REAL ESTATE

THE COUNSELORS OF REAL ESTATE

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EXPERTS' & CONSULTANTS' GUIDE

ABOUT THE COUNSELORS OF REAL ESTATE



The Counselors of Real Estate, established in 1953, is an international group of high profile professionals including members of prominent real estate, financial, legal and accounting firms as well as leaders of government and academia who provide expert, objective advice on complex real property situations and land-related matters.

Membership is selective, extended by invitation only on either a sponsored or self-initiated basis. The **CRE Designation** (Counselor of Real Estate) is awarded to all members in recognition of superior problem solving ability in various areas of specialization such as litigation support, asset management, valuation, feasibility studies, acquisitions/dispositions and general analysis.

CREs achieve results, acting in key roles in annual transactions and/or real estate decisions valued at over \$41.5 billion. Over 300 of the Fortune 500 companies retain CREs for advice on real estate holdings and investments. CRE clients include public and private property owners, investors, attorneys, accountants, financial institutions, pension funds and advisors, government institutions, health care facilities, and developers.

Enrichment Through Networking, Education & Publications

Networking continues as the hallmark of The Counselor organization. Throughout the year, programs provide cutting-edge educational opportunities for CREs including seminars, workshops, technology sessions, and business issues forums that keep members abreast of leading industry trends. Meetings on both the local and national levels also promote interaction between CREs and members from key user groups including those specializing in financial, legal, corporate, and government issues.

CRE members benefit from a wealth of information published in The Counselors' tri-annual award-winning journal *Real Estate Issues* which offers decisive reporting on today's changing real estate industry. Recognized leaders contribute critical analyses not otherwise available on important topics such as institutional investment, sports and the community, real estate ethics, tenant representation, break-even analysis, the environment, cap rates/yields, REITs, and capital formation. Members also benefit from the bi-monthly member newsletter, *The Counselor*, and a wide range of books and monographs published by The Counselor organization. A major player in the technological revolution, the CRE regularly accesses the most advanced methodologies, techniques and computer-generated evaluation procedures available.

What is a Counselor of Real Estate (CRE)?

A Counselor of Real Estate is a real estate professional whose primary business is providing expert advisory services to clients. Compensation is often on an hourly or total fixed fee basis, although partial or total contingent fee arrangements are sometimes used. Any possibility of actual or perceived conflict of interest is resolved before acceptance of an assignment. In any event, the Counselor places the interests of the client first and foremost in any advice provided, regardless of the method of compensation. CREs have acquired a broad range of experience in the real estate field and possess technical competency in more than one real estate discipline.

The client relies on the counselor for skilled and objective advice in assessing the client's real estate needs, implying both trust on the part of the client and trustworthiness on the part of the counselor.

Whether sole practitioners, CEOs of consulting firms, or real estate department heads for major corporations, CREs are seriously committed to applying their extensive knowledge and resources to craft real estate solutions of measurable economic value to clients' businesses. CREs assess the real estate situation by gathering the facts behind the issue, thoroughly analyzing the collected data, and then recommending key courses of action that best fit the client's goals and objectives. These real estate professionals honor the confidentiality and fiduciary responsibility of the clientcounselor relationship.

The extensive CRE network stays a step ahead of the ever-changing real estate industry by reflecting the diversity of all providers of counseling services. The membership includes industry experts from the corporate, legal, financial, institutional, appraisal, academic, government, Wall Street, management, and brokerage sectors. Once invited into membership, CREs must adhere to a strict Code of Ethics and Standards of Professional Practice.

Users of Counseling Services

The demand continues to increase for expert counseling services in real estate matters worldwide. Institutions, estates, individuals, corporations and federal, state and local governments have recognized the necessity and value of a CRE's objectivity in providing advice.

CREs service both domestic and foreign clients. Assignments have been accepted in Africa, Asia, the United Kingdom, the Caribbean, Central and South America, Europe and the Middle East. CREs have been instrumental in assisting the Eastern European Real Property Foundation create and develop private sector, market-oriented real estate institutions in Central and Eastern Europe and the Newly Independent States. As a member of The Counselor organization, CREs have the opportunity to travel and share their expertise with real estate practitioners from several developing countries including Poland, Hungary, Bulgaria, Ukraine, Czech Republic, Slovak Republic, and Russia as they build their real estate businesses and develop standards of professional practice.

Only 1,100 practitioners throughout the world carry the CRE Designation, denoting the highest recognition in the real estate industry. With CRE members averaging 20 years of experience in the real estate industry, individuals, institutions, corporations, or government entities should consider consulting with a CRE to define and solve their complex real estate problems or matters._{REL}

To BE or Not to BE? \dots Technology Is... to BE!

I am honored to write this, my first column, as 1999 president of The Counselors of Real Estate. Throughout my 14 years as a member, this journal has continually provided timely information on key issues affecting the real estate industry. And, true to form, the timing for this focus edition on technology could not be better!

There are those who, up until now, may have been able to ignore technology and its implications on the way we will do

> business in the next century. But with the new millennium now just months away, wise professionals must research and strategize as to how technology can be used to improve the tangible products you provide as well as enhance the advice you render your clients. An understanding of technology and the

way it impacts the way your *clients* do business is also critical.

While the jury is still out on the real implications of Y2K, it won't be long before these theories are put to the test. There are those who feel the whole thing has been a hype and as a result, this "scare" has proved extremely profitable for computer consultants and software developers. On the other hand, there are those who are taking the Y2K issue quite seriously, fearing serious disruption in our personal as well as professional lives. Leaders of businesses with year-ends that occur at the end of the fourth quarter will be expectantly awaiting how those of you with year-ends in earlier quarters fare. (Your potential disasters may save some of us.)

For industries where jobs can be replaced, technology is an unwelcome evil. Yet, for professionals whose practices can be enhanced by technology, it offers new challenges. Those professionals who master appropriate technologies can set themselves apart from traditional practitioners.

The ability to be resourceful in a timely fashion affords clients a "Net savvy" professional who has the latest financial and business statistical data at his/her fingertips; access to government policy changes and statistics; a look at properties through virtual reality; global communication at a fraction of the cost and time of traditional communication; and much more.

Access to this multitude of information is wonderful, but access does not equal understanding. A critical understanding of the information as well as its relevance and applicability to a particular client is what sets members of The Counselors of Real Estate apart. Those designated a CRE (Counselor of Real Estate) are positioned to help you find creative solutions to your complex real estate questions. To find out more about the services a CRE can provide visit us on the web at www.cre.org/.

Janithan H. Areny

Jonathan H. Avery, CRE 1999 President, The Counselors of Real Estate



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WHEN MARKETS CLASH

Bowen H. "Buzz" McCoy, CRE

Recent events in the public markets for real estate debt and equity securities may be analyzed from the point of view of the competition between public and private sources of commercial real estate finance. The author summarizes the clash between the public and private marketplaces over recent decades; discusses the causes of the liquidity crisis in summer, 1998; projects likely outcomes for public market real estate securities; and concludes that there will be a continuing need for both public and private sources of real estate finance, with opportunities for profit for those who understand what happens when such markets clash.

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YOU SAY YOU WANT A REVOLUTION? TECHNOLOGY TURNS OUT TO BE A PLUS FOR REAL ESTATE DEMAND

Hugh F. Kelly, CRE

Futurists have assumed that technology will be unfriendly to the real estate industry, with such phenomena as the paperless office, telecommuting, and electronic commerce negatively affecting the demand for commercial space. This manuscript examines some of the statistics and economic principles, and comes to a contrary conclusion. The author maintains that technology is the ally of the real estate industry, not its enemy.

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THE YEAR 2000 CHALLENGE-- IMPACT ON THE REAL ESTATE INDUSTRY

Nitin Manchanda

With all of the recent publicity, most people are aware of the Year 2000 (Y2K) problem, however, we still seem to be understanding its impact. This manuscript describes the Y2K problem and its potential impact in three areas of real estate -- facilities and property management; capital markets/financial transactions; and real estate software. An assessment of the level and degree of preparedness in addressing the Y2K bug in each of these areas is outlined.

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REAL ESTATE APPLICATIONS FOR GIS: A REVIEW OF EXISTING CONDITIONS & **FUTURE OPPORTUNITIES** Gerald N. Zaddack, CRE

During the past 10 years, many real estate analysts have purchased Geographic Information Systems (GIS), often spending tens of thousands of dollars for the fastest

personal computers and software packages. This manuscript will examine GIS contributions to real estate analysis, discuss several existing applications for this technology that can be utilized by real estate professionals, and preview new applications anticipated in the coming millennium.

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REAL ESTATE RESEARCH & VALUATION USING THE INTERNET

James R. MacCrate, CRE, Scott S. Metro, & David Watkins

This manuscript discusses real estate research and valuation using Internet and World Wide Web resources. While the potential for revolutionary change and dramatically improved operations may exist, there remain many pitfalls and risks along the way. The authors explore the possibilities and pitfalls that exist in this area, as well as suggest appropriate strategies for firms as they adapt to new technology.

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TIME-BASED COMPETITION & INDUSTRIAL LOCATION IN THE FAST CENTURY

John D. Kasarda

By creating or improving accessibility, advances in transportation technology and infrastructure have catalyzed and shaped five waves of commercial real estate development. The first four occurred, respectively, near 1). seaports, 2). rivers and canals, 3). railroads, and 4). freeways, expressways, and interstate highways. A "fifth wave" of development around airports is being spawned by high speed jet airplanes, new global supply-chain management practices and growing time-based competition. These interacting factors are heightening demand for and the value of commercial real estate that is in proximity to gateway airports. Real estate professionals who recognize this can select strategic sites near such airports and position investments to ride the fifth wave to profitability.

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SHAREHOLDER VALUE'S BLACK HOLE . . . CORPORATE REAL ESTATE

Richard A. Hanson, CRE

Corporate America could be losing \$119 billion per year and not even know it. Given the hyper-competitive nature of business and the investment returns demanded by shareholders, real estate investments generally fall short of the productivity, liquidity and investment objectives of corporations. As an investment, real estate carries with it not only an opportunity cost, but can actually have a negative impact on a corporation's balance sheet.

CONTRIBUTOR INFORMATION

Real Estate Issues publishes four times annually (Spring, Summer, Fall, Winter). The journal reaches a lucrative segment of the real estate industry as well as a representative cross section of professionals in related industries.

Subscribers to *Real Estate Issues (REI)* are primarily the owners, chairmen, presidents, and vice presidents of real estate companies, financial corporations, property companies, banks, management companies, libraries, and RE-ALTOR* boards throughout the country; professors and university personnel; and professionals in S&Ls, insurance companies, and law firms.

Real Estate Issues is published for the benefit of the CRE (Counselor of Real Estate) and other real estate professionals, planners, architects, developers, economists, government personnel, lawyers, and accountants. It focuses on providing up-to-date information on problems and topics in the field of real estate.

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Readers are encouraged to submit their manuscripts to:

Real Estate Issues, c/o The Counselors of Real Estate, 430 North Michigan Avenue, Chicago, Illinois 60611. All manuscripts are reviewed by three members of the editorial board with the author's name(s) kept anonymous. When accepted, the manuscript and any recommended changes is returned to the author for revision. If the manuscript is not accepted, the author is notified by letter.

The policy of *Real Estate Issues* is not to accept articles that directly and blatantly advertise, publicize, or promote the author or the author's firm or products. This policy is not intended to exclude any mention of the author, his/her firm or their activities. Any such presentations however, should be as general as possible, modest in tone, and interesting to a wide variety of readers. Potential conflicts of interest between the publication of an article and its advertising value should also be avoided.

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DEADLINES

See Editorial Calendar on page 48 for deadlines.

MANUSCRIPT/ILLUSTRATIONS PREPARATION

1. Manuscripts **must be submitted on disk** (along with hard copy) in **IBM or** <u>PC format only</u>--Mac files cannot be accommodated: .txt (text) file format or Word for Windows 6.0. All submitted materials, including abstract, text and notes, are to be **double-spaced** on one side only per sheet, with wide margins. Number of manuscript pages is not to exceed 15. Submit five copies of the manuscript accompanied by a 50- to 100-word abstract and a brief biographical statement. Computer-created charts/tables should be in separate files from article text.

2. All notes, both citations and explanatory, are to be numbered consecutively in the text and placed at the <u>end</u> of the manuscript.

3. Illustrations are to be considered as figures, numbered consecutively and submitted in a form suitable for reproduction. (Camera-ready form, line screen not to exceed 80 dots per inch-DPL.) If higher DPI is warranted to show greater image blends or contrast, illustrations must be computer-generated as PC compatible using the following formats: QuarkXPress, PageMaker, Illustrator, Photoshop, Corel Draw. Any other formats will not be accepted.

4. Number all tables consecutively. All tables are to have titles.

5. Whenever possible, include glossy photographs to clarify and enhance the content in your article.

6. Article title should contain no more than six words including an active verb.

7. For uniformity and accuracy consistent with our editorial policy, refer to the style rules in *The Chicago Manual of Style*.

THE BALLARD AWARD MANUSCRIPT SUBMISSION INFORMATION

The *REI Editorial Board* is accepting manuscripts in competition for the 1998 William S. Ballard Award. All articles published in *REI* during the 1998 calendar year will be eligible for consideration, including member and non-member authors. The \$500 cash award and plaque is presented annually each spring, during The Counselors' Midyear Meetings to the author(s) whose manuscript best exemplifies the high standards of content maintained in the journal. The recipient is selected by a three-person subcommittee comprised of members of The Counselors of Real Estate. (The 1998 recipient will be honored at The Counselors 1999 Midyear Meetings in Seattle.)

REAL ESTATE

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EDITOR'S STATEMENT

As we all know, technology is a principal driver of change, and it has produced tremendous changes in the real estate market in the last 10 years. Securitization (both on the equity and debt sides of the market), globalization, computerized mortgage risk analysis, and Internet marketing are developments virtually unknown even in the late 1980s. These changes required the technological capability to support them—and even to stimulate them. A line from the movie *Field of Dreams*, "Build the field and the players will come," could, in this case, be rephrased to, "Develop the technology and the market changes will follow."



The two crucial technological developments were, of course, 1). the evolution of the computer into a user-friendly tool; and 2). the explosion of the Internet. Thus, most of the articles in this issue pertain to the use of computers and the Internet for real estate analysis, research, valuation, and international business and investment. Perhaps surprisingly, globalization is occurring despite the lack of commensurate improvements in transportation. Introduction of the supersonic transport (SST)— the Concorde by Britain and France—did not result in nearly as significant an impact on international travel as did the introduction of jet passenger planes in the late 1950s. The SST is too small to make international travel economical for most people, even most business executives. Thus, the vast majority of business travelers today do not reach their destinations more quickly than they did in the 1960s. Fortunately, there is some degree of substitutability between communication and transportation, and this trade-off has permitted an increasing level of international commerce. But think of the trend of globalization that may follow when supersonic transportation becomes more economically feasible!

As we approach the new millennium we can expect technological advances to continue to drive the securitization and globalization of real estate markets, even with a possible economic slowdown in 1999. Any downturn is likely to be relatively mild and short; and this time (unlike 1990-91) it will not be real estate driven. Real estate markets are generally not overbuilt, and REITs are not over leveraged. Thus, there may be some slowing of real estate activity, but property value declines are likely not to be noticeable.

Furthermore, there remain to be realized large advances in securitization in many other countries. Real estate funds and debt securities are underutilized in a number of otherwise advanced economies, and there will be competitive pressures pon these countries to develop these investment vehicles. Thus, opportunities for CREs are abundant at an international level to help these countries develop the technological and institutional structures for modern real estate markets.

This is my last column as editor-in-chief of *Real Estate Issues*, and I want to thank the CRE leadership and members for the opportunity to serve in this capacity for the last six years. I also want to thank Faye Porter and her predecessor, Linda Magad, who served as managing editors, without whose help and support the journal would not have been published. I wish the best for Richard Marchitelli, CRE, our new editor in chief, who I know will do an excellent job of maintaining and improving the quality of the journal during the next several years. Finally, I would like to acknowledge the contributions of the former editors, who founded and developed the journal through its earlier stages—James McMullin, CRE Emeritus; Jean C. Felts, CRE; Jared Shlaes, CRE Emeritus; and Rocky Tarantello, CRE. Without their dedicated effort *Real Estate Issues* would not today be recognized as one of the premier publications in professional real estate.

Halbert Smith, CRE - 1998 Editor in Chief

WHEN MARKETS CLASH

by Bowen H. "Buzz" McCoy, CRE

BIT OF HISTORY

Recent events in the real estate capital markets may be seen as part of the evolving clash between public and private markets for real estate. Back in the 1970s the two markets were almost completely de-linked. Public real estate companies traded at times as much as 80 percent below the net asset value of the real estate carried on their books. This was borne out by the liquidation of Tishman Realty for approximately three and one-half times the price of its common stock; the Ernie Hahn company for three times the value of its common stock; and Monumental Properties, for almost four times the value of its common stock.

ABOUT THE AUTHOR

Bowen H. "Buzz" McCoy, CRE, is a retired managing director of Morgan Stanley, a firm which he served for 28 years. In recent years he has served as a business and real estate counselor. He is currently president of the Urban Land Foundation and a trustee of ULI. He also served as president of The Counselors of Real Estate in 1997, chairman of the Center for Economic Policy Research at Stanford University, and as a member of the Executive Committee of the Hoover Institution. (E-mail: buzzmccoy@ compuserve.com)

In the 1970's debt markets, investment bankers could place mortgage securities secured by headquarters properties of regional banks or public utilities at as much as 250 basis points below the rate at which the public debt of the parent company was trading. This lead to the chief economist of Equitable Life publishing an edict to all the field offices stating that no corporate mortgage could be issued at a rate less than that quoted in the daily *Wall Street Journal* for publicly traded Aa public utilities. Thus were capital market linkages born.

The 1970s also saw the initial round of REITs. They were mostly mortgage oriented. Those equity trusts which were formed, for the most part, lacked the quality of property which we see in today's REITs. A number of factors, including disintermediation, poor management, and small lot size caused the preponderance of these trusts to disappear by the early 1980s. Several real estate companies went public during the early part of the 1970s, but most of them returned to private status later in the decade, when private real estate assets were valued much more highly than public companies. Securitized debt also made an appearance in the 1970s, although it was limited primarily to tranched debt of high quality issuers, secured by a lease to their headquarters building. The debt tranches were structured to take advantage of a positive sloping yield curve, and bore little resemblance to the slicing and dicing of today. Thus the public markets for real estate debt and equity securities emerged in the 1970s, but the preponderance of commercial real estate finance was private, dominated by the insurance companies.

In the 1980s, private financing sources continued to dominate the real estate capital markets, with insurance companies prevailing in the debt and equity markets, including large joint-ventures. Pension funds began to allocate capital to real estate, and the pension fund advisory business grew rapidly. Commercial banks became increasingly aggressive throughout the decade, lowering spreads and underwriting standards to create market share. Even savings and loans, which had been traditional housing lenders, participated as syndicates of commercial real estate ventures. Private foreign investors came into the market in a big way as well. The real estate capital markets were flooded by private financing sources, and the quality of investment portfolios deteriorated as a result of the concomitant overbuilding.

Regulators placed stringent pressures on private financing sources in the early 1990s, including the imposition of risk-based capital rules on commercial banks and insurance companies. Many savings and loans were beyond salvaging. Pension funds lagged several years in marking their holdings to market. Credit and common stock analysts made it clear that real estate was "toxic." In the early 1990s the funding of financial institutions with large real estate holdings became problematic. The private market for commercial real estate finance had dried up.

REITs, especially after the tax efficient up-REIT ruling first given to Taubman, became an excellent vehicle to raise equity capital to pay down the banks. Developers who had never considered a REIT were encouraged by their lenders to do so, and the quality of real estate placed into REITs far exceeded that of the previous round. REITs benefited from the repricing of real estate, coming out of the depression in the mid-1990s, and investors were lured by annual returns of 30 percent for two years back-to-back. As a result, REITs were viewed as a growth stocks, not the income security they had been designed to be. Commercial Mortgage Backed Securities, formerly purchased chiefly by savings and loans, came into the fore as other lending sources dried up. A series of problematic investments could somehow achieve alchemy by being pooled, and the disparate cash flow characteristics of a hundred loans proved a more stable financing vehicle than individual whole loans. Disproportionate cash flow was dedicated to the "top" piece, and the rating agencies provided investment grade ratings to such tranches. A market developed for the "bottom" piece among opportunity funds and those willing to take higher risk. Issuances ballooned and the public debt markets drove many commercial banks out of the business. Underwriters of CMBS evolved from being intermediaries to becoming principals, extending their own capital when necessary and holding unsold, often riskier pieces in inventory. By acting as principal they could issue a competitive quote to a borrower and make as much as a 150-200 basis point "inside spread" by slicing and dicing the pooled securities. This worked fine as long as the market was receptive. Otherwise, inventory backed up, and the investment banks began to have the same problem the commercial banks had experienced early in the decade.

WHAT HAPPENED IN 1998?

By the first half of 1998, the public debt markets had pretty much taken the commercial banks out of the business. Because of their "inside spread," the investment banks could undercut the commercial banks in pricing their loans. The commercial banks could not compete with Wall Street on spread and sustain an adequate return on their capital. Underwriting standards began to deteriorate in the banking system, as they attempted to remain competitive. By mid-summer, 1998, Alan Greenspan cautioned the commercial banks on their lending practices to real estate. It looked like the public markets were here to stay, and the private markets were losing significant market share.

Some analysts raised queries about the possible fragility of the CMBS market as well. The rising tide of the repricing of real estate in the mid-1990s was lifting all boats and possibly masking the performance of many of these loans over time. An investment grade rating could obscure the nature of the assets in the investment pools. Large CMBS pools had not been fully tested in a real estate recession. A good statistical record of loans past due and delinquent during adverse times had not been compiled. Ongoing due diligence on individual loans in pools in the secondary market was problematic. It is not clear how such diligence is to be funded, or who is to perform it. Liquidity in the secondary markets could become a fiction. An investment grade rating did not mean there was a depth of market makers. Often the only market maker was the original issuer, and the trades were "by appointment." This was especially true when investment banks were bulked up on inventory. Thus, it was realized, in many ways, that large CMBS commercial mortgage pools were unseasoned, untested, immature securities. We would need to go through at least one full economic cycle to fully understand how they would perform over time.

All of this came to a head, of course, in the liquidity crisis in the debt markets in late summer of 1998. Problems with Russia, Latin America, and Asia caused liquidity to dry up in the emerging markets debt market. This liquidity crisis created a flight to quality-primarily to U.S. Government and highgrade corporate bonds. The market became binary. A debt security was either high-grade or it was not; there were no shades of gray. CMBS was swept up along with high yield and other lower quality debt issues. The real estate financial community was puzzled that real estate debt was being regarded as too risky, especially when the supply and demand characteristics of commercial real estate were probably as well in balance as at any time in recent years. It became obvious quickly, however, that investors regarded CMBS paper as unseasoned and immature, for the reasons cited above, and they quickly dumped it into the illiquidity hopper.

The real estate public equity markets, in the form of REITs, also took a battering in 1998. As commercial real estate re-pricing was completed, it became apparent that REITs would no longer be growth stocks. The process of moving equity securities from one class of investor to another can be quite expensive. The stock market continued throughout 1998, despite a few bumps and grinds, to place a higher value on growth stocks than on income stocks. The result was a decline in value for virtually all REIT shares, with some classes of real estate suffering far more than others.

As a result of the reversal in fortunes of public debt and equity real estate securities, the private market came roaring back in, to a much greater degree than earlier in the decade. Some insurance companies made 80 percent of their annual mortgage commitments during the last third of the year. Commercial banks, while cautious in their lending standards, found the widened spreads far more to their liking. The future of REITs will be driven by the state of the real estate economy. For the next two to three years leases will continue to roll over out of below-market rents, allowing some REITs to experience double digit store-to-store growth. This is typical for this stage in a recovery from such a severe depression, but it will create expectations which will not be sustainable in flat or declining rental markets.

It was interesting to observe the speed with which the private markets attempted to regain market share to take advantage of the public market difficulties.

WHERE DO WE GO FROM HERE?

The liquidity crisis of 1998 reminded us once again that life in the real estate capital markets is not linear. Just because the public markets dominate finance for a few years does not necessarily mean that the private markets are dead. Far from it. In the heady days of CMBS growth, analysts were predicting that the public debt market would become the primary source for real estate finance. The wake up call of 1998 was that public securities markets can dry up quickly for periods of time for reasons which have absolutely nothing to do with the quality of the underlying real estate assets. This potential periodic de-linkage of the capital markets from the underlying assets should cause all major users of real estate capital to desire to have multiple sources available, in both the public and private markets. In fact, despite the progress made in the public markets throughout this decade, a case can still be made that real estate is essentially private market business.

The future of REITs will be driven by the state of the real estate economy. For the next two to three years leases will continue to roll over out of below-market rents, allowing some REITs to experience double digit store-to-store growth. This is typical for this stage in a recovery from such a severe depression, but it will create expectations which will not be sustainable in flat or declining rental markets. As this cycle of REITs grows more mature, there will be increasing pressure to rob properties of desirable or even critical capital expenditures in order to maintain investor expectations regarding dividend levels. Over time, this will degrade the portfolios of

many REITs. When we experience the next real estate recession, dividend growth will cease to meet investor desires, and stock prices will fall. When stock prices fall to a certain level, say around 65 percent of net asset value, opportunity funds and real estate operators will begin to take REITs private, (much as they did with public real estate operating companies in the 1970s). For those attuned to arbitraging anomalies between the public and private markets, there will be money to be made.

It will be difficult to differentiate among CMBS issuers until we have a downturn and we can study how individual portfolios fare. As these securities mature, there will undoubtedly be "branding" distinctions made in the marketplace among issuers, based upon the support of secondary market trading activities; ongoing due diligence on individual loans over the cycle; the quality of follow-up information provided to the marketplace; and the diligence and tenacity applied to past due or delinquent loans. If true secondary markets develop in terms of information flow and trading activity, there should be substantial continued growth in this market.

If, over time, public markets dominate real estate finance, the real estate markets will become far more transparent, with copious amounts of public data available on individual properties. In this event, it is likely that the long dreamed of national rental index may become a reality. With enough public data on hand, various indices of property types and locations could be traded long or short, and hedge markets could develop for major users of space. This has long been a vision of many who deplore the still mysterious and arcane nature of real estate information, the difficulty of obtaining pure net rental data, or even consistently measuring space in various locations.

Despite the transparency of the public markets, and the better information flow, there is the irony that such markets could still become highly volatile and de-linked from the underlying real estate assets. Recently Alan Greenspan warned of the risks of the new international financial architecture. The increased volatility of the markets can, in effect, cause lower growth because of the anxiety created. This, of course, is exactly what occurred in the debt markets in late summer of 1998.

On the other hand, there may be many who do not really want a fully public, transparent real estate capital market. Real estate remains primarily a local and an insider's game. Detailed real time market knowledge is not broadly shared. The industry wants the world to be predictable, while it remains unpredictable. In a thoroughly predictable, transparent world, profits are limited. Obviously, the entrepreneurial talent which makes this business so entertaining and adventuresome would not be drawn to such an environment. So, as much as some may yearn for perfect markets and a broad public market for real estate, we had better keep the private markets alive and well. We had better hope that the public and private markets continue clashing. Without both of these marketplaces, we would lose much of our unique character, as well as opportunities to trade them off for our own profit.REL

NOTES

This is an adaptation of an article that appeared in the February 1999 edition of Urban Land. Printed with the permission of Urban Land.

You Say You Want a Revolution? Technology Turns Out to Be a Plus for Real Estate Demand

by Hugh F. Kelly, CRE

n June 30, 1975, *Business Week* magazine featured an article on "The office of the future." Nearly a quarter of a century ago, futurists were confidently predicting that word processing systems would move document creation and handling into electronic formats so exclusively that corporations could anticipate the advent of the "paperless office."

In 1997, American manufacturers shipped 12 million computer printers from their U.S. plants for domestic consumption and for export markets. Offshore manufacturers, that same year, shipped 17.2 million printers to U.S. business and personal computer users, according to the Census Bureau's Current Industrial Reports. The 29 million unit total for 1997 was up 16.8 percent from the shipment figures tallied in 1993.

The American Forest & Paper Association, a paper producers' trade group, estimates that printer and copy paper usage has increased by 30 percent during the 90s. The *Wall Street Journal* has reported that as companies adopt e-mail, paper usage jumps by 40 percent. It is a worldwide phenomenon. Japan's paper consumption increased from 28 thousand metric tons in 1990 to 33 thousand metric tons in 1998. Western Europe's demand for paper is growing at about three percent annually, Latin America at 3.3 percent, and Eastern Europe at more than five percent. In the United States, paper output from computers, scanners, copiers, and multifunction devices was estimated at 4.6 million tons in 1998, up 198,000 tons in just two years, according to analysts at CAP Ventures, a firm specializing in strategies for document management and related industries.

Rather than triggering a shrinkage in office paper, the unquestionable advances in office technologies since 1975 created a complementary

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Hugh F. Kelly, CRE, executive managing director, Landauer Associates, Inc., New York, prepares and presents national and regional economic forecasts on property markets. He serves as chief economist for Landauer and for its parent company, AEGON USA Realty. Mr. Kelly writes and teaches about economic issues and their implications (Continued on page 8) explosion in the volume of documents we need to read, assimilate, circulate, and store – in the old, familiar "letter size or legal size; portrait or landscape" formats. Whole forests have given their lives in the process.

The startling saga of the paperless office is just one example of how difficult it is to predict the path of technological change and its effect on business behavior. Many prognosticators, surveying the potential effects of emerging technologies on the real estate industry, posited a real reduction in demand for property. Telecommuting, internet shopping, teleconferencing, and other behavioral shifts were anticipated to mark a day in which cyberspace replaced physical space as the locus of business. As far as real estate is concerned, the evidence thus far indicates that complementarity rather than substitution is the operative principle governing the technology revolution.

THE HOME-WORKING MOVEMENT

Take the "work-at-home" movement, for example. Widely publicized studies by market research companies specializing in the information/communications industry, such as IDC/LINK, estimate the number of home offices at about 35 million, and growing at a rate of about 8,000 per day. Pretty impressive numbers. In fact, they are rather startling when put into the context of the real estate industry as a whole and even when measured against the entire U.S. economy.

Let us consider the gross assumption of one worker per home office and estimate how much demand has purportedly been shifted away from conventional space. Using a crude rule of thumb of 200 square feet per worker, those 35 million homebased office workers would need seven billion square feet of suburban or downtown office space. This compares to a total inventory of office space in the United States of 3.5 billion square feet, according to the 1999 edition of Comparative Statistics, (the annual compendium of market data assembled by the Society of Industrial and Office Realtors and Landauer Associates). This survey covers about 130 metropolitan office markets across the U.S. The work-at-home numbers are, to use the statistician's euphemism, "not intuitively correct."

IDC/LINK's reports do recognize that most of the "home offices" are supplements used by folks extending the workday or workweek by bringing files home from conventional office space. Or they are the domains of self-employed workers, either generating income on a part-time basis or keeping administrative records for field jobs such as sales or services which are not conventional office occupations to begin with. A study published by the Department of Labor in March 1998 indicates that more than half of those "working at home" in 1997 were not paid expressly for doing so, and that no more than 3.6 million were telecommuters who were paid for the hours worked at home.

The estimate that 8,000 workers join the homeworking movement each day comes from the American Home Business Association, and roughly gibes with IDC/LINK growth rate for all home offices, (i.e., the 35 million worker figure). The AHBA growth figure translates into 2,920,000 new "home workers" annually. The average growth rate for all civilian employment in the United States since 1988 has been 1,624,000 jobs per year. The total civilian labor force in the nation is now 138 million. If the 35 million worker figure were accurate, that would imply that 25 percent of all jobs were being performed out of the home. These figures surely look plausible neither to economists nor to those still routinely commuting to jobs by overcrowded mass transit or freeways.

By contrast, real estate industry figures (not often regarded as paragons of statistical purity) have considerably greater credibility. The annual *Comparative Statistics* volume tallies total absorption of 422 million square feet in the six year period 1992 – 1998, a take-up rate of 12.1 percent of total inventory. During this period, office vacancies declined from 18.6 percent to 8.8 percent. Construction during the period accounts for the difference between the net absorption rate and the lesser decline in percent age vacancy. The annual average absorption, as a percent of total office inventory, was 2.1 percent for the six-year interval, closely matched with the 1.8 percent growth rate for non-agricultural wage and salary employment over the period.

It is often an excellent idea to cross-check published reports of technology trends against established statistical standards. On July 31, 1998, the *New York Times* ran a story about the explosive growth of Internet shopping. The picture is indeed dramatic, with the estimated sales of goods over the Internet increasing about fifty-fold from 1996 (\$707 million) to 2002 (a projected \$37 billion).

But, to those accustomed to monitoring retail sales figures, the *Times* article (and the Jupiter Communications, Inc., study it cited for its estimates and

projections) is all about context – context which was never provided to the readers. Personal consumption expenditures in the U.S. exceed \$5 trillion per year. Sales of goods are less than half the total, though, at approximately \$2.4 trillion. Nevertheless, Internet sales in 1998 were not even one-half of one percent of all goods. It always pays to keep in mind some basic rules. One of these is enunciated in Edward R. Tufte's masterly study, *The Visual Display of Quantitative Information:* "To be truthful and revealing, data graphics must bear on the question at the heart of quantitative thinking: 'Compared to what?' . . . Graphics often lie by omission, leaving out data sufficient for comparison."

INTERNET RETAIL vs. THE "SHOPPING EXPERIENCE"

So, what about that huge growth rate? Even with the Internet commerce growing fifty-fold between 1996 and 2002, that is just \$36 billion in added spending in this sector (notice how cavalierly economists can apply the word "just" to the number "\$36 billion"). Suppose total goods expenditures increase at a modest three percent overall (unadjusted for inflation). That equates to a spending rise of \$450 billion over the period - meaning that sales in traditional venues will grow by \$414 billion (\$450 billion minus \$36 billion), or 11 and one-half times the amount of Internet sales growth. Even at its eyecatching growth rate, Internet sales in 2002 would still be just 0.8 percent of all retail sale of goods. These are hardly numbers to leave mall managers and retail property investors quaking in their boots.

Of course, that little subtraction embedded in the previous paragraph should not be simply taken for granted. The minus sign might seem to indicate that Internet sales are "taking away" sales from traditional shopping venues. But that is not necessarily the case, as economists who study the multiplier factors in input/output tables know. Those Internet sales should, in fact, be producing some "induced demand" in stores. How? Well, where are all the computers and peripherals necessary for the new cyberstore going to be bought? It is a good bet that most consumers will be traipsing down to CompUSA, Circuit City, or The Wiz to buy their hardware. Just look at your local Main Street or suburban mall, and count the outlets that are selling technology. That is part of the context of the skyrocketing E-Commerce chart.

TECHNOLOGY & THE ENTERTAINMENT INDUSTRY

The cascade of effects, often unanticipated, is the

Even at its eye-catching growth rate, Internet sales in 2002 would still be just 0.8 percent of all retail sale of goods. These are hardly numbers to leave mall managers and retail property investors quaking in their boots.

place where many writers about technology change go astray. Frequently, the analysis is simply a onedimensional and unidirectional estimate of the relationship between a technology producer and the end-users. There is no sense of the logistics of production and distribution functions in the creation of the products and in getting them to the markets. An excellent case in point involves the entertainment industry. With the advent of home video players, many thought that "The Last Picture Show" was going to capture the state of the movie industry at the end of the twentieth century.

Look what has happened. Certainly, the proliferation of retail outlets for the videos has created a whole new tenant category in the retail arena, from main street outlets to national chains like Blockbuster Video. Some facilities are large enough to use "big box" space. But it turns out that the marketing function for the videos depends heavily upon release for theatre distribution, so that the very function that was supposed to become obsolete was in more demand than ever before. This has created ever-increasing requirements for multiplex theatres, and has transformed many malls by creating an ever-larger "entertainment" component to the retailing experience.

Here are some of the numbers depicting the interaction between the home-based and theater-based entertainment since 1980. In that year, there were 1,850,000 households with video cassette players, or 2.4 percent of all households with televisions. Three million pre-recorded video cassettes were sold to U.S. dealers that year. By 1997, there were 80,360,000 VCR households in the U.S., an 82 percent penetration of the market. The number of prerecorded cassettes sold to dealers across the country had soared to 673.5 million. So the growth of the home entertainment video industry in the 80s and 90s has measured in the thousands of percent, a rate that even the Internet can be envious of.

And what are the figures for cinemas over the same time span? Not as impressive in percentage terms, but positive to be sure. Box office gross receipts were up 131.6 percent between 1980 and 1997, from \$2.75 billion to \$6.37 billion. Individual admissions were up 35.8 percent, from 1.022 billion in 1980 to 1.388 billion in 1997, an indication that exposure to movies on video stimulated, rather than suppressed, movie-going by consumers. And, critically from the real estate standpoint, the total number of indoor movie screens jumped 119.7 percent over the period, from 14,029 to 30,825. The growth of multiplex cinemas has not only transformed the movie-going experience, it has brought huge synergies to suburban malls and vitalized the nightlife of downtowns as well. The only losers, it appears, have been that icon of America, the drive-in movie. Drive-ins have dwindled from 3,561 screens in 1980 to just 815 in 1997.

Keepers of statistics often struggle to keep up with economic change. The U.S. Department of Commerce recognized during the 80s that the Standard Industrial Classification (SIC) system required some adjustment to capture the introduction of new technologies into the workforce. The spectacular growth of the video industry and its connection to the more traditional motion picture business was one such change. Unfortunately, one of the effects of the new (1987) SIC categories was to render comparison with pre-1987 data difficult.

Nevertheless, the employment effects of the technology explosion in the entertainment field are evident – and no less dramatic – when examined over a shorter span of history. Between 1990 and 1998, job growth in movie theaters (SIC 783) has measured 18.2 percent, or 22,300 new positions. But the more striking growth has been in the movie production side of the industry, up 75,900 jobs since 1990; a 49.7 percent increase in less than a decade. Overall, the industry (including its video production and distribution components) has expanded 36.9 percent, or 151,500 jobs, since the beginning of this decade.

The real estate industry has benefited from the technologically-enhanced growth in the entertainment business. In New York City, Manhattan's West Side agglomeration includes such giants as the News Corporation and Fox Broadcasting, NBC's Rockefeller Center complex, CBS's "Black Rock" headquarters, and ABC/Disney's Lincoln Center Production complex. In Brooklyn and Queens as well, historic studio space has been put back into production. Los Angeles, meanwhile, has seen submarkets like Century City and Burbank lead the way in its real estate recovery during the 90s, while expanding to new areas like Playa Vista for state-ofthe-art production space. The ramifying effects extend across a whole range of businesses, from law to catering, all of which are real estate space users.

CONCLUSION

Additional and equally compelling evidence can be adduced from the industrial sector of the economy where, after all, the technology is researched and manufactured. But this would require at least as much discussion as this article has already developed.

Suffice it to say that technology has proven to be an ally, not an enemy, to the real estate industry during the course of the 90s. Like the U.S. economy itself, commercial property has proven to be remarkably adaptable to change and ready to accept the challenge of technology. But more fundamentally, it appears that there is a growth imperative in technology itself. As innovation arises, applications seem to branch out. If the 90s have been a decade of productive technological change, so too have they proven a period when renewed productivity growth has gone hand in hand with robust job creation. Together these have produced extraordinary levels of net absorption in commercial real estate of all kinds.

ABOUT THE AUTHOR

(continued from page 5)

for real estate investment. He is editor in chief of the CCIM/Landauer joint-venture publication, Investment Trends Quarterly; of the SIOR/Landauer annual book, Comparative Statistics; and of The Counselor, a news-letter for members of The Counselors of Real Estate. (E-mail: HKelly@Landauer.com)

The Year 2000 Challenge – Impact on the Real Estate Industry

by Nitin Manchanda

ntroduction

Perhaps the most frustrating aspect of the Year 2000 problem (commonly known as "Y2K" or "the millennium bug") is that it is not a result of industrial sabotage, but has been inadvertently woven into the complex fabric of corporate Information Technology systems over the last few decades. The cost and effort needed to eliminate this bug is monumental.

The principle problem with the Y2K bug is the inability of computer systems to recognize the existence of the 21st Century. Put another way, many computer systems will interpret January 1, 2000, as 01/01/00, which in effect is January 1, 1900. The simplicity of this bug completely belies the complexity of the problem.

This manuscript will describe the Year 2000 problem and cover critical issues in three areas of real estate – facilities and property management; capital markets/financial transactions; and real estate software. However, the impact of Y2K is far reaching. It may infect each and every part of your computer system that relies on valid dates to initiate, record, report, calculate, or facilitate a business operation. This could mean a breakdown of financial controls such as General Ledger and accounting systems, as well as the interruption of elevator service, security systems, air-conditioning, and fire alarms. In this age of technology, computers are intricately linked to one another, and this inter-dependency will only worsen the effect.

WHAT IS THE YEAR 2000 PROBLEM?

Many computer systems were originally developed using a six-digit date (two digits each for the month, day, and year). This six-digit date saved precious file and memory space. Today's modern hardware

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Nitin Manchanda, is a principal consultant at PricewaterhouseCoopers in the real estate systems and operations group. He is involved in developing creative technological solutions to manage real estate-related challenges. Solutions frequently involve selecting and implementing package software or designing and developing custom systems.(E-mail:Nitin.Manchanda@ us.pwcglobal.com) systems are not limited by the file storage and memory constraints of a few decades ago. Although these considerations are no longer an issue, many systems created over the years still use the original six-digit format.

Most systems with two-digit years will soon malfunction. Without the century in the date, information sorted, compared, and used in calculations is likely to produce incorrect results when the dates cross the century mark. The year "00" in many systems will become either invalid or will be considered 1900 by default. In addition, some data entry processes do not allow for the entry of a "00" year or a four-digit year.

Another related problem is that the Year 2000 is a leap year, and 1900 was not, thus editing and calculation routines will be further complicated. Some forecasters also believe the Year 2000 problem will first occur on April 9, 1999, since some programs may read this as the 99th day of the Year 99. Together this reads as "9999" which the Cobol language interprets as "end of file," indicating that all records in a query or report have been selected when they possibly have not. The same issue may arise on September 9, 1999, if computers interpret the 9th day of the 9th day of the 9th month of the Year 99 as "9999."

Year 2000 errors are not limited to mainframe computer systems. Most pre-Pentium personal computers have a clock chip that will not retain a year when re-booted beyond 1999. The same clock chip defect may also be present in other electronic devices that utilize the date and time such as VCRs, camcorders, time clocks, digital thermostats, etc. These are just some of the examples that need to be considered when addressing the Year 2000 bug.

IMPACT ON THE REAL ESTATE INDUSTRY

The government and many leading industry leaders, notably in the financial services sector, have been quite forthcoming in discussing the Y2K bug. The commercial real estate sector, especially property and facilities management, remains an anomaly in this regard with limited evidence of discussion on this issue.

Property and Facilities Management Issues

Richard D. Goulet, a service project manger with Burr Ridge, IL-based AMS Mechanical Systems Inc., is on the Y2K task force of the International Facilities Management Association (IFMA). Speaking about property managers, he says "they may be calling the manufacturers asking whether a system is Y2K compliant and, if the manufacturer says yes, just leaving it alone. But they are not thinking about all the different parts of the system, because if one component fails, then it all fails."¹ Another voice heard recently discussing the Y2K problem is from the Building Owners and Managers Association (BOMA). Coffe Colvin, secretary/ treasurer of BOMA, in his testimony to the House Committee on Transportation of Infrastructure, mentioned that "embedded systems" could affect building access controls; surveillance cameras and badge readers; refrigerant leak detectors and underground storage tank monitors; telecommunication systems; power generators and distributors; etc.²

The exact impact that Y2K will have is difficult to ascertain, however, most experts agree that the problem will be widespread and span all property types – industrial, office, retail, hospitality, and mixed use, etc. Most buildings will be affected in one way or another if preventative action is not taken.

It appears that property and facilities managers rely on manufacturers' systems to solve the Y2K problem. The building owners are left with few choices other than to replace existing systems if vendors do not provide fixes for their current systems. Property owners are not the only ones that could be affected by the Y2K bug. Tenants could also be affected depending on the lease, since leases may delegate such responsibilities or be subject to system upgrade costs that tenants may not have anticipated.

Legal issues surrounding the Y2K issue could also arise in the year 2000 as tenants claim that building facilities were inadequate while owners may try to pass along the costs of system enhancements. In a round-table discussion at the IREM mid-year conference, Anthony Smith, president of Robinson Sigma Commercial Real Estate Inc., stated that, "We have tenants ask us what we are doing to bring buildings into compliance, but if tenants have net leases, compliance may really be their problem. Not all leases are clear."³

Capital Markets/Financial Transactions

By many accounts, the real estate financial sector seems to be better prepared for the Y2K bug. Even though most industry leaders feel that not enough is being done, there are examples of corrective efforts that began early this decade. The possible reason for the financial sector to have been more pro-active with regards to this problem is that both the implications and effects are more transparent, *i.e.* the number of date-sensitive transactions in the financial sector is huge and much more apparent. For a bank that miscalculates the amount of interest owed to its customers, the affect could be staggering, especially if it has a large customer base. Similarly, mortgage backed securities, that are usually large dollar amounts, could create havoc for investors if inaccurate monthly results are reported or paid.

Freddie Mac allegedly started working on the problem in 1994 and has more than 10 percent of its 3,300 employees assigned to the task. It claims to have fixed 75 percent of its programs and is working on the remainder.⁴ Mr. Sichelman of Freddie Mac told the Chattanooga News-Free Press that the Mortgage Bankers Association has embarked on an ambitious Y2K testing program that will test transactions based on 16 core functions in loan origination and servicing in secondary marketing. Another early initiative is AMRESCO's Year 2000 initiative, which began in early 1995 and uses seven criteria to determine Y2K readiness. Included in the testing are 13 dates (including the April 9, 1999, issue discussed earlier) that are determined to be critical by the Federal Financial Institutions Examination Council (the oversight group for the Federal Reserve, OCC, FDIC, OTS, and NCUA).

Even though many professionals believe this segment is ahead of others, homeowners and tenants are advised to keep accurate records of payments and receipts during the latter half of 1999 and the first half of 2000.

Real Estate Software Issues

The real estate software industry is seeing strong growth in sales as real estate companies replace some of their legacy systems with Y2K compliant technology. Most asset and property management software included leases with end dates in the 21st Century, and one would think that real estate software would have overcome this hurdle a long time ago. Newark's MIS Director, Sebastian Font claims that, "Real estate is one of those industries that has escaped the wrath of the year 2000."⁵ This is partly true - some databases were storing mostly twodigit years with programming logic in place to treat the dates as 20th or 21st Century dates - two-digit years ranging from 00 to 29 belong to 21st Century, while 30 to 99 belong to the 20th Century. This workaround is limited for obvious reasons, but possibly (depending on the programming) could function during the Year 2000 and beyond. On the

The Y2K compliance issue is complex and real, and is a serious threat to real estate companies. Property management appears to be the most complex, mainly because of the hidden or "imbedded" systems in place and the legal issues surrounding them. Financial transactions will undoubtedly be affected, but these are more apparent; most public companies are being forced to assess their exposure and in many situations corrective measures are being taken. Commercial Real Estate software is likely to be less affected...

other hand, many software companies have already released newer versions of their software, which overcome these shortfalls. MRI and Skyline, two major real estate software companies, built their software with four-digit years many years ago. One such company, CTI Limited Inc., has been compliant since its software was first introduced in 1973. As with most software implementation, testing is a key part of the process. CTI tested its Y2K compliance early this year and found that when it simulated the transition from December 1999 to January 2000, no data was lost and its lease calculations were flawless. Most property and asset management systems released this year claim to be Y2K compliant. However, whether it is rewriting pieces of existing code, rewriting entire systems, or replacing legacy systems, Y2K testing should be part of any software review strategy. Many software vendors rely on third party controls or software development tools and their reliability can only be ensured through testing.

SOLUTIONS AND COSTS

In technical terms, there are two main approaches to tackling the Year 2000 Problem. The first approach, "expansion" involves finding every reference to the problem year in the code and adding two digits to it, thereby expanding it. This approach not only requires changing the dates in the program code itself, but also changing all the date references in all the stored data associated with the software programs, making the process time-consuming.

The second approach, "windowing," involves finding and fixing only the code that needs to recognize the change in the century but leaving all the data associated with the program intact. In effect, this approach reprograms the computer to properly recognize the correct century in a two-digit date. This is accomplished by programming a 100-year window into the computer's logic as described earlier; the years 30 to 99 can be part of the 1900s and 00 to 29 as 2000 and after. In addition to the expansion and windowing methods, there are many software programs designed to speed up the work by automatically sifting through lines of code.

The solutions to the Y2K problem will eventually depend on individual circumstances, and more importantly, will also depend on others achieving similar solutions since many systems are interdependent. Most big organizations are following a Year 2000 project life cycle which calls for the systematic analysis, repair, and testing of computer systems to ensure that all applications are made compliant. A decision to replace, repair, or reprogram computer code needs to be made on a case-bycase basis, and any "one size fits all" approach, is likely to miss certain angles of the problem.

The estimates of the cost of fixing the problem usually run into the hundreds of billions of dollars for the United States as a whole. Large companies, with different systems and computer networks, have already and continue to spend millions of dollars each year to become Year 2000 ready. Many major organizations are expected to spend between \$50 and \$100 million. The cost to each organization is again, very specific to their individual structure and needs. The following table, from Caper Jones' article — Year 2000: What's the Real Cost?,⁶ describes some ballpark figures you can expect to spend.

Software Staff (# of people)	Total Costs
5	\$197,784
10	\$379,087
25	\$906,511
50	\$1,648,203
100	\$3,523,033
500	\$16,688,051
1,000	\$35,601,176
5,000	\$178,005,882
10,000	\$356,011,765
20,000	\$712,023,529

CONCLUSION

The Y2K compliance issue is real and complex, and is a serious threat to real estate companies. Property management appears to be the most complex, mainly because of the hidden or "imbedded" systems in place and the legal issues surrounding them. Financial transactions will undoubtedly be affected, but these are more apparent; most public companies are being forced to assess their exposure and in many situations corrective measures are being taken. Commercial Real Estate software is less likely to be affected since it has been storing very long term leases, although they are not completely out of the woods given the numerous sides of the Y2K bug and the dependency on other software that they use.

Today, no simple solution exists and the bug will cause trouble for every enterprise in a different way. What is important to fathom is that organizations can plan a "treatment program" to mitigate the problem. Unfortunately, the deadline cannot be pushed off. BOMA recommends the following steps–educate yourself; designate a year-2000 manager; inventory existing systems; contact suppliers; prioritize problems; anticipate contingencies; identify solutions and test them.⁷

NOTES

- 1. Crains Chicago Business; October 19, 1998.
- 2. Federal Document Clearing House Congressional Testimony; October 6, 1998.
- 3. Journal of Property Management; July 17, 1998.
- 4. Chattanooga News-Free Press; October 11, 1998.
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REAL ESTATE APPLICATIONS FOR GIS: A REVIEW OF Existing Conditions & Future Opportunities

by Gerald N. Zaddack, CRE

Gissoftware and software were only the tip of the iceberg. Many users became frustrated with the steep learning curve necessary to implement a fully integrated GIS and abandoned the technology when they could no longer justify the cost of these "pretty maps."

This manuscript will examine the state of GIS in real estate analysis, describe several applications for this technology that can be utilized by nearly all types of real estate professionals, and look ahead toward likely applications in the coming millennium.

CURRENT STATE

As recently as 1990, there were only a handful of desktop GIS systems available. Costs typically exceeded \$500 for the software plus several thousand dollars for boundary, street, and demographic data files. Today dozens of desktop systems are available, most priced less than \$500, including census tract boundary and major street files as well as basic demographic data such as population, income, age, and house-hold size. Major players in the GIS software industry include: Autodesk, Inc., (www.autodesk.com); Desktop Mapping Technologies, Inc., (www.destktopmapping.com); ESRI, Inc., (www.esri.com); MapInfo

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Gerald "Jerry" N. Zaddack, CRE, of Johnson & Zaddack, Inc., has extensive experience in computer-assisted real estate applications including: feasibility, market analysis, and valuation. Mr. Zaddack is the 1999 chairman of the Technology Committee for The Counselors of Real Estate. (E-mail: jzaddack@aol.com) (www.mapinfo.com); and On Target Mapping (www.otmapping.com).

The explosion of the Internet has also expanded GIS use by companies of all sizes. For example, demographic and real estate data are readily available at the U.S. Census web site (*www.census.gov*) and numerous private-sector providers, including CACI Marketing Systems (*www.caci.com*); Claritas, Inc., (*www.claritas.com*); and National Decision Systems (*www.natdecsys.com*). University research departments are also a good starting point, including: Indiana University Center for Real Estate Studies (*www.indiana.edu*/~*cres*/); Penn State University (*www.worldcampus.psu.edu*); and the Real Estate Center at Texas A&M University (*http:/recenter.tamu.edu*).

Municipalities were among the first users of GIS, recognizing its tremendous potential for integrating and mapping parcel boundaries, streets, water/ sewer lines, easements, land use, and ownership. In recent years many states, counties, and cities have made their GIS layers available to the general public. Key factors for real estate professionals are compatibility and price. Unfortunately many municipalities developed proprietary systems that do not easily interface with "off-the-shelf" GIS software packages. A second limitation is often cost. While some government officials follow a practice of making GIS available free or at a nominal cost, most have attempted to recoup the significant front end costs of establishing a GIS by charging users, who often are real estate professionals.

Clearly the brokerage community has been the leader in embracing and incorporating GIS. Other users include appraisers, corporate real estate executives, site selection experts, and consultants who perform market and feasibility studies.

GIS APPLICATIONS

Pin Maps

Figure 1 is a typical pin map depicting the location of shopping centers available for sale. Property addresses are geocoded (a process whereby street addresses are assigned their corresponding latitude and longitude coordinates), thus enabling the GIS to display properties along with major streets and relevant landmarks. Variations of this popular mapping application include color-coding the data points based on price, size, age, price per square foot, etc., and depicting demographic (income, median age) or real estate data (occupancy rate, rental rate, traffic counts) as a background. Appraisers, property managers, and lenders can similarly benefit from the visual depiction of these types of tabular data.

Trade Area Definition

A second powerful application for GIS is trade (service) area definition and depiction. Simply stated: map data is easier to visualize than spreadsheet data. For decades the most common technique for defining a trade area was to assume the trade area consisted of the area within one, three, or five miles of a site. Demographic "ring" reports similar to *Table 1*, summarizing demographic data (*ie.*, existing and projected population, median age, household size, and household/per capita income) have been included in nearly every appraisal, listing package, and market study for years.

Table 1

DESCRIPTION	1.0 MILE RADIUS	3.0 MILE RADIUS	5.0 MILE RADIUS		
POPULATION					
2000 Population	9,757	62,273	121,965		
1995 Estimate	8,802	56,248	111,423		
HOUSEHOLDS					
2000 Projection	4,425	28,024	52,694		
1995 Estimate	3,732	23,728	45,608		
OCCUPIED					
UNITS	2,976	19,205	38,172		
Owner Occupied	68.76%	72.55%	75.75%		
Renter Occupied	31.24%	27.45%	24.25%		
1990 Persons Per	2.20	0.45	0.50		
Household	2.39	2.45	2.52		
1995 Est. Average	¢72.210	000 100			
HH Income	\$73,310	\$82,107	\$79,154		
1995 Est. Median HH Income	\$56,224	\$63,273	\$63,463		
1995 Est. Per Capita Income	\$31,797	\$34,868	\$32,527		

Ignoring for a moment the pitfalls of assuming that all customers conduct business within rings around their residence or job, creating a map that overlays the rings over the census block groups from which the demographic summary statistics are derived reveals a significant limitation to this method of trade area definition.

The map in *Figure 2* depicts the one, three, and five mile rings superimposed over the actual census block group boundaries that are crossed by the





rings. As shown, the demographic data summarized in the "ring" report is influenced by people who live well beyond the three or five mile ring and hence outside of the trade area being analyzed. This is a common problem, especially in growing communities, because the Census Bureau establishes the size of block groups and census tracts based on population count, not geographic area.

A GIS not only allows the analyst to visualize the area from which the demographic statistics are being derived, but also to more accurately draw trade area boundaries based on population density, transportation networks, and land ownership patterns. *Figure 3* depicts an alternative trade area that comprises customers who would be more likely to frequent this location. The alternative trade area contains the same total population as the five-mile ring, but is more representative of a true potential customer base.

Even if the analyst is comfortable with the notion of a circular trade area, a GIS can greatly enhance the understanding of the customers who comprise the trade area. For example, the tabular report only includes totals and averages or medians for the entire trade area. A GIS allows the user to map individual data fields such as household income or median age, thereby providing a clearer picture of the trade area.

Recent enhancements in GIS technology include spatial analysis tools. These tools improve trade area analysis by incorporating gravity model techniques that seek to mimic customer behavior by using the location and purchasing behavior of customers and the location, physical attributes, and level of competition.

Raster Imagery

The aforementioned GIS real estate applications consist primarily of vector data including streets, zip code, and census tract/block groups, which is to say the data can be displayed using lines and polygons. An interesting recent addition to GIS is raster imagery which allows non-linear data such as aerial photography, topography, and building footprints to be integrated into a GIS.

Satellite photography has been publicly available since the early 1970s but only in the past few years have images been affordable and easily integrated into a geographic information system. Site selection experts frequently study aerial photographs to identify available sites. GIS allows these images to be incorporated with land use (general plan/zoning), traffic count, and demographic layers to greatly enhance site selection.

Collectively this imagery can save real estate developers enormous amounts of time when evaluating and planning sites. Raster imagery is greatly enhanced by adding street and parcel level geography when these layers can be acquired from municipalities.

Portfolio Management

Another exciting application of GIS technology is as a database management tool, providing a window to better manage a real estate portfolio. For example, most GIS software programs enable the user to not only geo-code property addresses and display locations along with streets and landmarks, but to also link other property specific attributes such as digital photographs, videos, floor plans, inspection reports, lease abstracts, and other data. GIS packages now easily accept data from non-GIS software packages such as Dbase, Excel, Lotus 1-2-3, Oracle, FoxPro, Paradox, etc.

Advances in e-mail and file transfer speed allow remote location data to be transferred and integrated into a GIS package. Utilizing this type of integrated system allows managers to conduct virtual tours of their properties through a GIS window.

Likewise, GIS images can be exported into Powerpoint and similar presentation software.

Site Cloning

An ideal real estate GIS application presents itself when a retailer or restaurant operator with one or more successful locations desires to expand into a new market. The starting point in any expansion consideration should be an analysis of what makes the current site(s) successful. Demographic factors to consider include population, age, and income. Non-demographic considerations include land use and traffic volume.

GIS is the perfect tool for identifying current customer distribution. Addresses can be geo-coded and mapped to visually identify primary and secondary trade areas. These data points can then be superimposed onto a series of demographic theme maps such as population density, median age, and household or per capita income. Reviewing a handful of these types of demographic maps will often reveal a pattern that helps explain the success of a



site; for example, the best performing sites appear to be in neighborhoods with the median age of 50-59 and with a household income of \$40,000-\$49,999.

Superimposing customer locations over land use and traffic volume maps can quickly provide insight into traffic volumes and surrounding land uses that help explain a site's success.

The true power of a GIS is evident in the final step. A common query based on the conclusions derived from the analysis of an existing site might be: "display all census block groups in which the median age is 50-59, where the median household income is \$40,000-\$49,999, bisected by streets with over 35,000 vehicles per day." If parcel geography were included, the inquiry could be expanded to: "include and display all vacant commercially zoned parcels."

Utilized in this manner a fully integrated GIS package can dramatically reduce the time needed for a real estate counselor to identify potential new sites. Certainly, existing and potential competition must also be considered, but the likelihood of selecting and recommending an appropriate site is greatly increased through this type of cloning analysis.

A LOOK AHEAD

GIS as an industry is in its infancy, having reached desktop PCs in the just the past 10 years. To date, nearly all GIS software packages are "one size fits all," requiring the user to have a basic knowledge of geography, database management, graphics, and cartography; a unique skill set to say the least! While the first three lessons all real estate professionals learn early in their career are: "location, location, location," few are well versed in any of the disciplines necessary to create, implement, and profitably integrate GIS into their everyday practice.

Not suprisingly, national brokerage firms, retailers, and national real estate consulting firms have been in the best position to benefit from GIS because their size allows them to allocate the financial resources to hardware, software and, most importantly, people.

Many smaller firms investigated and/or invested in a GIS package only to conclude the maps were pretty but the technology was not cost effective. For these firms, advances in Web-based systems may allow them to again consider GIS. The September 1998 issue of *Business Geographics* magazine included a survey of 11 prominent GIS vendors. Each was asked the direction the industry will head in the next 10 years. Common themes throughout the responses were:

- Stand-alone systems will be replaced by Webbased tools that will allow the user to interface standardized GIS software using a browser;
- The Internet will allow GIS software, business, and spatial data to be updated real-time;
- Users will have a much higher understanding of how a GIS can be used to model spatial data;
- Specialized tools such as gravity modeling will be more readily available and enhanced to be more similar to wizard-style menus;
- Data will continue to become cheaper and more accessible;
- GIS operations will become more transparent to the user through integration into "mainstream" business software.

Although the current GIS packages may seem to be an expensive and cumbersome tool for producing pretty maps, the wise real estate counselor will continue to monitor GIS as many anticipated enhancements should allow more real estate counselors to incorporate this dynamic and useful tool into their counseling assignments._{REI}

REAL ESTATE RESEARCH & Valuation Using the Internet

by James R. MacCrate, CRE, Scott S. Metro, & David Watkins

NTRODUCTION

In recent months, we have been hearing and reading a lot about the potential for faster, more flexible, easily updateable, and less expensive real estate research and valuation using Internet and World Wide Web (WWW) resources. While the potential for revolutionary change and dramatically improved operations may exist, there remain many pitfalls and risks along the way. This manuscript explores both the possibilities and the pitfalls that exist in this area; identifies real estate research and valuation professionals in both large firms and small firms for possible winners and losers as firms adapt to the new technology; and finally, suggests appropriate strategies for research.

REVIEWING THE STATE OF THE ART

Most of the raw data items that are required for a real estate consulting, valuation, or research project can now be accessed from a combination of sites on the Internet's World Wide Web. These raw data items can be supplemented by proprietary data maintained by consultants in their confidential files. All this information can then be integrated into a comprehensive presentation format, complete with text, graphics, interactive maps (GIS), and even, if desired, audio and video, and an on-line discussion capability. Reports can be updated on a daily, or even more often than a daily basis, as new data is fed into report templates. Buyers of information can specify "alerts," to be triggered by specified events. In other words, if desired, the report can become almost a "real-time," living document, rather than a one time snapshot of conditions at a point in past time. The model for this Internet-based research/valuation presentation methodology is the so-called "portal" concept. In Internet parlance, a portal is a multipurpose Web page that serves as a "personal newspaper" and lets the

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Scott S. Metro *is a director in the Real Estate Systems and Operations practice of PricewaterhouseCoopers, (Continued on page 23)* user select what items will be presented; in what detail and what format; how the items will be presented on a page; and how frequently the information will be updated.

Most of the traditional "search engines," like Yahoo, Excite, and Infoseek, have expanded their offerings and changed their business, becoming multi-purpose portal sites, not just single-purpose search engines. They have done this in the attempt to hold users longer and provide more comprehensive services to them. They have become focal points, which assemble multiple links to other pages. It is possible, in the technical sense, to create the equivalent of a portal page for a real estate valuation or a real estate research project. This is now being done by a few of the more technically advanced consultants and firms for first-stage research on communities or market areas, and for some types of valuation - most often the less complex singlefamily residential project. However, it is far from being an automatic process or one that lends itself to quick and easy "fill-in-the-blanks" types of solutions. Next we will examine a few of the reasons why this is so.

BUMPS ALONG THE ROAD TO AUTOMATED VALUATION

Real estate consultants who engage in various types of automated or Internet-assisted valuations or research projects should be aware of some of the issues that make this far from a foolproof process. These include issues related to: quality control and data reliability; pricing; data assembly or integration; security and confidentiality; and liability.

QUALITY CONTROL ISSUES

First of all, serious quality control issues exist with real estate data on the Internet. There are many data providers, but few with established track records for on-line data provision. Many of the same issues that arise with traditional print data also appear with on-line data. How current is it? What is the level of detail? How trustworthy is the data from a given provider?

Furthermore, the speed of change of on-line data raises some unique issues not faced in the print format. For example, in a site that updates its data daily, how does a consultant cite or reference the version used? Similarly, if the morning's data is not preserved on-line in the evening's update, how can the consultant check on the accuracy of completed work? It is likely that the consultant's due diligence will come to focus more on the overall, day-in, day-out reliability of the data provider and its collection and presentation procedures, more than on the contents of any one screen.

On the screen, as with printed reports, there is also the issue of the "illusion of truth" that surrounds official-looking report data. ("If it is on a screen, or in a report, and looks official, it must be true.") The same kinds of due diligence procedures and verification of sources are called for, whether the information be on paper or on screen.

INSTABILITY OF "LINKS"

Some consultants have suggested that they can assure a steady stream of current, reliable data, and almost "real-time" ongoing property valuation, by linking to a number of Web sites, and feeding information from those sites into a pre-defined set of formats or templates. While this option may be attractive in theory, it does not appear that the Internet state-of-the-art can support it in a practical way, today. Web users are well aware of the frequency with which sites can change character, quality, presentation format, and can even appear and disappear in a matter of days.

It may be too early in the evolution of the Internet to attempt such an approach, using public Web data sources. However, it could work, done over a closed private corporate intranet, or a password-protected limited access "extranet," where all participating data sources are known quantities, and have agreed to supply data in an agreed-upon manner.

PRICING ISSUES

Pricing issues are just starting to emerge. This turns out to be a very complex area, with an ever-shifting mix of free and "paid for" data. Some providers (*ie.*, brokers) may offer free data as an inducement to customers to use their other services. Others may provide some data free--an introductory sample, as it were--to encourage purchase of additional or more detailed data. Changes in technology will make even this pricing environment unstable, as it becomes possible to buy and sell data in a "micropricing" format, where data is literally "bought by the bit."

Consultants must remain alert to constant shifts in the pricing environment. Over time, we can expect to see intermediaries stepping in to provide on-line daily information about price and quality of available data, at very fine grain, by property type and geographic area.

INTEGRATION ISSUES

Integration issues pose additional challenges. Does the consultant accept the presentation format offered by a data provider or "custom-craft" his/her own for the job at hand? This answer may differ from project to project, with standard templates being acceptable for simple projects and customized formats used for specialized or more complex assignments.

And what will be the role of the consultant in this new environment? Merely a collector and assembler of data provided by others? Or, an advisor commenting on the meaning of data items and deciding on the appropriate presentation format? The challenge to the consultant is to understand enough about the new data environment and its potential, that he or she can play the advisor role not only on traditional real estate subject matters, but also on Internet data issues and concerns.

SECURITY AND CONFIDENTIALITY ISSUES

Security issues are ever-present in the on-line data environment. How can the consultants ensure confidentiality? Internet data trails can remain for long periods of time. Who else is seeing what you are doing on the net? How much can a data provider be trusted to maintain confidentiality? How secure are internal "firewalls" within a large, multi-division firm? These issues are likely to become more important as real estate investors and analysts place increasing reliance on the Internet.

Software exists to make possible encryption and secure transmission of data. Training consultants to use it is another matter. And, of course, it will always be necessary to "qualify your vendor"whether on-line or in the "paper" world.

LIABILITY ISSUES

Who is liable, if incorrect data is drawn from on-line sources? There are at least two distinct fact situations, with two different answers. In those cases where there is an agreement to provide data (these will usually but not always be the cases of "paid for data"), the buyer has a duty to qualify the reliability of the provider, and the vendor makes certain warranties about what is being provided. The buyer may have recourse against the vendor, depending on what the agreement says.

On the other hand, getting data free from public sources on the Internet is a different and riskier matter. The consultant is at risk here, and will not be likely to have much recourse against data suppliers, in most cases. So it is wise to independently confirm the validity of such data, from at least one other non-Internet source. The implication of this is that public Internet data can be good for "first-cut" analyses, to be followed and supplemented by analysis done in more traditional ways.

WHO WILL BENEFIT FROM THE NEW TECHNOLOGY?

We are still in the early days of Internet-assisted research and valuation. It is too early to tell who will be the successful early adopters of these new technologies. The technology does not give an automatic edge to either small or large firms. Rather, the winners will likely be those firms - large or small that intelligently and flexibly incorporate new technology into their processes. The challenges involve managerial skill and investment strategy, as much as technological know-how. They are challenges for the CEO and CFO, as well as the Chief Information Officer (CIO), of any organization.

The large, well-capitalized firm has the ability and the financial resources to automate most or all of its internal operations, to reuse data for multiple purposes, and to instantly network the latest information from its various branch offices or from related firms, making use of intranets and extranets, the private and semi-private variants of the public Internet. Large firms, however, run the risk that their major investments in self-developed software can quickly become outdated because the technological state-of-the-art may quickly jump ahead of them. On the other hand, data quality issues can be fewer, to the degree that the firm can maintain internal control of its processes.

The smaller firm or even the one-man practitioner may have less capital to spend on hardware and software, but could be in a position to compete with the larger firms by "buying smarter," moving faster, and taking advantage of the many opportunities for networking that the Internet provides. Hardware and software suppliers, such as Gateway and Dell, are making it easier for the small firm to keep up with the pace of technological change. They provide "easy upgrade" plans that let the user smoothly upgrade to the latest versions of a product. It is increasingly possible for the small user to lease rather than buy, fitting the length of investment to the useful life of computer products.

INTERMEDIARIES: HUMAN AND OTHERWISE

Both large firms and small firms are faced with the

challenge of "riding the technology tiger," as the trends toward "faster, smaller, more powerful, and cheaper" continue and intensify in the worlds of hardware and software. In the world of data, the challenge is one of sorting through an increasing information overload. More data becomes available, in different formats, and with different pricing structures, on an almost daily basis.

To cope with these changes, we are seeing the emergence of a new kind of intermediary. While it was originally thought that the Internet might eliminate intermediaries or middlemen, now we are seeing a new, specialized variety of intermediaries. First, people are filling the role of "trusted advisor" on technological change, data quality, etc. Some are on corporate or professional association payrolls; others operate in free-lance mode, often from their Web sites. But over time, and sometimes quickly, the human intermediaries are being supplemented or replaced by non-human intermediaries (forms of intelligent software that perform the same functions).

For example, some of the same "auction" software that now helps users buy plane tickets or cars based on detailed "specs" could be used to let purchasers of real estate or valuation information put their detailed requirements out for bid, and receive bids from providers over the Internet. This could spark a wave of new competition, as barriers to entry of new providers would be low.

Conversely, it could solidify the position of established real estate information brand names, if they are smart enough to adapt their offerings.

WHAT DOES THE FUTURE HOLD?

The one thing we can be sure of is volatility. There will be rapid evolution of data offerings and formats, and provider firms. Buyers of real estate research and valuation information - such as banks, investment bankers, and pension funds - will increasingly demand that their advisors and service providers serve them on-line. Big players in the real estate industry will make large investments as they attempt to maintain their established positions in the world of cyber-real estate. At the same time, large new players from other industries will view the real estate research and valuation information provision as a "vertical market" ripe for exploitation.

And finally, there are always the small firms or individuals with the new "niche" ideas, products or services that can be marketed globally from Web sites. Some could become the Microsoft of tomorrow, while others may be absorbed by the giants of today.

How does all this new technology relate to and affect the traditional face-to-face business style of the real estate and appraisal professions?

Some practitioners will use computer and Internet technology - as they have used the phone and the fax machine - to supplement and speed up their traditional ways of doing business. But over time, the new technology will make it possible to replace, eliminate, or modify the traditional face-to-face business style. In part, this will result from easier to use and more "life-like" technology -- for example, video-conferencing with multi-media document transmission capabilities. And in part, it will be a generation change. Younger professionals who have grown up with e-mail, Internet, and video transmissions, will be as comfortable, (maybe more comfortable), with "doing business virtually."

The face-to-face business style will not disappear overnight. But steadily, over time, more and more portions of real estate deals and research projects will be conducted on-line.

In summary, the real estate information future can be exciting or frightening, depending on where one stands. But wherever one stands, failing to adapt, and failing to understand the Internet and its implications is a very risky strategy. Though it may be messy, confused, and disjointed along the way one thing is certain; the real estate profession is heading steadily toward an Internet/on-line future._{REI}

NOTES

The authors would like to acknowledge the contributions of Roger J. Grabowski, ASA, a Partner in the Financial Advisory Services Group at PricewaterhouseCoopers LLP.

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(continued from page 20)

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TIME-BASED COMPETITION & INDUSTRIAL LOCATION IN THE FAST CENTURY

by John D. Kasarda

hat opportunities and challenges await 21st century industry? The picture is becoming clearer by the day. Commercial borders will effectively supplant national borders. Global sourcing will predominate as advanced telecommunications and transportation technologies allow a wide geographic dispersion of component manufacturing sites and places of final assembly, predicated on raw material availability, labor costs and skills, and markets.

Networks of strategically aligned firms will replace individual companies as the effective enterprise, with supply chains competing against supply chains. In this world of "virtual enterprises," a manufacturer's profitability will be determined as much by its supplier's performance (cost, quality, delivery) and the performance of its downstream distribution and support firms as by the manufacturer's internal operations.

Products will increasingly be designed and customized to be sold throughout the world. International markets will continue to rapidly evolve as new products are introduced and existing products improved at an accelerating pace. Routinized mass production will be replaced by flexible customization; inventories by response; stocks by flows.

Facilitated by computer-aided design (CAD) and computer-assisted manufacturing (CAM), economies of scope (the ability to produce multiple products more cheaply in combination than separately) will supplant economies of scale. Innovation, flexibility, and rapid response will rule competitive strategies.

ABOUT THE AUTHOR

John D. Kasarda, is a Kenan Distinguished Professor of Business Administration and the director of the Kenan Institute of Private Enterprise at the University of North Carolina at Chapel Hill. Dr. Kasarda has published more than 60 articles and eight books on urban development, logistics, and competitiveness issues. He has served as a consultant to the real estate industry and to the Reagan, Bush, and Clinton administrations on local and regional economic development. (E-mail: john_kasarda@unc.edu) Technological breakthroughs and new product development will no longer be contained within the national geography of their discovery, but freely flow throughout the world, just as capital and information do today. Intellectual property rights and product security will become evasive. Pirating, duplicating, and copying, despite protections incumbent in World Trade Organization (WTO) and various international trade acts, will be even more commonplace. Successful firms will thus not only be dedicated to continuous improvement, but they must also be constant innovators and rapid distributors of their products to stay ahead of an imitating pack of global competitors.

Cost and quality will be necessary, but not sufficient determinants of commercial success. In the coming fast century, speed and agility will become increasingly pivotal, with industry increasingly emphasizing: 1). accelerated development cycles; 2). flexible production; and 3). quick response. In all cases, time-based competition will intensify.

Firms that are most successful in time-based competition will use advanced information technology and high speed transportation to source parts and components globally, minimize their inventories, and provide fast and flexible responses to unique customer needs worldwide. They will seek international partners and rely on just-in-time suppliers and sophisticated downstream logistics providers. By combining information connectivity between supplier and customer with production flexibility, manufacturers will customize or otherwise differentiate products to create customer value. Manufacturers must also be able to offer the same speed and flexibility in the delivery process - from the time their assembled products leave the factory until the time they arrive on the customer's doorstep.

Growing pressure to cut sourcing, production, and delivery cycle times has led to the introduction of new global supply chain management practices that increasingly rely on air cargo, in general, and integrated air express, in particular. Manufacturing firms are selecting strategic locations to optimize their domestic and international supply-chain flows and customer delivery response times. From a commercial real estate standpoint, the three L's (location, location, and location) are being replaced by the three A's (accessibility, accessibility, and accessibility). Of course, the two are related.

Strategic accessibility, shaped by evolving transportation technology and infrastructure, will have a significant impact on where modern industries locate and where commercial growth occurs. This has certainly been the case in the past, and will likely be even more so in the future, as can be illustrated by highlighting five waves of industrial location and commercial real estate development.

TRANSPORTATION ACCESSIBILITY AND COMMERCIAL GROWTH

Distribution networks and transportation accessibility have always been paramount to industrial location. The world's first great commercial centers grew up around seaports. The next wave of major commercial development occurred at river- and canal-based cities that formed the backbone of America's Industrial Revolution.

Railroads sparked the third wave of commercial development, opening up land-locked interiors to manufacturing and trade. Major goods-processing and distribution industries emerged at rail hubs and terminal points. For example, Atlanta, the largest commercial real estate market in the South initially developed as a railway hub and was originally known as "Terminus."

The fourth wave of commercial real estate development was fostered by the shift to cars and trucks to move people and goods. Freeways, expressways, and interstate highways generated a massive deconcentration of housing and firms. Large suburban malls and commercial centers, industrial parks, and office complexes sprouted as far as 50 miles from major city centers. Some of these fourthwave "edge cities" now have more retail and office space than their metropolitan areas' downtowns.¹

We are now entering the fifth and most opportune development era - the Fifth Wave - where aviation, international markets, and time-based competition will predominate. This new era is being ushered in by large, high-speed jet airplanes, advanced telecommunications technologies, and three irreversible forces of immense significance: 1). the globalization of business transactions; 2). the shift to justin-time manufacturing and distribution methods; and, as a result of the first two, 3). the growing requirement of industries of all types to ship products quickly by air to distant customers. The combined thrust of these interacting forces is creating new commercial growth nodes around the world, with international airports supplanting seaports, rail, and highway systems as primary wealth and job generators.

It is the author's opinion that optimizing long-term returns on commercial real estate investments will require an understanding of the Fifth Wave and the forces underlying it. Solid returns will also require vision and action regarding the pivotal role air commerce will play in the 21st century. This will be further explained by elaborating upon the forces making up the Fifth Wave of economic development.

GLOBALIZATION

Since the early 1980s there has been a marked growth and integration of world markets resulting in huge volumes of raw materials, components, finished products, information, and capital flowing across international borders every day. U.S. exports and imports more than doubled during the past decade exceeding \$2 trillion in 1997, while total world exports surged to \$5.3 trillion in 1997. Investment abroad by multinational corporations likewise mushroomed to over \$3 trillion in 1997, while sales generated by multinationals outside their country of origin exceeded \$6 trillion (million million).²

Perhaps nowhere is the new global economy more concretely manifested than in the dramatic rise of component sourcing. Just a decade ago, Ford introduced the world car, assembled in Detroit from parts produced in each of the major continents. Today, global sourcing is so commonplace that it is difficult to find assembled goods anywhere in America made up entirely of domestic parts and components. For example, a personal computer produced in North Carolina's Research Triangle Park is likely to be assembled from electrical components imported from Taiwan, disk drives from Singapore, integrated circuits from Japan, microprocessors from Korea, a keyboard from Thailand, and a glass screen from Mexico.

The growing interdependence of world markets is reflected not only in terms of international trade, but also in international information flows and financial transactions. Between 1977 and 1997, international telephone calls to and from the U.S. (the vast majority for business purposes) increased 8,000 percent, from 375 million minutes in 1977 to nearly 30 billion minutes just 20 years later.³ From a global capital flow standpoint, by 1997, the volume of foreign exchange trading exceeded \$1 trillion each day.4 While the current global economic woes will certainly reduce the growth of world trade this year and perhaps next year as well, few doubt that this is more than a short-term cyclical downturn and that the powerful trend toward global commerce will dominate the 21st century.

Air commerce is likewise creating entirely new industries such as shipping customized clothing and freshly-cut flowers to distant markets within hours, adding considerable value to products. People not only pay for freshness in perishable goods, they also pay extra for the satisfaction of speedy, reliable delivery of more durable goods.

JUST-IN-TIME PRODUCTION AND DELIVERY

The shift to a global economy, while generating a phenomenal expansion of market opportunities, has also brought in a multitude of new international competitors, placing growing pressure on firms to reduce costs and increase production efficiency. In the manufacturing arena, global sourcing has been one mechanism frequently employed to reduce costs. Another is a major advance in production, distribution, and inventory control methods commonly known as "just-in-time" (JIT). Under the JIT system, all elements in the supply chain, from raw material acquisition to delivered finished products, are synchronized to cut sourcing, production, and delivery cycle times and substantially reduce, or even eliminate, inventories.

One factor underlying just-in-time operations is that inventory costs are becoming a greater percentage of the total cost of production and distribution of many products. Research shows that the proportion of total distribution costs going to maintaining inventory has doubled during the past decade, with timing of delivery a crucial factor. Early delivery raises warehousing and inventory expenses, while late delivery results in costly interruptions in production schedules and missed sales opportunities. The new economy will place a premium on manufacturers acquiring materials and producing and delivering finished products in a highly synchronized fashion, precisely as needed.

The necessary transition to just-in-time systems is further being validated by marketing research which documents that consumer tastes and product demands are changing much more swiftly today than was the case in prior decades. Indications are that such shifts will accelerate even faster in the decades ahead, resulting in situations where products that are "hot" one month may become obsolete six months later. This has already happened in the computer software and peripherals industry. Thus, the passing era in which manufacturers can mass produce large batches of standardized goods for relatively stable markets is quickly giving way to an accelerated era of customized production on short notice for rapid response to quickly changing demands. Just-in-time systems are especially wellsuited to this new agile environment where flexibility and speed will become imperative to competitive success.

THE COMING AIR COMMERCE ERA

With international transactions, production flexibility, and speed characterizing the new economy, it is absolutely certain that air cargo and air express (overnight) delivery service will play increasingly important roles in business strategy. No other means of transit is better equipped to meet the economic realities of the emerging era where global sourcing and selling and just-in-time logistics require that producers receive and ship smaller quantities more frequently and quickly over long distances.

Already air freight accounts for more than onethird of the value of U.S. products exported, a percentage that is continuously rising. Within the United States, air express actually accounts for 60 percent of all air cargo shipments, increasing at a remarkable rate of 25 percent per year.

International air cargo shipments are projected to grow at least 6.5 percent annually during the coming decade, with Pacific Rim routes also generating annual average growth rates over this period of over six percent, despite the negative impact of the Asian economic crisis expected to last for at least another year.⁵

Much of this freight will continue to be shipped in the bellies of passenger planes, with some Boeing 747s (combi aircraft) carrying as much as 35 tons of cargo along with their passenger loads. Yet, because air cargo is expected to grow so much faster than passenger transit, hundreds of passenger planes are being converted to all-cargo carriers, including numerous 747s, DC-10s, and MD-11s. According to Boeing, the number of wide-body air freighters are expected to increase from 219 to 859 between 1995 and 2015 with the majority of air cargo being shipped by freighter aircraft.^{6, 7}

In prior economic eras, when speed of delivery and production flexibility were less crucial to competitive success, air freight was considered a luxury. It was confined primarily to small, lightweight, compact products with high value-to-weight ratios or to items needed on an emergency basis at distant sites. Today, essentially anything that can be loaded onto a large aircraft is routinely shipped internationally by air: automobiles, heavy machinery, high-tech equipment, textiles, furniture, pharmaceuticals, live cattle, bulk seafood, poultry, and agricultural products. In fact, heavy and oversize cargo, along with perishables, are among the fastest growing sectors of the air freight industry.

Air commerce is likewise creating entirely new industries such as shipping customized clothing and freshly-cut flowers to distant markets within hours, adding considerable value to products. People not only pay for freshness in perishable goods, they also pay extra for the satisfaction of speedy, reliable delivery of more durable goods.

Many of America's catalogue retailers and brand manufacturers have thus begun using overnight and two-day express as a competitive, value-adding tool. An excellent example here is P.C. Connections, Inc., of Marlow, NH, which set up its distribution warehouse as part of the Airborne Express complex in Wilmington, OH. The company guarantees next day delivery of its computer software and peripherals for phone orders received up to midnight. Using advanced telecommunications (electronic commerce) and air express service to differentiate its products through rapid customer response, P.C. Connections' sales and profits have skyrocketed.

Other catalogue and Internet retailers such as Lands End and Amazon.com have found that large and growing numbers of their customers will pay considerably extra to have their orders air expressed. They have learned that in today's "must have it now" environment, delivery and not price often wins the sale.

Air commerce is also revolutionizing global supply chain management and shaping industrial location decisions. Companies have found that they can reduce numbers of factories and warehouses through air cargo logistics while improving overall performance. For example, National Semiconductor of Santa Clara, CA, has contracted with FedEx to fully manage air transportation of 7,000 tons of finished products and 7,000 tons of components through a single warehouse consolidation facility near Singapore's Changi International Airport, thus replacing 13 factory warehouses that were previously scattered throughout Asia. The 48-hour Singapore to U.S. delivery schedule by air compares to the prior more than 30-day Asia to California delivery using traditional ocean transportation. The air logistics system has proven highly competitive for National Semiconductor based on its much lower inventory expenses, reduced labor costs, and considerably shorter order cycle-times.

AIRPORTS AS NEW INDUSTRIAL MAGNETS

As more and more modern businesses and industries are gaining competitive advantage through air logistics, locations near airports have become increasingly valued. This has resulted in substantial agglomeration of industrial and commercial development in proximity to these new economic growth nodes. For example:

- In the 26-mile commercial corridor linking Washington, D.C.'s Reagan (National) and Dulles Airports, employment grew from 50,000 in 1970 to over 600,000 in 1996, representing a 1,100 percent increase compared to an overall U.S. employment growth of 59 percent during this period.
- The number of companies within the dynamic Las Colinas area just to the east of Dallas-Fort Worth International Airport has grown to more than 2,000 including Abbott Laboratories, AT&T, Exxon, GTE, Hewlett-Packard, Kimberly-Clark, and Microsoft.
- FedEx has transformed the once-sleepy Memphis into a center of international business, attracting billions of dollars in investment in manufacturing and distribution facilities in the vicinity of its airport. More than 130 foreignowned firms from 22 countries employing 17,250 workers have been drawn to Memphis since the 1980s. American companies such as Nike, Apple Computer, Square D, Disney Stores, and Starter Corporation, among many others, have similarly established new manufacturing and distribution centers near Memphis International Airport. Nearly all these companies pointed to the FedEx hub as a key attraction.
- In the 10 years following the introduction in 1975 of international air service in Atlanta 813 foreign firms located there generating \$33 billion in investment and 54,000 jobs. Charles Elliot, director of location consulting at Moran, Stahl and Boyer, concluded that airports are the most important factor in determining the location of an international business, especially those with direct international air service.⁸
- A study by the al Chalabi Group documented that more than 200,000 manufacturing, warehousing, and office jobs located in the vicinity of Chicago's O'Hare Airport between 1975 and

1990 largely because of the accessibility it provides to national and international markets.⁹

- Rickenbacker International Airport (Columbus, OH), originally built in 1941 as an army airbase, has successfully converted into a dedicated air cargo airport, foreign trade zone, and industrial park. Since the early 1990s, Rickenbacker has attracted dozens of development projects with more than six million square feet of commercial space constructed and occupied by 1997.
- Alliance Industrial Airport (Fort Worth, TX), being developed by the Perot Group, has landed more than 50 companies during the 1990s including Intel, Nokia, Nestle Distribution, BFGoodrich Aerospace, and Zenith Electronics generating \$3.6 billion in new investment. Alliance is currently developing 1,277 acres as an Advanced Technology Center (anchored by Intel's \$1.3 billion computer chip manufacturing facility) with space for nearly six million square feet of planned buildings at the Center.
- In the Philippines, Subic Bay Freeport is rapidly expanding around a former U.S. naval airbase converted to commercial use in 1993. Since FedEx announced in 1994 that it was locating its Asia/ Pacific hub at Subic Bay, over 150 firms employing 40,000 workers have located there, generating almost \$2.5 billion in investment. In late 1998, Acer completed and opened its largest PC assembly facility in the world, heavily utilizing air express for its supply-chain management.
- By late 1997, nearly 50,000 people were employed on the airport grounds at Amsterdam's Schiphol Airport, a 7.2 percent increase over the previous year. Schiphol, alone, accounts for 10 percent of the European air cargo market and 1.9 percent of Netherlands' GNP. Nearly half of the 547 companies linked to Schiphol grew in 1998, compared to 31 percent in 1995. The airport forecasts that it will generate 2.8 percent of Netherlands' GNP by 2015 (approximately \$14 billion).

In addition to their growing attractiveness as sites for modern manufacturing and distribution industries, airports are becoming magnets for corporate headquarters and regional offices as well as for professional services, such as consulting, that require considerable employee long-distance travel.¹⁰ Airport accessibility is likewise a powerful draw to service-sector industries such as advertising, legal, data processing, accounting and auditing, and pubic relations which frequently send out professional staff to customer sites or bring in their customers by air.¹¹ The same applies to high-tech industries whose supply-chain management relies extensively on air shipments and where employees have a 60 percent higher air travel propensity than workers in general.

Apropos the latter, a comprehensive empirical study was conducted in 1998 by Kenneth Button and Roger Stough of the impact of hub airports on an area's high tech job growth.12 Their multiple regression analysis (controlling for appropriate alternative factors impacting high tech job growth) across all 321 U.S. metropolitan statistical areas (MSAs), supplemented by specific case studies contrasting the economic performance of areas that have hub airports with those that do not, generated convincing results. Button and Stough show that the existence of a hub airport in an MSA increases the area's high-technology employment by over 12,000, with their multiple regression model explaining over 64 percent of the variation in high-technology employment across metropolitan areas.13 Additional analysis revealed that the causal link between job growth and degree of airport services flows from air transportation input to creation of employment and not the other way around.

The above findings are consistent to an Ernst and Young study which identified the U.S. metropolitan areas likely to exhibit the most growth in facilities and jobs between 1992 and 2000.¹⁴ Five of the six top cities (Atlanta, #1; Dallas, #2; Raleigh-Durham, #3; Charlotte, #4; and Houston, #6) had hub airports, with only Salt Lake City at number 5, operating without a hub.

The message is clear. Even "second tier" cities that have "first tier" national and global air links offer distinct advantages in the minds of plant siting specialists and executives seeking to locate their businesses.¹⁵ Growing time-based competition should make access to well-served airports an even more important locational advantage in the years ahead, significantly impacting the demand for and value of nearby commercial real estate.

CONCLUSION

Advances in transportation and telecommunications technology are spawning a new speed-driven economic era which is considerably altering the location decisions of business and industry. Just as seaports, rivers and canals, railroads, and highway systems provided competitive advantages and shaped the locus of commercial development in the past, major gateway airports will increasingly do so in the future. In the coming fast century, where globalization and time-based competition will increase aviation utilization, these airports will become increasingly powerful drivers of commercial development. Counselors of real estate and other real estate professionals who recognize this megatrend can select strategic sites near gateway airports and position investments to be leveraged by air commerce in the coming fast century._{REI}

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- 13. The model was estimated using ordinary least-squares and the preferred specification was:
 - Ln high-technology employment = 5.407*
 - +0.503 hub airport*
 - +0.033 Fortune 500 companies*
 - +0.115 ln housing values
 - +1.354 ln highway density*
 - +0.141 ln defense expenditure*
 - +2.845 ln service employment*
 - +1.405 ln population size*
 - * denotes statistical significance at 99% confidence level; n = 303; $R^2 = 0.643$.
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SHAREHOLDER VALUE'S BLACK HOLE . . . Corporate Real Estate

by Richard A. Hanson, CRE

Like matter sucked into the grip of a cosmic black hole, never again to see the light of day, corporate capital tied up in real estate never realizes its earning potential and ultimate value to shareholders.

orporate America could be losing \$153 billion per year and not even know it. Such is the impact of real estate ownership on the potential earning capability of a corporation when, effectively, a sizable portion of its assets disappear from an active role in creating capital growth and investment benefit. This requires serious consideration of the relative effects of real estate ownership on the financial performance and operations of a corporation.

Given the hyper-competitive nature of business and the investment returns demanded by shareholders, real estate investments generally fall short of the productivity, liquidity, and investment objectives of corporations. In short, corporations can better serve themselves and their shareholders by rethinking how real estate serves their needs. This point is demonstrated in this article through an analysis of key financial data of a hypothetical company. As additional support, alternative real estate ownership structures are presented that allow corporations to use and, in most instances, control real estate without investing substantial portions of their precious capital in this asset class.

WHO OWNS CORPORATE REAL ESTATE?

This often-overlooked asset ties up a major portion of corporate capital. In fact, according to *Forbes*, corporations own \$1.7 trillion, or 43.1 percent of all commercial real estate in the United States (*Figure 1*). This is a startlingly high figure considering that 33 percent of such corporate-owned real estate is held for investment purposes,

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according to a 1990 report completed by Arthur Andersen/IREM.

In effect, that \$1.7 trillion represents capital that corporations could deploy more productively. Alternative uses could include repaying debt, buying back corporate stock, or investing in the company's core business.

ACCEPTABLE RATES OF RETURN

To be competitive, a company must return a market rate acceptable to its investors. These returns need to take into consideration the returns delivered by all companies competing for investor dollars. The S&P 500 provides an objective and diverse baseline to evaluate any corporate investment. This index has generated an average annual return of 24.1 percent over the past five years and 19.2 percent over the past 10 years.¹ Therefore, if a company is competing for equity investments it must strive for competitive returns in excess of 19 percent on invested capital. Historic investment performance data indicates that each dollar invested in real estate creates a gap between the expected equity return and the return expected by real estate investors, a condition investors term 'negative arbitrage.'

An analysis of returns required by real estate investors allows a more precise determination of the amount of that negative arbitrage. Over the past 10 years, expected real estate spreads have averaged 500 basis points over 10-year Treasuries (*Figure 2*).

Therefore, if we were to assume that 10-year Treasuries were yielding five percent, the current capitalization rate for the average real estate investor would be 10 percent; thus, the negative arbitrage would be 900 basis points. When applied to the \$1.7 trillion dollars of real estate owned by corporate America, this creates a staggering potential loss of shareholder value.

REAL NUMBERS

Examination of a hypothetical company in two different scenarios will further illustrate this point:

- a. Company buys and owns real estate, or
- b. Company leases real estate

Figure 1



The standard assumptions are as follows (in 000s):

\$6,000
10 years
-0-
40%
10%

Ownership of Asset

Depreciation	
Basis	\$6,000
Depreciable life	40 years
Annual depreciation	\$150
Loan (70% loan to value)	\$4,200
Interest rate	8%
Term	20 years
Annual debt service	\$422
Capital invested in asset	\$1,800

Lease of Asset

Asset basis	\$6,000
Lease constant	9.25 %
Capital invested in asset	-0-
Capital invested in core business	\$1,800
Return on capital invested in core business - (Assume S&P 500 10-year average)	20%

For the purpose of isolating the effect of ownership versus leasing, the discussion does not include such factors as potential company operating income and asset appreciation or depreciation during the 10-year holding period.

Scenario A: Owning

If the asset were purchased, the company would invest \$1.8 million of its capital and borrow \$4.2 million at eight percent interest. The interest expense and depreciation would be deductible. In year one, this would result in an interest expense of \$333,000 and depreciation of \$150,000, for a total deduction of \$483,000. Using a tax benefit of 40 percent, the after-tax cost is \$290,000. Adding back depreciation of \$150,000 and subtracting a principal payment of \$89,000, the negative cash flow is \$228,000. *Exhibit I* calculates this cash flow for each year during the 10-year holding period.

The cumulative negative cash flow over the 10year period is \$2,492,000. At the end of the 10-year holding period, the asset is sold for \$6 million. The remaining book value is \$4.5 million, resulting in a gain of \$1.5 million. Applying a tax rate of 40 percent creates a tax of \$600,000. The remaining mortgage is \$2,698,000, resulting in cash on sale of \$3,302,000. Thus, the cash less the tax results in cash

Figure 2



EXHIBIT I

OWN AND SELL AT END OF HOLDING PERIOD

		1	2	3	4	5	6	7	8	9	10
Operating income		0	0	0	0	0	0	0	0	0	0
Interest payment		(333)	(317)	(309)	(299)	(289)	(278)	(266)	(254)	(240)	(225)
Depreciation		(200)	(200)	(200)	(200)	(200)	(200)	(200)	(200)	(200)	(200)
Taxable income		(533)	(517)	(509)	(499)	(489)	(478)	(466)	(454)	(440)	(425)
Income tax		213	207	204	200	196	191	187	181	176	170
After tax operating income	(\$2,886)	(320)	(310)	(305)	(300)	(294)	(287)	(280)	(272)	(264)	(255)
Operating income		0	0	0	0	0	0	0	0	0	0
Debt service		(422)	(422)	(422)	(422)	(422)	(422)	(422)	(422)	(422)	(422)
Income tax		213	207	204	200	196	191	187	181	176	170
After tax operating cash flow	(\$2,292)	(208)	(215)	(218)	(222)	(226)	(230)	(235)	(240)	(246)	(252)
NPV	(\$1,497)	(192)	(183)	(172)	(161)	(152)	(143)	(134)	(127)	(120)	(113)
Net sale price Adjusted basis											6,000 (4,000)
Taxable gain on sale											2.000
Capital gains tax											(800)
Sale proceeds											6,000
Remaining balance on mongage											(2,696)
Sale proceeds Capital gains tax											3,302 (800)
Cash available for reinvestment Cash reinvested	\$2,502										2,502
Income from reinvestmemt		0	0	0	0	0	0	0	0	0	0
Income tax on reinvested income		0	0	0	0	0	0	0	0	0	0
After tax income from reinvest	\$2,502	0	0	0	0	0	0	0	0	0	2.502
NPV	\$1,127	0	0	0	0	0	0	0	0	0	1,127
TOTAL AFTER TAX CASH FLO TOTAL NET PRESENT VALUE	\$210 (370)	(208)	(215)	(218)	(222)	(226)	(230)	(235)	(240)	(246)	2,250

EXHIBIT II

LEASE

		1	2	3	4	5	6	7	8	9	10
Operating income		0	0	0	0	0	0	0	0	0	0
Rent x		(555)	(555)	(555)	(555)	(555)	(555)	(555)	(555)	(555)	(555)
Before tax operating cash flow		(555)	(555)	(555)	(555)	(555)	(555)	(555)	(555)	(555)	(555)
Income tax		222	222	222	222	222	222	222	222	222	222
After tax operating income	(\$3,330)	(333)	(333)	(333)	(333)	(333)	(333)	(333)	(333)	(333)	(333)
Operating income		0	0	0	0	0	0	0	0	0	0
Rent		(555)	(555)	(555)	(555)	(555)	(555)	(555)	(555)	(555)	(555)
Income tax		222	222	222	222	222	222	222	222	222	222
After tax operating cash flow	(\$3,330)	(333)	(333)	(333)	(333)	(333)	(333)	(333)	(333)	(333)	(333)
NPV	(\$2,205)	(307)	(284)	(262)	(242)	(224)	(206)	(191)	(176)	(162)	(150)
Net sale price		6,000									
Adjusted basis		(6,000)									
Taxable gain on sale		0									
Capital gains tax		0									
Sale proceeds		6.000									
Remaining balance on mortgage		(4,200)									
Sale proceeds		1,800									
Capital gains tax		0									
Cash available for reinvestment	\$1,800	1,800									
Cash reinvested		(1,800)									1,800
Income from reinvestmemt		360	360	360	360	360	360	360	360	360	360
Income tax on reinvested income		(<u>144</u>)	(144)	(144)	(144)	(144)	(144)	(144)	(144)	(144)	(144)
After tax income from reinvest	\$3,960	216	216	216	216	216	216	216	216	216	2,016
NPV	\$2,241	199	184	170	157	145	134	124	114	105	908
TOTAL AFTER TAX CASH FLO	\$630	(117)	(117)	(117)	(117)	(117)	(117)	(117)	(117)	(117)	1,683
TOTAL NET PRESENT VALUE	36				,,		/				

available for reinvestment of \$3,202,000. Subtracting the cumulative negative cash flow from the positive proceeds of sale results in total after-tax cash flow of \$210,000. The net present value, using an 8 percent discount rate, is a negative \$413,000.

Scenario B: Leasing

If, instead of purchasing the asset, the company were to lease the asset, there would be no capital investment. The lease payment would be 9.25 percent of \$6 million, or \$555,000 per year, all of which is deductible. Using a tax benefit of 40 percent, the after-tax cost is \$333,000. The negative cash flow is also \$333,000 per year. *Exhibit II* calculates this cash flow for each year at the end of the 10-year holding period. The cumulative negative cash flow over the 10-year holding period is \$3,330,000.

The \$1.8 million not invested in the asset is reinvested in the core business of the company at a 20 percent pre-tax return, resulting in \$360,000 per year of additional operating income. The tax at 40 percent is \$144,000, resulting in an after-tax return of \$216,000 per year. Thus, the annual negative cash flow is reduced to \$117,000. In year 10, in order to make the analysis consistent with the sale of the asset in Exhibit I, the \$1.8 million is returned. The after-tax cash flow is \$630,000. The net present value, using an eight percent discount rate, is a positive \$36,000.

NET RESULT

Leasing results in an after-tax benefit *three times greater* than the purchase of the asset. On a net present value basis, this difference is \$449,000 — a negative \$413,000 on the ownership basis versus a positive \$36,000 on the lease basis. This is accomplished by the ability to reinvest the \$1.8 million equity in the core business instead of in the asset. In order for the purchase option to accomplish the same result, the asset would have to be sold in year 10 for \$15,068,000 instead of \$6 million.

Another way to gauge the result is to compare the benefit with the asset. In this example, the asset cost \$6 million and the incremental after tax cash flow benefit of the lease is \$420,000 (\$630,000 less \$210,000). On both a marginal and annual basis, this is a seven percent after-tax return on this single asset.

By all accounts, the lease far outperforms the purchase in this situation.

ADDRESSING THE ARGUMENTS

Typically, there are three major arguments made

against the sale of real estate: 1). tax on the sale; 2). loss of control over assets; and 3). loss of residual value.

The *tax on the sale* of real estate can be a hurdle. However, a company should always make a decision based on the best economics and not let the tax tail "wag-the-dog," so to speak. In fact, this argument is nullified in that if the property is appreciating in value, there should be enough cash proceeds to pay the tax liability. If the asset is not appreciating in value, then the property should be sold to avoid further decline in value.

The *loss of control over assets* is not a sound argument to keep real estate. Leases can be written that protect the tenant on all major aspects of the use of the property. In addition, options to renew the lease after its original lease term and options to purchase at fair market value at the end of the lease give the tenant long-term protection.

Finally, with regard to loss of residual value, we must remember that most companies are not in the real estate business. The investor in the average company is looking for returns (we have assumed a 20 percent return) based upon the company's ability to succeed in its core business; therefore, management should employ its capital to achieve that result. As previously stated, there are certain businesses in which real estate is critical to its core business and should be retained. However, these examples are few and far between. Considering that the present value of one dollar received in 10 years discounted at 20 percent is only 16 cents, this further demonstrates how critical it is to employ capital in a way that achieves earnings immediately - not in the future when real estate is finally sold. Real estate is a very cyclical business and the past several years indicate the difficulty of timing real estate ownership with real estate occupancy requirements. As shown in the example, the asset would have to be sold at 250 percent of its cost in order to achieve the same after-tax result.

TRADITIONAL INVESTORS ARE BACK

If corporations should not own this real estate, who should? . . . The answer is, those who have made real estate investment their core competency. Operating with different investment criteria – 10 percent, not 20 percent – they are better suited to achieve acceptable investor results. Real estate has long been considered as a hedge against inflation. In addition, most portfolio managers are attempting to diversify their investments, expressing concern over the volatility of the stock market and the low returns of the bond market. They see real estate as an effective balance of the two; it produces annual cash flow like a bond but also has growth potential like a stock. Since it is less risky than most stocks it can offer a smaller return.

More importantly, a whole new class of real estate investments is now available to investors and portfolio managers. Vehicles such as real estate investment trusts (REITs) and commercial mortgage backed securities (CMBSs) have attracted large amounts of capital to the real estate sector. In fact, it has been estimated that these two classes of investment have poured in excess of \$250 billion into real estate investments in the past five years (*Figures 3 and 4*). Although interrupted in 1998, this investment flow is not likely to disappear and pension funds, insurance companies, and private investors are very active today.

Size is critical to both investment vehicles; single transactions in excess of \$1 billion are becoming more and more common. Since REITs are required to distribute 95 percent of their funds from operations (FFO), they can grow only by raising debt and equity funds and using the cash for acquisitions. These acquisitions can be in the form of purchasing other REITs or acquiring additional properties. In either instance, they will continue to be active buyers of real estate.

A question is often asked as to why CMBSs will benefit corporations that own real estate. The quick and easy answer is that they create liquidity and that is what corporations need. More importantly, they bring a whole new discipline to the real estate financial world. They spread the risk by creating multiple layers of investment in real estate debt with different risk characteristics. This creates a greater variety of investors who will invest in real estate and compete for the product. This, in turn, reduces the spread between the debt and similar investments with the same risk profile, thus reducing the overall cost of money to real estate borrowers.

TAKING ADVANTAGE OF CURRENT OPPORTUNITIES

All of this investor attention presents an excellent



Figure 3



opportunity for corporations. For the first time, real estate can be used to enhance value instead of reduce value.

Securitization of real estate allows corporations to sell their real estate to an established buyer that is becoming very sophisticated in valuation, risk analysis, and delivery of pools of real estate investments to investors. Corporations can take advantage of the franchise value of REITs; because of this ongoing concern value, REITs have lower yield requirements on individual real estate investments. This, in turn, has increased prices for premium properties. Add to this formula the creditworthiness of investment-grade corporations as tenants and a profitable investment situation is created. Suddenly, the sum is worth more than the parts.

Corporations need to take advantage of the current atmosphere that exists on Wall Street. As long as investors continue to believe that diversified portfolios of real estate in the hands of REIT managers reduces risk and creates a sound investment, cash will continue to flow into the real estate sector. This cash will continue to require a return significantly lower than that required by shareholders in the core business of the company. Corporations must take advantage of the spread created by this new asset class.

Some companies argue that because they have so much cash, additional liquidity appears to be of no value to them. A word of caution to those companies: you were the takeover targets of the 1980s. Then, excess cash was the greatest indicator of a company that should be liquidated. Could real estate become that indicator in the future?

No longer can corporations treat real estate merely as a factor of production or ignore its financial implications. To avoid that 'black hole,' it is essential that real estate today be treated as a managed asset that must compete for scarce capital and deliver a competitive return, ultimately enhancing shareholder value._{REI}

NOTES

The author would like to acknowledge the contributions of Ted Notz, financial analyst at Mesirow Stein Real Estate, provided key research and analysis for this article.

1. Represents historical stock market returns which may or may not be repeated in the future.

CRE PERSPECTIVE

WHERE DO WE GO FROM HERE?

by Michael L. Evans, CRE

Recently, many in our industry have asked the question: Is this the beginning of the end for the latest real estate up-market — or the end of the beginning?

Finding an answer, or more likely a "guesstimate," to that question, requires nothing less than a systematic approach to gathering information – followed by a dispassionate evaluation of the possibilities.

The following is a fairly straightforward evaluation to help you cut through the confusion and understand the basic dynamics of forces now at work in the marketplace.

First, a quick look at some basic macro economic factors should produce a logical prognostication. These include: the state of the economy; geo-demographics, the local regional and national dynamics of real estate markets and property sectors; the comparative health of overall capital markets; issues affecting the market for publicly-traded real estate securities; and outside influences such as the socioeconomic-political status in Asia.

The general feeling right now is that we will continue to have an exceptionally low rate of inflationand there is certainly no reason to believe that the U.S. economy is headed in a direction other than a soft landing. Currently, inflation is at a 1.3 percent annual rate, U.S. commodity prices have fallen because Asian demand for raw materials has fallen. Despite the changes in the world economy, the U.S. is still chugging along, albeit at a lower GDP rate than originally projected.

Given our current economic environment (a slower growth rate than projected), interest rates (although recently lowered twice), in my belief, are still about 100 basis points higher than they should be. As a result, we can probably expect to see additional rate decreases – which will again spur economic expansion as capital and carrying costs are reduced and corporate margins are increased. If you look at real interest rates (interest rate minus inflation), they are still high in relative terms, thus accounting for the premature expectation of future interest rate reductions. No doubt the onus of a recession, and the precedent for a turn in fortunes, is out there as well. Remember when, just 10 years ago, the U.S. had a robust economy one year – and the beginning of a recession a year later? Commentators believe that although our economy is moving in the right direction, there is a chance of a recession as we enter the latter part of 1999 and the year 2000. Some on the other hand, see us gaining altitude in the year 2000 without even touching ground.

With its recent volatility, the stock market is not a good indicator of whether we will see a recession. The beginning of the Bear market in the U.S. – followed quickly by a recovery to almost all time highs– was a result of a hint of global bad news, (first from Asia then to Mexico and Russia, and now even in Brazil), offset by positive U.S. economic news.

To their credit, however, stock prices have certainly been responsive to interest rate changes. The Fed's last 1/2 percent drop in interest rates, spurred a 500-point, four-day rally by the Dow Jones. Are we better off today than we were a year ago? One only needs to look at the Dow Jones just one year ago to see that we are still higher than that record breaking benchmark. Sustainability of recent gains is the key question.

Which brings us to the question of public real estate ownership, specifically real estate investment trusts. The REIT market -- and its health -- is a major factor going forward in how the real estate market operates. Predicting annual 20 percent increases in REIT stock prices year after year for the foreseeable future was, and is, overly optimistic. We cannot realistically expect to have a repeat of the 36 percent increase in REIT prices in 1996 and the 20 percent rise we saw in 1997. REITs follow the stock market and there is some correlation between stock market advances and declines and the value of REIT stocks.

The consecutive increases in REIT prices in 1996 and 1997 were in part due to the differences between the construction costs of real estate and the acquisition costs of existing real estate. REITs merely took advantage of the arbitrage between the cost of building versus the cost of buying and the market gave their stock prices credit for the difference. Adding to their attractiveness was the fact that real estate is now regarded as an institutional grade investment.

In our current stock market environment, REITs are behaving like small cap stocks. The FFO (Funds from Operations) yield is 11 percent – with dividend yield today averaging eight percent. Only a year ago, a number of the large REITs were yielding less than Treasury Bills and, as previously noted, appropriately so. The appreciation potential of REITs made up for this difference in yield. When coupled with dividend yield, REITs were able to deliver double digit returns to their investors.

Today, without the appreciation increment as large as it was previously, partially due to the absence of available capital, the cashon-cash yield has to both increase and be more reflective of the historical difference in real estate yields (cash and appreciation) over bond yields, which historically has been about 400 basis points. The market adjusted the price of REIT stocks to bring this yield equilibrium back into sync.

What has happened in the REIT sector is not reflective nor predictive of what has happened to real estate. Recent commentators have noted that there has been a 15 percent to 20 percent downward adjustment in real estate prices as a result of a number of factors. I believe that a slightly smaller drop has actually occurred. There clearly has been some disintegration in real estate prices, but not as a result of the decline in REITs. Currently REITs are selling at a 10 percent discount to net asset value and should trade at plus or minus 10 percent over the long term. IPOs have peaked out for now, but should be back in force as investment demand for REITs increases in early 1999. As capital re-enters the real estate market, realistic growth strategies will once again drive REIT prices upward. Add to this the apparent about-face in the Clinton Administration's attitude toward REITs - manifested most recently in the 2000 budget proposal — and the strong potential for real growth in the REIT market is evident.

Again, it is important to point out that the real estate market – and any price declines – are separate from the decline in REIT prices. While there clearly has been some reflection from the so-called tainting of REIT values over the last 10 months, the decline in actual real estate prices is largely a result of the end of the tremendous capital flow that was provided to the real estate sector through the CMBS market.

It was not long ago that the CMBS market contributed virtually nothing to real estate financing -- loans were made by traditional lenders such as banks and life insurance companies. In late August/September 1998; as a result of the massive amount of CMBS issues in the market, there was a "rush to quality" by investors that caused CMBS spreads to widen and attracted traditional lenders back into the market. Along with the increase in issues of CMBS, the buyers of CMBS borrowed money to buy new debt instruments. Thus, we had debt financing debt and a house of cards ready to fall. With this enormous supply of CMBS, there were not enough buyers to sustain the market and absorb the supply. The market became more nervous with the conceptual bankruptcy of Long Term Capital Management, one of the largest buyers of long-term Triple-A CMBS issues. Investors in CMBS and potential investors in new CMBS issues did not want to buy if Long Term Capital was going to liquidate its large CMBS position and further oversupply the market.

As of last September, there existed an "overhang" of approximately \$25-\$30 billion dollars of CMBS paper inventory. By January 1999, something like \$10 or \$15 billion of this had been sold, leaving up to \$15 billion in paper still to be sold. It will take a number of months to absorb this supply in the marketplace.

Nevertheless, the CMBS market rolls on. Last year was a record year for CMBS issuance despite the September "slip" in the market. In 1997, issuance totaled \$43.8 billion. Last year, \$78.3 billion in loans were securitized and sold as CMBS, a figure some have estimated to be approximately 75 percent of the total financing market. Changes within the industry are apparent and we expect more conduits to exit the market as pressure builds on these lenders to back their programs with more equity (they borrow too!) and also tighten their underwriting of mortgage loans. This means that lenders will have to do far deeper property market analysis — drilling down to submarkets — and also giving greater scrutiny to the creditworthiness of borrowers, especially in a down-market scenario. In short, conduits that want to play in this market over the long-term, will have to think and act and operate more like banks or credit companies.

The so-called credit crunch that took hold late last year was not truly a credit crunch but actually the result of an over-supply of credit. Banks and lenders did become more liberal in their Loan To Value (LTV) ratios and too competitive in their rates. Thus, one could conclude that real estate is still an acceptable and viable investment - the problem is that the financing vehicles were not kept in check until the flight to quality instilled rapid discipline and forced major conduits such as Nomura to back out of the market in late August 1998.

In many respects, the CMBS crunch and the reduction of capital available to the real estate industry can be seen as a very positive omen. Had it not occurred during the summer of 1998, overbuilding would be more likely in major cities as office projects moved forward and oversupplied an already fully employed economy. Additionally, the so-called credit crunch has already directed capital into higher quality projects with better and more stable projects being completed and less stable projects being avoided or delayed.

Today, many markets are at their stabilization point, estimated by E&Y Kenneth Leventhal (E&YKL) to be 7.5 percent vacancy rate in office; 3.5 percent vacancy rate in industrial; and about six percent in apartments. Rates below these vacancies will spur new construction, vacancy rates above will not - all being a function of the potential rents that can be achieved in the marketplace. Based on a recent study completed by E&YKL, many markets in the U.S. - especially those with exceptionally low current vacancy rates - will see significantly higher vacancy rates by the end of the year 2000, mainly as a result of slower absorption and increased construction.

Where do we go from here?

Real estate fundamentals are the key to the near future. Currently, there is virtually **no overbuilding** on a national basis. This presents tremendous investment opportunities to either buy REITs at significantly discounted values and/or purchase CMBS at high yields. Interestingly, there is a lot of talk about buying the "B" pieces of CMBS today at 30 percent yields.

Virtually overlooked in this market, are the huge portfolios of real estate owned by Corporate America, foreign banks, and institutions. Few today want to sell at bargain prices.

Real estate investors can do

incredibly well during the coming months if they are on top of and sensitive to these industry trends. It will not be as easy as it was in 1994, but opportunities for real wealth creation through real estate are **everywhere**.

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CRE PERSPECTIVE

THE TECHNOLOGY REVOLUTION & ITS EFFECTS ON REAL ESTATE

by Macdonald West, CRE

"Technology Revolution" or "Information Age?" It is unclear at this time how history will define our current era. But, few disagree that the changes underway in our society are causing a "structural change" in the way people will live and work in the future. These changes will be every bit as dramatic for real estate as those caused by the Industrial Revolution.

Learning from History

The agricultural communities of all developed countries have been radically changed by the Industrial Revolution. People moved from farms to cities and urban areas. Transportation changed from horses and buggies to railroads, automobiles, ships and planes. Today, the U.S.A. is basically a standardized community, and globalization is fast leading us toward a standardized world.

Why did people "allow" this to happen?... The fundamentals that motivate people are:

1). family economics - their ability to survive in a community, as this relates to

2). their fundamental belief system.

The Israelites moved to Egypt because of a seven-year famine. Egypt had food. They left Egypt 430 years later because of persecution. People moved to the cities during the Industrial Revolution because that was where the jobs existed.

The Technology Revolution and the Information Age are enabling people to work, compete, and survive almost wherever they wish to locate ... at home, on vacation, while traveling locally or overseas! This is particularly true of people who work basically with their minds, versus people who work basically with their hands. In addition, people are moving to countries and nations where they can best survive. The U.S. is experiencing its highest immigration rate since 1910.

Globalization, Delivery Systems & Networks

The world is increasingly becoming a "smaller" place as a result of today's ease and speed of travel,

and as a result of high-tech communications. Further, in recent years world delivery systems have made the ability to manufacture goods overseas extremely competitive, by way of less expensive labor, real estate, and in some cases capital resources. Today's delivery systems are very dependable, quick, and competitive — especially when compared with higher labor and manufacturing costs in the U.S. and most other developed countries. As products are increasingly being marketed on a global basis, manufacturing in a foreign country is no longer a negative factor for global distribution. Those countries with low labor costs, and a skilled or teachable work force are the most favored . . . China, Taiwan, Korea, Malaysia, etc.

The improvement of worldwide delivery systems is leading to new designs in combining industry, manufacturing, and transportation. The concept of the Global TransPark being developed in North Carolina, Thailand, and the Philippines is one example of technology changing real estate products. The Global TransPark is a new kind of industrial park/airport that fuses modern manufacturing and distribution facilities with multi-modal transportation, advanced telecommunications, sophisticated materials-handling systems, and state-of-the-art support services.

Effects of Further Globalization

Further globalization will inevitably lead to further world standardization. Many products are already highly standardized ... consider automobiles, airplanes, computers, telephones, and how about Coca Cola! Other systems and networks are becoming more standardized, but as this occurs there will be many problems to be resolved. For example, consider worldwide standard work methods; a standard method of communication; a standard language; a standard culture; or at least a standard business culture? This is where the greatest resistance lies and where future battles will be fought. Commerce, economics, and the ability to survive will bring people together, but fundamental belief systems and pride will divide. The ability of people to coexist will ultimately drive globalization and commerce. The future will rest in winning people's hearts. Business in the U.S. as it exists will have to change.

Effects on Real Estate

With increasing technology, readily accessible information, ease of travel, and dependability of delivery systems, the question for real estate practitioners has to be: how will this effect the future of the real estate markets? It seems evident that the greatest development of new manufacturing will occur outside the U.S. in developing nations where labor and capital costs are lower. Although manufacturing will occur overseas, business leaders will be able to locate wherever they wish to work by staving in control through technology. The location of these business leaders will be increasingly influenced by factors such as: climate, natural beauty, outdoor sports/pastimes, as well as political climate, infrastructure, economic stability, ease of travel, etc. The "sunbelts" and playgrounds of the world will continue to attract business leaders, along with the employees of the support services needed to look after them. With all these thoughts in mind, it seems inevitable that real estate user types must also change. For example:

Residential: With the increasing need for room to work at, or near home, space designed to function as offices within houses will flourish, and become standard. Hence the average size of median income and above homes will tend to increase.

Offices: Alternatively, the need for small, one- or two-person offices will increase near affluent residential areas. As CEOs and business leaders increasingly work closer to where they live, the need for large, high cost, high-rise downtown offices will be challenged in the coming years, unless there is a large and affluent residential population nearby. The number of home offices will continue to increase with CEOs, lower level managers, sales people, computer operators, etc., reaping the benefits from working close to home, or at home.

Retail: The information age via

the Internet is revolutionizing the way people shop. People no longer have to drive across town to shop for products. This can be done in the comfort of one's living room, and the product delivered to the front door from anywhere in the world. The number of stores will decrease as people increasingly order over the Internet. Well-located shopping centers that offer entertainment value will survive, because people will still want a reason to "go somewhere." But the existing, plain regional malls will either trend towards local distribution centers for products ordered electronically, or they will become real estate opportunities for creative reuse.

Industrial/Warehouse: This will remain a strong asset class, especially where properties are located at or near major air, sea, rail, and road transportation centers. However, this property class will need greater access to telecommunications in the future.

Hotels: As the opportunity to work at home, or close to home increases, the need for workers to congregate regularly will also increase. For example, monthly meetings to coordinate management training, sales, problem solving, etc., will increase. This offers excellent opportunities for wellrun and well-located resort/ meeting hotels with high-tech telecommunications services. Travel will continue to increase as businesses become more global; so the future for hotels is generally strong. However, hotels that solely feed off of downtown offices that are challenged, as noted above, will similarly suffer.

Outlook

As Counselors of Real Estate, our future will remain bright. The real estate markets are still "local" in nature. There is no substitute for sound local knowledge when real estate decisions are made. As the future for property types change, we as Counselors should be in the forefront of the market, anticipating those changes. This is not always an easy task, but it can be very rewarding both intellectually and financially. This is our constant challenge.

NOTES

Thoughts for this article were inspired by The Counselors of Real Estate 1998 High Level Conference on "Speed, Innovation + Technology," held at The Grove Park Inn, Asheville, North Carolina, in August, 1998.

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Claude Ballard, cre, Receives 1998 John R. White & James D. Landauer Award

Recognizing his many years of outstanding dedication to The Counselor organization and his contributions to the real estate industry, **Claude M**.



Ballard, CRE, was honored with the 1998 John R. White & James D. Landauer Award during the CRE Annual Convention.

Active since his invitation to membership in 1982, Mr. Ballard currently serves as chair of the James E. Gibbons Educational Development

Trust Fund. He is also a member of the CRE Board of Directors and the High Profile Task Force. He traveled to Romania and the Czech Republic in the spring of 1997 as part of the CRE Executive Service Corps.

Mr. Ballard, a limited partner and senior consultant with Goldman Sachs & Co., New York, has more than 50 years experience in real estate. He left Prudential in 1981 to join Goldman Sachs as a general partner. In 1988, he became a limited partner and senior consultant specializing in institutional real estate investments, real estate strategies, and merger advisory services for corporate property assets. *National Real Estate Investor* recently named Mr. Ballard one of the 40 professionals who made the greatest impact on the real estate industry in the last 40 years.

In 1986, the James D. Landauer Award was created as a memorial to honor CRE Jim Landauer. Beginning in 1997, the award was renamed the John R. White & James D. Landauer Award. Its existence honors the contributions both men made to The Counselor organization and the counseling profession. The award is presented annually, when appropriate, to a real estate professional who has furthered the ethical and professional ideals of The Counselors of Real Estate and its CRE Designation.

Past recipients include: CREs Roland Rodrock Randall, James Gibbons, Roy P. Drachman, John White, Boyd Barnard, George Lovejoy, Jr., Daniel Rose, Jared Shlaes, J. Daryl Lippincott, Eugene Carver, and non-members Charles Shaw and Charles Spaulding._{REI}



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