PARALYZED BY VARIOUS PRESSURE GROUPS REGARDING PASSING OF PRO-ACTIVE TELECOMMUNICATIONS LEGISLATION;

WELL FUNDED POLITICAL LOBBIES FOR INDUSTRY INTEREST GROUPS WHO ATTEMPT TO PERPETUATE THEIR MEMBER FIRMS' MARKET ADVANTAGE UNDER THE LAW (ESPECIALLY PRINT PUBLISHERS, BROADCASTERS, CABLE TELEVISION, TELEPHONE);

A FINANCIAL PARADIGM THAT STRESSES THE IMPORTANCE OF SHORT-TERM EARNINGS, OFTEN AT THE EXPENSE OF LONG-TERM INVESTMENT AND PLANNING; AND INTEREST RATE AND TAX RATE STRUCTURES THAT DISCOURAGE SAVINGS AND RAISE THE COST OF CAPITAL IN AMERICA RELATIVE TO SOME FOREIGN COUNTRIES (E.G. TAXING OF DIVIDENDS).

IN SPITE OF ALL OF THESE INSTITUTIONAL ROADBLOCKS, THE NEW BROADBAND TECHNOLOGY PARADIGM, WHICH FEATURES VAST ECONOMIES OF SCALE AND EMPHASIZES SHARING OF HIGH-CAPACITY NETWORK FACILITIES, IS BEGINNING TO TEAR DOWN SOME OF THE ROADBLOCKS TO INFRASTRUCTURE INVESTMENT.

THE MARKETPLACE IS GRADUALLY, BUT EFFECTIVELY, CHANGING THE RULES OF THE GAME AND FORCING CHANGES IN TRADITIONAL INSTITUTIONAL DEMAND AND SUPPLY ARRANGEMENTS.

THE NEW DIGITAL FIBER-OPTIC TECHNOLOGY COSTS SO MUCH, PARTLY BECAUSE OF DEVELOPMENT AND LEARNING COSTS, AND PARTLY BECAUSE IT MUST BE PURCHASED AND INSTALLED IN MUCH GREATER CAPACITY "LUMPS".

THIS CAUSES CONSUMERS TO SEARCH FOR WAYS TO SHARE THE FACILITIES AND THEIR COSTS OVER A WIDE RANGE OF SERVICES AND SYSTEM USERS. ONCE THEY DO LARGE SCALE SHARING, THE PER UNIT COSTS OF THE NEW DIGITAL FIBER-OPTIC TECHNOLOGY IS WELL BELOW ANY ALTERNATIVE TECHNOLOGY.

WITH A HOST OF RULES AND RESTRICTIONS AGAINST NETWORK INTEGRATION AND SHARING, MORE AND MORE FIRMS TRY TO TIPTOE AROUND THEM TO ACHIEVE THEIR GOALS FOR COST EFFICIENCY.

THEY BUILD CREATIVE ALTERNATIVE NETWORKS USING NEW TECHNOLOGIES LIKE DIGITAL RADIO AND FIBER-OPTICS.

RESIDENCE CUSTOMERS HAVE A TOUGHER PROBLEM, BUT TRY TO COPE WITH THE SITUATION BY INVESTING IN VARIOUS ADAPTERS AND DEVICES TO MAKE THEIR VARIOUS HOUSEHOLD SYSTEMS WORK TOGETHER, BUT THEY ARE NOT ABLE TO AFFECT THE WAY BASIC COMMUNICATIONS SERVICES ARE DISTRIBUTED TO THEM.

BUSINESSES RUN AN ENTIRE GAUNTLET OF REGULATIONS AND RESTRICTIONS TO COOPERATE WITH EACH OTHER AND PACKAGE NEW SERVICES FOR THEMSELVES AND THEIR CUSTOMERS. IT IS BECOMING COMMONPLACE TO SEE TELEPHONE COMPANIES, CABLE TELEVISION FIRMS, ELECTRIC UTILITIES, PUBLISHERS, COMPUTER FIRMS AND OTHERS COOPERATE WITHIN LEGAL RESTRICTIONS (USUALLY) TO JOINTLY DEVELOP AND DISTRIBUTE COMMUNICATIONS SERVICES.

THERE IS A CLEAR TREND OF RELAXATION OF RESTRICTIONS IN LEGISLATURES AND REGULATORY BODIES.

UNFORTUNATELY, THE SAME CANNOT BE SAID OF THE COURTS.

CONGRESS CONTINUES TO REVIEW THE LINE-OF-BUSINESS RESTRICTIONS AND THE CABLE/TELCO CROSS-OWNERSHIP RESTRICTIONS AND HAVE RECENTLY ELIMINATED SOME OPERATING RESTRICTIONS ON CABLE AND BROADCASTING FIRMS.

ALL MAJOR BROADCASTING FIRMS NOW HAVE CABLE TELEVISION INTERESTS. MANY INDEPENDENT TELEPHONE COMPANIES OWN CABLE TELEVISION INTERESTS AND SHARING OF NETWORK FACILITIES IS COMMON.

PRINT PUBLISHERS ARE CONTINUING TO DIVERSIFY INTO ELECTRONIC COMMUNICATION BUSINESSES.

PRIVATE BYPASS NETWORKS ARE BEING INTERCONNECTED AND THEIR USE IS EXPANDING TO INCLUDE VOICE, DATA AND VIDEO SERVICES ON THE SAME PHYSICAL FACILITIES.

TELEPHONE COMPANIES ARE EXPANDING THEIR JOINT PROVISIONING ARRANGEMENTS WITH THE BROADCASTING INDUSTRY.

THUS, THERE IS A CLEAR TREND TOWARD SHARING AND INTEGRATION AS COMPUTING, TELECOMMUNICATIONS, BROADCASTING AND PUBLISHING TECHNOLOGIES CONVERGE UNDER THE NEW TECHNOLOGICAL PARADIGM.

#### 4. REGULATORY AND PUBLIC POLICY CHALLENGES

CURRENTLY, THERE IS NO CONSISTENT NATIONAL PUBLIC POLICY FOR TELECOMMUNICATIONS.

POLICYMAKING IS FRAGMENTED AMONG MANY GROUPS, INCLUDING STATE AND FEDERAL REGULATORS, THE FEDERAL AND STATE JUDICIARY, AND LEGISLATORS.

THIS HAS RESULTED IN RANDOM AND AD HOC TELECOMMUNICATIONS POLICIES DEVELOPED PURSUANT TO A HOST OF CASE-BY-CASE REGULATORY DECISIONS.

THE VARIOUS DECISIONS HANDED DOWN IN REGULATORY PROCEEDINGS AND IN THE COURTS OFTEN ARE NOT CONSISTENT IN THEIR DIRECTION AND, NOT SURPRISINGLY, HAVE SPAWNED CONSTITUENCIES WHICH INHERENTLY CONFLICT WITH EACH OTHER.

A GOOD RECENT EXAMPLE IS THE LAW PROHIBITING TELEPHONE COMPANIES FROM HAVING A FINANCIAL INTEREST IN CABLE TELEVISION PROVISION IN THEIR SERVICE AREAS; AND THE DIVESTITURE COURT'S RULING PROHIBITING THE BELL COMPANIES FROM PROVIDING ELECTRONIC PUBLISHING AND OTHER INFORMATION SERVICES.

THE PROBLEM IS THAT WHENEVER SUCH DECISIONS ARE MADE, FOR WHATEVER REASONS AT THE TIME, THEY ARE EXTREMELY HARD TO CHANGE OR REVERSE.

THIS IS ONLY NATURAL, SINCE THERE IS ALWAYS A "WINNER" AND A "LOSER" IN SUCH DECISIONS.

THE LOSER BECOMES HANDICAPPED IN THE MARKETPLACE AND THE WINNER SPENDS A LOT OF TIME AND MONEY TO PERPETUATE THEIR RELATIVE ADVANTAGE UNDER THE LAW.

SUCH POLICYMAKING RESULTS IN NO CLEAR NATIONAL AGENDA AND CREATES A TREMENDOUS ARENA FOR POLITICAL MANEUVERING, RATHER THAN MOVING AMERICA IN A SOUND DIRECTION FOR DEVELOPMENT OF ITS INFRASTRUCTURE.

CLEARLY, CURRENT BUSINESS RESTRICTIONS PLACED ON TELEPHONE COMPANIES, CABLE COMPANIES (THEY LIKEWISE FACE A HOST OF BARRIERS TO ENTRY INTO TWO-WAY TELECOMMUNICATIONS SERVICE MARKETS), BROADCASTERS AND OTHER INDUSTRY GROUPS GO AGAINST THE GRAIN OF DEVELOPMENT OF ADVANCED PUBLIC NETWORKS.

BY FORCING STRUCTURAL SEPARATION OF THESE VARIOUS COMMUNICATIONS VENDOR GROUPS, INCENTIVES TO INTEGRATE THE PUBLIC NETWORK AND SHARE DIGITAL FIBER-OPTIC FACILITIES ARE NOT ONLY NONEXISTENT, BUT WASTEFUL REGULATION, ENFORCEMENT AND LOBBYING COSTS ARE INCURRED ON ALL SIDES.

POLICYMAKERS WHO ARE IN A POSITION TO AFFECT THE MARKET STRUCTURE OF THE COMMUNICATIONS INDUSTRY NOW FACE A SERIOUS DILEMMA.

SHOULD THEY ELIMINATE THE EXISTING LINE-OF-BUSINESS (LOB) RESTRICTIONS WHICH THE BELL COMPANIES FACE TO ALLOW THEM INTO MARKETS FOR NEW SERVICES; IN MANY OF WHICH THE U.S. IS FACING INCREASING GLOBAL COMPETITION?

KEEPING THE CASH-RICH INCUMBENT TELEPHONE UTILITIES OUT OF MARKETS FOR ADVANCED INFORMATION SERVICES AND VARIOUS PHASES OF THE DESIGN AND MANUFACTURING BUSINESS ALTOGETHER, RISKS SACRIFICING OUR FUTURE INTERNATIONAL COMPETITIVENESS IN SOME VERY IMPORTANT HIGH-GROWTH MARKETS.

MANY BELIEVE THAT BRINGING TO BEAR THE MASSIVE FUNDS AND EXPERTISE OF THE TELEPHONE COMPANIES IN THESE MARKETS CAN IMPROVE OUR CHANCES TO BE A STRONG INTERNATIONAL PLAYER.

TO BE SURE, OTHER COUNTRIES MAY EXPLICITLY SUBSIDIZE TELEPHONE COMPANY INFRASTRUCTURE DEVELOPMENT, TO ENHANCE THEIR OWN PRODUCTIVITY AND COMPETITIVENESS.

SUCH INDUSTRIAL POLICIES ARE NOT SO EASY TO IMPLEMENT IN CAPITALIST AMERICA. PERHAPS ALL WE ARE OBSERVING IN THE SITUATION OF THE DIVERSIFIED TELEPHONE UTILITY IS POLICYMAKERS' REVEALED PREFERENCE FOR KEEPING THIS INDUSTRY STRONG WITHOUT EXPLICITLY SUBSIDIZING IT.

COMPUTER AND CABLE TELEVISION COMPANIES, ELECTRONIC EQUIPMENT MANUFACTURERS, PRINT PUBLISHERS AND BROADCASTERS ARE JUST SOME OF THE INDUSTRIES WHICH HAVE TRADITIONALLY OPPOSED RELAXING LEGAL AND REGULATORY RESTRICTIONS ON THE ENTRY OF TELEPHONE COMPANIES INTO NEW LINES OF BUSINESS; THEREBY PREVENTING CROSS-SUBSIDIES OF THE COMPETITIVE DIVISIONS FROM THE REGULATED MONOPOLY DIVISIONS.

THERE IS TOO MUCH INTENSE LOBBYING FROM PRESSURE GROUPS ON BOTH SIDES OF THIS ISSUE.

A GROUNDSWELL OF PUBLIC SUPPORT ONE WAY OR THE OTHER IS VERY UNLIKELY, SINCE THE PUBLIC VIEWS THESE ISSUES AS TECHNICAL AND CANNOT TELL WHO IS RIGHT FROM WHO IS WRONG.

THE EXECUTIVE BRANCH NATIONAL TELECOMMUNICATIONS AND INFORMATION AGENCY HAS LONG BEEN CRITICAL OF THE MANUFACTURING AND INFORMATION SERVICE LOB RESTRICTIONS; HOWEVER THEY LACK THE POWER TO AFFECT NATIONAL POLICY.

THE MOST DISTURBING RECENT DEVELOPMENT, IS THE POWERFUL IMPACT OF THE JUDICIARY IN PERPETUATING QUESTIONABLE AND INCONSISTENT POLICY.

BECAUSE OF THE INABILITY OF LAWMAKERS TO ENACT A CONSISTENT NATIONAL POLICY, THE COURTS HAVE FILLED THE LEADERSHIP GAP AND ARE NOW THE REGULATORY AUTHORITY BY FIAT (THERE IS SIMPLY NO OTHER COUNTERBALANCING FORCE).

RECENTLY, A FEDERAL APPEALS COURT ISSUED A REVERSAL AND REMAND DECISION TO THE LOWER AT&T DIVESTITURE COURT WHICH, PURSUANT TO ITS STATUTORY OBLIGATION TO REVIEW THE SITUATION EVERY THREE YEARS, RULED THAT THE LINE OF BUSINESS RESTRICTION ON INFORMATION SERVICES SHOULD REMAIN IN PLACE.

THE REMAND ORDER SUGGESTED THAT THE LOWER COURT WAS WRONG IN PARTIALLY UPHOLDING THE INFORMATION SERVICES RESTRICTION. IT STATED THAT IF ANY PART OF THE RESTRICTION IS TO BE RELAXED, IT MUST BE IN ITS ENTIRETY.

COMPETITIVE SERVICE PROVIDERS HAVE NOW PETITIONED THE SUPREME COURT TO THROW OUT THE APPEALS COURT REMAND DECISION.

IF THE SUPREME COURT ACCEPTS THE CASE, WE COULD END UP BACK AT SQUARE ONE WITH THE DIVESTITURE COURT.

VERY RECENTLY, ANOTHER COURT DECISION SEEMED TO BE MOVING IN THE OPPOSITE DIRECTION AS THE APPELLATE COURT WHICH ISSUED THE INFORMATION SERVICES REMAND ORDER.

A FEDERAL COURT RULED THAT THE FCC COMPUTER INQUIRY III DECISION WAS NOT LEGAL AND VACATED THE ORDER WHICH ELIMINATED THE SEPARATE SUBSIDIARY REQUIREMENT FOR BOCs ENHANCED SERVICES BUSINESSES. ALSO, THIS ORDER FOUND THAT THE FCC CANNOT PRE-EMPT STATE REGULATORY AUTHORITY TO REGULATE ENHANCED SERVICE PROVIDERS; IT IMPLIES THAT THE SAME IS TRUE REGARDING ONA AND OTHER POLICIES AS WELL, THOUGH THESE WERE NOT SPECIFICALLY MENTIONED.

THIS IS A DISTURBING TREND INDEED, AND MAY RESULT IN A HODGEPODGE OF STATE REGULATIONS, WHICH COULD ADVERSELY AFFECT THE NATIONAL MARKET PLANS OF FIRMS IN THE BURGEONING ENHANCED SERVICES INDUSTRY.

IF THIS COURT DECISION SIMILARLY AFFECTS FEDERAL POLICY FOR INTERCONNECTION RULES, A HOST OF STATE REGULATIONS COULD HAMPER EFFICIENT NETWORK CONNECTIONS.

THIS COUNTRY'S TELEPHONE SUBSCRIBERS STAND TO BENEFIT GREATLY FROM EASY AND EFFICIENT INTERCONNECTION OF COMPETITIVE PRIVATE NETWORKS WITH THE PUBLIC TELEPHONE NETWORK.

IT IS THE FCC'S STATUTORY JOB TO DECIDE HOW TO IMPLEMENT AND ENFORCE SUCH POLICIES, NOT THE JUDICIARY.

IF THIS WOULD ONLY BOIL DOWN TO A CONSTITUTIONAL ISSUE OF STATES RIGHTS, THAT IS ONE THING; BUT IF IT ULTIMATELY LEADS TO INCONSISTENT REGIONAL POLICIES FOR INTERCONNECTION ARRANGEMENTS, THE PUBLIC INTEREST IS NOT SERVED.

IT IS ALARMING TO THINK THAT NATIONAL TELECOMMUNICATIONS POLICY MAY BE BASED ON A SERIES OF CASE-BY-CASE COURT DECISIONS.

IN THE CURRENT SITUATION, NOBODY MAY WIN, AND TELEPHONE USERS AND THE COUNTRY WILL LOSE IN TERMS OF NATIONAL PRODUCTIVITY AND INTERNATIONAL COMPETITIVENESS.

UNCERTAINTY ABOUT THE FUTURE OF OPERATING AND DIVERSIFICATION RESTRICTIONS OF TELEPHONE COMPANIES MAKES IT QUITE RISKY FOR COMPETITIVE ENTRANTS CONSIDERING LARGE CAPITAL EXPENDITURES. COMPETITORS FEAR THAT, IF THE GIANT TELEPHONE COMPANIES ARE ALLOWED TO ENTER THE MARKET, THEY COULD GET SQUASHED.

IN TURN, PHONE COMPANIES, SPENDING THEIR POLITICAL ENERGIES ON CONVINCING POLICYMAKERS TO LIFT OPERATING RESTRICTIONS ON ENTRY INTO HIGH-GROWTH INFORMATION SERVICE MARKETS, ARE SLOW TO OFFER EFFICIENT INTERCONNECTION AND DISTRIBUTION FACILITIES FOR THE USE OF OTHERS, WHO REPRESENT POTENTIAL FUTURE COMPETITORS.

THE RESULT IS WHAT WE OBSERVE IN WASHINGTON D.C.: RHETORIC AND ENDLESS DEBATE BETWEEN INDUSTRY GROUPS REPRESENTING INCUMBENT FIRMS AND POTENTIAL ENTRANTS. WE ARE STUCK WITH A CLASSIC STANDOFF UNTIL THE GOVERNMENT FINALLY TAKES A POSITION ON THE ISSUE OF TELEPHONE COMPANY ENTRY INTO NEW LINES OF BUSINESS.

POLICYMAKERS COULD DO US ALL A FAVOR AND BREAK THE SUSPENSE BY MAKING A DECISION ONE WAY OR THE OTHER.

THE STATUS-QUO IS VERY BAD FOR CUSTOMERS. NOT ONLY DO THEY HAVE TO PAY FOR INFLATED RATE-BASES, BUT CUSTOMERS CANNOT BENEFIT FROM MANY NEW SERVICES WHICH THE TELEPHONE COMPANY COULD OFFER IF LOB RESTRICTIONS WERE REMOVED.

FURTHERMORE, CUSTOMERS DO NOT BENEFIT FROM THE SIGNIFICANT COSTS OF LOBBYING BY TELEPHONE COMPANIES, CABLE TELEVISION AND OTHER INDUSTRY GROUPS TRYING TO PROTECT THEIR MARKET ADVANTAGE.

MANY NEW INFORMATION SERVICES AND APPLICATIONS (E.G. VIDEOTEX, IMAGING, DISTANCE LEARNING, "TELECOMMUTING", ETC.) JUST DO NOT SEEM TO BE ABLE TO GET OFF THE GROUND WITHOUT THE USE OF THE PUBLIC COMMUNICATIONS INFRASTRUCTURE.

IF CROSS-SUBSIDIES ARE THE PRIMARY CONCERN OF POLICYMAKERS AND COMPETITORS, PROPERLY DESIGNED PRICE-CAP REGULATION CAN EFFECTIVELY ELIMINATE THIS PROBLEM.

WITHOUT A RATE-BASE AND CAPTIVE CUSTOMERS TO PAY FOR IT, TELEPHONE COMPANIES WILL NOT HAVE INCENTIVES TO CROSS-SUBSIDIZE COMPETITIVE LINES OF BUSINESS; THEY WILL HAVE TO EVALUATE BUSINESS ALTERNATIVES IN TERMS OF NET PRESENT VALUE JUST AS OTHER COMPETITIVE FIRMS DO.

POLICYMAKERS IN AMERICA NEED TO BEGIN TO CHANGE THE RULES IF WE ARE EVER GOING TO REALIZE POTENTIAL SYNERGIES AMONG INDUSTRY PLAYERS AS WE DEVELOP AN ADVANCED COMMUNICATIONS INFRASTRUCTURE.

INSTEAD OF POLICIES WHICH CREATE ARTIFICIAL BOUNDARIES AROUND SERVICES AND TECHNOLOGIES, AND THE INTEREST GROUPS WHICH CONTROL THEM, WE SHOULD BE PROMOTING A SPIRIT OF COOPERATION ACCORDING TO THE MARKET FORCES OF SUPPLY AND DEMAND.

IF WE DO NOT CHANGE, THE CURRENT POLITICAL TUG-OF-WAR WILL CONTINUE AS INDUSTRY PRESSURE GROUPS TRY TO PERPETUATE THEIR MONOPOLIES

SUMMARIZING THE MAJOR POLICY CONCLUSIONS:

1) TELEPHONE COMPANY LINE-OF-BUSINESS RESTRICTIONS ON MANUFACTURING AND INFORMATION SERVICES SHOULD BE LIFTED SO THAT WHATEVER SYNERGIES THERE ARE FROM ECONOMIES OF SCALE AND SCOPE FROM COOPERATION AMONG FIRMS WILL BE REALIZED;

2) EXCLUSIVE FRANCHISES FOR CABLE TELEVISION OR TELEPHONE COMPANIES SHOULD BE REMOVED SO THAT THEY WILL POTENTIALLY BE ABLE TO COMPETE WITH ONE ANOTHER TO DISCIPLINE PRICES AND PROFIT LEVELS;

3) RULES AND REGULATIONS FOR EASY AND EFFICIENT NONDISCRIMINATORY INTERCONNECTION BETWEEN COMPETITIVE NETWORKS AND PUBLIC TELEPHONE NETWORKS SHOULD BE DEVELOPED, IMPLEMENTED AND VIGOROUSLY ENFORCED BY REGULATORS IN A TIMELY MANNER;

4) PRICE-CAP REGULATION SHOULD BE IMPLEMENTED FOR TELEPHONE UTILITIES TO ELIMINATE INCENTIVES FOR CROSS-SUBSIDIES AMONG REGULATED AND UNREGULATED LINES OF BUSINESS, AND COSTING AND PRICING FLEXIBILITY SHOULD BE PHASED IN SO THAT THEY MAY COMPETE IN NON-BASIC SERVICE MARKETS; CONTRACT PRICING FOR BUSINESS CUSTOMERS SHOULD BE ALLOWED.

5) CABLE CROSS-OWNERSHIP RULES SHOULD BE ABOLISHED, SO THAT THESE FIRMS MAY WORK TOGETHER TO PROVIDE NEW ADVANCED SERVICES WHENEVER IT MAKES SENSE, BUT IN NO CASE WOULD COMPETITION BY OTHER SUCH COOPERATIVES BE PROHIBITED (THIS IS SIMILAR TO THE JAPANESE MODEL OF "COOPERATIVE COMPETITION", WHERE FIRMS MAY COOPERATE BUT WILL BE SUBJECT TO DIRECT COMPETITION FROM OTHER SUCH COOPERATIVES;

6) BEYOND THESE MEASURES THERE ARE TWO OTHER POSSIBILITIES FOR STIMULATING INVESTMENT IN ADVANCED TECHNOLOGY; INVESTMENT TAX CREDITS (SIMILAR TO THOSE FOR ALTERNATIVE ENERGY AND CONSERVATION PROGRAMS IN YEARS PAST), AND GOVERNMENT LOAN INTEREST RATE SUBSIDIES ARE TWO POSSIBILITIES.



FINALLY, THERE NEEDS TO BE MORE ACTIVE PARTICIPATION OF THE GOVERNMENT IN THE STANDARDS SETTING PROCESS. THE CURRENT VOLUNTARY SYSTEM DOES NOT WORK AS TECHNOLOGY HALF-LIVES ARE MUCH SHORTER THAN STANDARDS-SETTING CYCLES. CELLULAR AND ISDN TECHNOLOGY ADOPTION PROBLEMS WERE LARGELY CAUSED BY STANDARDS DELAYS. THE GOVERNMENT MUST NOT SET STANDARDS. RATHER, THEY MUST FORCE INDUSTRY GROUPS TO ADOPT TIMELY AND RELATIVELY STABLE PUBLIC NETWORK STANDARDS SO THAT MANUFACTURERS WOULD BE MORE WILLING TO INTRODUCE NEW PRODUCTION EQUIPMENT. THE STANDARDS WHICH ARE SET MUST NOT BE STATIC OR EXCLUSIVE, BUT MUST BE RELATIVELY STABLE. OF COURSE, ANY MANUFACTURER OR PRIVATE NETWORK VENDOR IS FREE TO PURSUE ANY STANDARD IT WISHES. IT IS ONLY PUBLIC NETWORK SERVICE AND EQUIPMENT PROVIDERS WHICH MUST CONFORM TO PUBLIC NETWORK STANDARDS.