THE REVOLUTION IN HOW WE WORK

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Key Words:
Accommodation
Appraisal
Change
Computers
Work

INTRODUCTION

We are all moving into a new "information age," which will cause changes in all areas of nearly every society. Understanding and adapting to those changes will be a major challenge for many years to come. This paper seeks to examine the potential impacts of these changes in general, and then apply them more specifically in the context of the real estate appraisal occupation.

INFORMATION ACCESS IS THE KEY!

If there is some type of change occurring, how would we describe it? The initial vehicle for these changes unquestionably was the development and miniaturization of the transistor, the microprocessor, and the computer. We are all aware of some of the results of this process, from desktop and laptop computers, to cellular phones and global positioning devices. In a theoretical sense, these devices share technology that allows them to process information rapidly, while being very small and using little power. But recent history teaches us that the meaning of descriptive words like rapid, small and low power, as applied to these devices, changes frequently and substantially, always toward more rapid, smaller, and lower powered. Thus, we can be absolutely certain that, whatever devices are in the stores today, the ones next year will be faster and smaller, and will use less power.

The central point, however, is that such devices only exist to allow us to process information, faster, more easily, and with less expense. It follows that we will process this information in many more locations. Information that we once had to travel some distance to obtain, perhaps from a University research library, we now may obtain from the Internet, at work, at home, and even from vehicles. As a result, where information is located is becoming much less important. The smallest library today has access to most of the content of the largest library of 50 years ago. And we know that some of the gaps in available information will be filled in every year.

Further, as equipment costs continue their inexorable decline, the cost of accessing

information of all types is declining as well, allowing more people access to more information, more often. In short, the ability of people everywhere to access information is expanding geometrically, and will continue to do so.

It is important to recognize that "information," in the sense that I am using it, is very broad. What information is it that we get from a Global Positioning device (GPS)? Simply it is "Where am I?" (Or perhaps, in what direction or at what speed am I going?) Here, the GPS uses its power to extract information from a group of satellites, to yield a rather simple fact, but a fact that at one time could not even be known, and then later could only be known at great expense. When every vehicle has a GPS readout, as in time they probably will, can mechanical speedometers survive?

And sometimes the information is simply a cellular phone conversation with a friend about your last vacation. Arguably, this information may not have much "value." The exchange could be postponed, or eliminated. However, humans are social, and we need, and benefit from, the bonds that we build with others. It seems likely that much of the improved information access that we are examining will be used to provide better access to others, creating or enlarging extended families.

But overall, we must accept that we are living through a phenomenal change in peoples' ability to access information. The change involves many aspects, starting with the location of the information, its format, and its cost. Also changing is the easing of access, (in time, money and effort), and the broadening of access, (from the few to the many).

CONSIDER THIS A ROLLING CHANGE

It is also very clear that these changes are gradual, varying over time, place, occupation, and culture. Part of the reason that change is gradual is economic: the newest devices are still scarce and expensive, until production increases; but after a while they are pushed to the back of the shelf by still newer and better devices. People with less income, or less need for a particular device, will wait until prices drop, or until the need for that device arises. I do not own a GPS device, interested as I may be, because I have not yet reached the need level, or a low enough price, where I will say yes. I do recognize that it is only a matter of time.

Change is also gradual because time is needed to adapt the device to society's needs, and for society to adapt to the use of the new idea. It is often said of computers that the hardware, (the device itself), is a year ahead of the software, (the programs that allows users to gain benefits), and the software is a year ahead of the users. In truth, the time lag may be much longer than one year. I can only claim to be fully using perhaps 20% of the software capabilities of the computer on my desk, despite using one for more than 20 years. And my computer hardware is behind the latest devices by several years! It seems that I have a learning curve, like everyone else.

New hardware cannot be put into mass production until someone can visualize how we

might be able to benefit from such a hardware idea, and how to produce it at a low enough price. Next, the functions of the device must be defined, and understandable controls designed. Necessary software and instructional materials must then be developed. Only then can the device be marketed. Thus, the time from the birth of the idea to its introduction on the market can be years.

The early adaptors of any new device are few in number; this has been true for most major new pieces of equipment. Only over time will you and I realize, primarily by talking with others, that what we thought was a "gadget" will justify the cost and learning time to become a useful tool. The initial benefits of a device may be relatively low, and our comments to friends ambiguous, and they may decide to wait. In time, however, we will get over the startup learning curve, and the word will spread that there is a real benefit to be obtained. Gradually, then, the adoption rate of the device will increase. The desk-top computer and the cell phone are past that point already, and the 3Com Palm Pilot is at that point today.

Adoption time is also influenced as the original device is improved, with each successive model, as the makers learn how we want to use the device, and which hardware and software features are important to us. The Palm is not a new idea: similar hand-held phone list and calendar devices have been available for some years, but with only limited success. It took that long to "get it right," to combine the right features in the right way in the right package at the right price!

Finally, it will be obvious that a country that is already wired for fixed telephones will be slower to adopt cellular phones. Thus, the rate of adoption of any new technology is also influenced by what competitive technology is already in relatively widespread use in that occupation, culture, or country.

As a result of all of these and other factors, we see that the adoption of new ideas and equipment occurs gradually, varying by country, economic class, education, culture, and many other factors. In turn, then, it is likely that whatever new technologies might soon impact our lives already exist, at least in preliminary form, and perhaps are in widespread use in some other country. We can, and must, watch what new technologies are being introduced elsewhere, for they are the harbingers of our own future. And the first attempts may be failures, as the first pocket electronic address books were, or the early laptop computers. Even if the first one is a flop, in time, like the Palm Pilot, someone will get it right.

HINTS OF THE FUTURE

Increasingly, we read about the elimination of different telephone numbers for the different locations that you are at, during the day. As you move from home to car to office to meeting to home, it is argued that you could be accessed by the same phone number. The various devices you choose to use would automatically move your number around among themselves.
One of the clear trends that we can expect to see, then, is better and more automatic

coordination between devices, as technological means are developed, to simplify our use of the increasing number of devices. How many different places/devices do you have with people's names in them - perhaps some with email addresses, some with phone numbers, some with other detailed information, and so on. This is an example of a need that is crying out for greater, better integration, and it will come.

One University in the United States has established a laboratory which is experimenting with "wearable computers." Their thought is that, as computing devices become smaller and smaller, some forms of them will probably be with us all day long, and perhaps while we sleep, as well. Effectively, they will be embedded in our clothes, or in our ornamental jewelry, watches, etc. We see this now with the interesting new multifunction watches, including radios, cellular phones, phone number and address devices, stock market monitors, and simple internet devices. Related are the new miniaturized medical monitoring and treatment devices, from electrocardiograms to insulin pumps.

The concept of "wearable computers" points out what may be the second trend to be expected, our greater personal "connectedness," a closer bond between ourselves and some type of computer, perhaps acting as a support device or assistant to us. It may be fastened into a watch, or a seam of our clothes, or even implanted in our body. Because it is nearly always with us, it can communicate with other devices for us, to alert them that we are there, what our phone number is, what temperature we usually like a room at, what our preference for type of music is, or if we prefer the room to be as silent as possible, or any interface with our environment that we as consumers turn out to want. This bond will, in turn, allow us to structure our environment more to our liking, somewhat as if our household were managed by a superb butler. Notice that this concept would require far better coordination between devices than what we now experience.

A third trend is already with us, a result of the better, faster, cheaper access to information, noted above. In major businesses of the 1950s, large numbers of people worked to process information, from many sources, and to sum it up into some form that would give decision-makers a sense of events. Increasingly, the information is being collected automatically, aggregated automatically, analyzed automatically, and put on the boss's desk for daily review. Thus, fewer people are gathering and processing information for others to make decisions about; more of us have occupations where we are expected to act upon information received.

A fourth clear trend is that, as information is more widely available, there is less of a premium obtainable to those who have mastered the skill of finding it, and more of a premium for those who have mastered the interpretation of it. This change is highly important, in my opinion, in studying the future of many occupations, including appraising.

THE NEED FOR NEW SKILLS

All of these changes seem very intriguing. What is the downside? It is a truism that all change hurts; it is also true that bigger changes hurt more than smaller changes. Greatly improved access to information is not exempt from these rules. What happens to librarians when many, if not most, reference books are on the Internet, or on microchips at our desk? At the very least, the nature of their work would change, from monitoring access to these books, to helping people access what they need to access, and bringing some order to the overwhelming flood of information.

Thus, one very important issue is people's tolerance for change, and resistance to change. We know that we all resist change: my wife despairs of getting me to discard a favorite old jacket! But we know, from our own experience, that we can and do change, gradually, when we are convinced that it is in our best interest to do so. As noted above, the willingness to change unquestionably varies from time to time, place to place, and culture to culture.

Here, the evidence suggests that the change that we are going through will be unusually large, and potentially rather fast. The size of the change means that the benefits to be obtained from the change will also be large. In turn, this means that those who adapt to the change may well have a considerable benefit over those who do not.

IMPACTS ON THE WORKPLACE

There appear to be several clear impacts on many different workplaces. One is the gradual shift from a production of things, to a production of ideas, now well along in the United States. Better ways of doing things, of solving problems, of allocating resources are being rewarded. But the biggest rewards appear to be for the better new products or services, which allow us to use technology to live better, easier, and longer.

Another big impact, mentioned above, is the gradual reduction in mid-level information-processing employment. Every large, medium, and small company has or soon will restructure itself, as the improvements in automated information processing reduce the number of data handlers, which reduces the number of levels of supervisory people, and flattens out the company. In turn, each is increasingly asking that its major suppliers do the same, reducing prices or improving quality or both. Thus, nearly every business is asking itself how it can improve what it does.

A third big impact is the rapidly growing importance of technology to the average business. The corner store often has an electronic cash register now. Field salespeople often are provided a pager and/or cellular phone by their employer. Many also are provided a Palm or similar hand-held device, and some are provided a laptop computer. Increasingly, the financial books in even small businesses are kept on a personal computer, and the correspondence is prepared on one. Video training tapes are fairly common, and computer-based or internet-based training is being used more often. As a result, the average business manager is increasingly managing technology, and making purchasing decisions that involve technologic issues.

A fourth change, related to the third, is the growing familiarity of the work force with technologic devices. Personal pagers are becoming common, along with cellular phones and home computers. At the same time, a significant percentage of jobs require at least some use of a computer, keyboard, or touch screen. Thus, where there is an absence of these skills, there is a barrier to the expected changes. Where there is this growing familiarity, it is an inducement to further change.

A fifth change, slow in coming, is to become comfortable with storing data, documents and records only in electronic format, without the necessity for a paper copy. It seems highly likely that this change will occur, but possibly very slowly!

WHAT THEN FOR VALUATION?

Valuation workers, of course, are not exempt from change. We have seen the industry go from typed report forms to computer printed forms. We have changed from sales data on paper sheets or cards to data stored on a computer. Sales data that once came to us in a mimeographed sheet then came in a printed book, and then a microfiche, then a CD-ROM, and now often by a telephone connection to a central computer, perhaps over the Internet.
Some have made field inspection notes by dictating into a micro-cassette recorder. A few have experimented with using a laptop or hand-held computer to take field notes, or for computer voice dictation in the field. Some have used hand-held laser devices to calculate distances. In the past, appraisers had to get nearly all of their information about the property being appraised from their actual inspection of it. Increasingly, however, that information is being captured, saved in computers, and partially reused, in various ways.

All of this simply states what we all know, that computers and automated information processing have already caused significant change to the occupation of valuation as it existed several decades ago. In the United States, the great majority of real property appraisers prepare their reports on a computer, and most do the data entry themselves. Perhaps one-half of real property appraisers already have an Internet connection at this time, and possibly ten percent presently obtain business information from the Internet on a regular basis. There is no available data on the percent who own or use a digital camera or digital scanner, but it is very clear that the percent is increasing fairly rapidly.

What, then, can we say about the future, given the existing usage. It has been said that valuation is "investigative reporting." The appraiser must investigate the property being appraised and the market setting in which it exists, analyze how the property fits into that market, and then report the findings. Let us use this functional breakdown to explore our future.

Report preparation can be automated much more than now, particularly the entry of data on the subject property and sales. Also feasible would be a more automated system of initial sale adjustments and cost and depreciation calculations. Increased use

of digital cameras and other digital imagery will allow much faster and cheaper production of pictures and other report exhibits. These changes are occurring, and will accelerate.

The collection of data, on the subject property and the sales, will also go through a similar automation process. Cities in the United States are increasingly providing land-use zoning information on the Internet, and building permit histories in time are likely to follow. Land characteristics of individual properties are becoming readily available, while building characteristics are less easily accessed. However, there is growing business pressure to make better building characteristics information available, and steps are being taken that are likely to lead to that. The date of transfer of ownership of a property is available in most areas now, along with names of buyer and seller, but information on prices is much less available. Again, there is growing business pressure seeking to improve this data. This increase in available data raises important issues regarding personal privacy, which will be a barrier that slows down the adoption of increased automation.

The analysis portion of the process is the biggest question mark. There are several companies providing automated valuation models in the United States, with coverage ranging from an individual city to many metropolitan regions. Several companies have been in business for some years. The methodology varies, as does the accuracy, but most rely on analysis of sales, or of sale price trends. At present, these systems primarily are used by lenders for smaller loans, such as home improvement loans, where a regular appraisal is considered too expensive relative to the size of the loan. Nearly all current use is on residences, although models applicable to small apartments, smaller industrial buildings and small retail buildings have recently been introduced.

These programs are generally reported to work best with the more standardized properties, in markets where there are adequate numbers of sales, and where the market data is readily available in computer form. It is to be expected, based upon the earlier discussion of general trends, that accuracy will improve over time, that data will become more widely available in computer form, and that the usage of these systems will probably widen to include types of loans, and appraisal situations, beyond the current usage.

I must conclude, then, that the future of valuation work is subject to two great changes, already well under way. The first is one of greater efficiency, reducing the time and costs of the appraisal and the report. As appraisals are produced in less time, there will be somewhat of a decline in the number of appraisers needed to do a given amount of work. Please note that projecting the total future demand for numbers of appraisals to be performed is outside the scope of this paper, although I do expect that the number of all types of appraisals, including automated ones, that will be performed will increase substantially, over time, as the cost of an appraisal falls.

The second great continuing change, as is obvious, is increasing competition from automated analyses, which have the advantages of being much less expensive, and

much faster, but the disadvantage of being less reliable. It is possible that some presently unforeseen regulatory or legislative action will limit the growth of automated valuation, or restrict it to a relatively narrow sub-market. Otherwise, it seems very likely that such products will continue to grow in accuracy and geographic and property type coverage. Given that, they will continue to take business away from real estate appraisers.

These two trends have the same effect - of reducing the demand for appraisers below what it would otherwise be. What, then, will appraisers do in this situation? I submit that the primary competitive advantage that the appraiser has over automated valuations is better quality, and the primary disadvantages are high cost and long delivery time. As is nearly always true, the need is to maintain or improve the advantage, while vigorously attacking the disadvantage.

The clear means to attack the problem of high costs and long delivery times is to improve productivity and scheduling, and that means much better use of automation, and more of it, than we have achieved to date. There is growing pressure upon appraisers to do this, and competition among appraisers to achieve results.

How to maintain or improve quality is much more complex, I believe. First is the difference between "real" quality, and the perception of quality by those who are consumers of appraisal services. Over the years ahead, it seems to be very important for appraisers to seek to convince their customers that appraisers will and do provide a better quality product, and are very committed to doing so. In my opinion, this message is not receiving enough emphasis by appraisers.

However, this message runs up against the very real problem that some clients do not particularly want high quality, but rather place more emphasis on low cost and high speed delivery. It is not possible to have all three at any one point in time, so quality suffers. (Only over time can productivity be increased while maintaining a particular quality standard.) As a result, it seems to me to be likely that appraisers will be drawn toward the two extremes, those who are competing in the markets where a low cost and fast turnaround are the keys, and those who are competing in the markets where better quality is the key. The first group is the most at risk to competition from automated valuations. However, both groups will be under pressure to maintain or improve standards of quality, while cutting costs and turnaround times. Both groups must embrace technologies that hold promise of cutting time and costs, and/or improving the quality of their work. Effectively, they are in a race with the developers of automated valuation models, and the amount of the work that each gets is a function of who does well in the race.

The real point of this article, then, is that the great changes in information availability that are sweeping the world will affect all of us in various ways, regardless of our occupation. But for appraisers, because our role is to collect and analyze information, we are particularly at risk. And our best strategy is to move with this change to the greatest extent possible, in order to gain the maximum individual benefit from it. In

doing this, we each maximize our competitive position relative to automated valuation.

However, in doing so, our increased productivity will further reduce the demand for appraisers. Only by improving our marketing, increasing the use of appraisers in situations where we are not now being used, can we hope to address that problem. There are early steps being taken toward that end in the United States. Appraisers in other countries may well have more time before they will need to act, time that they should use to monitor the changes occurring in other countries.

BIOGRAPHICAL NOTES

The author is a practicing real estate appraiser and land economist, with more than 35 years of experience in a wide variety of property types. The emphasis is upon unusual properties and/or unusual appraisal settings, including contaminated properties, construction defects, or earth movement, in property or income tax, litigation or arbitration settings. His formal education was a Bachelor of Science and a Master of Business Administration Diploma, both in Real Estate and Urban Economics, and both from the School of Business, University of California, Berkeley, followed by extensive professional courses. Mr. Betts holds the MAI and SRA designations from the Appraisal Institute, and the ASA designation, in real estate, from the American Society of Appraisers. He has been quite active, as a chapter officer and chapter committee member of both groups, as well as serving on a number of national or regional committees. He has taught real estate appraisal and economics courses for more than 30 years, most recently teaching for AI and ASA. Mr. Betts is a coauthor of The Essentials of Real Estate Economics, with Dennis McKenzie, published by Prentice Hall and now in press for the fifth edition. He is also the coauthor, with Silas Ely, of Basic Real Estate Appraisal, also published by Prentice Hall, and also in press for the fifth edition.