Putting it right with the direct comparison approach

By George Canning, AACI, P. App

The direct comparison approach (DCA) is misunderstood by all appraisers and tends to be one of the more poorly presented valuation techniques found in today’s reports.

Historical perspective
Stan Laurel always said to Oliver Hardy, “That is another fine mess you got ourselves into!” Although that line made Laurel and Hardy a great comic team, it is also appropriately applied to the historical aspects of the DCA, with the exception that it is no laughing matter.

Our appraisers’ lack of understanding about the DCA has a long history. When searching through 70 years of DCA archive material, it was found that no significant changes have occurred in all these years. In 1931, James D. Henderson wrote an article called Real Estate Appraising in which he says, “In the final analysis, the appraising of the single home rests on the experience of the appraiser and his ability to make sufficiently exhaustive study of location, the adaptability of the building to the lot and to its surrounds, its architectural style, character of people in the neighborhood, its
original cost with relation to present reproduction cost, its completion of equipment and intelligence of interior planning.’

From this article, one would get the impression that numerous factors are being taken into consideration for the purposes of valuing a single-family house. He then concludes his article by stating, “After a full consideration of all the elements of value of the single house which we have been reviewing, let us adopt the concept of value presented in Chapter II of the Course of Lecturers on Real Estate Appraising issued in 1927 by the Department of Education and Research of the National Association of Real Estate Boards. The value of a house and lot will be equal to the cost of the lot plus the original cost or replacement cost of the house corrected by reasonable addition or deductions as indicated by prevailing conditions.’

Obviously, the cost approach was used in the 1930s to determine the DCA. Interestingly, as of the writing of this article, the abstract method of adjustment (which is fundamentally rooted in the cost approach) is trying to surface again.

As we leave the 1930s (the recognized start of the appraisal industry in both the US and Canada), we find that things did not progress very far. The DCA was shown in the textbooks with ‘picture perfect’ adjustments and no explanation for the appraiser as to how to adjust for the differences between the sales and the subject property. Some examples were given, but they were taken from a ‘utopian’ database.

The learning aspect of appraising from a student’s perspective was generally left to a seasoned appraiser. In most cases, the seasoned appraiser never had formal training in data analysis, but used clever words or phrases such as ‘in my opinion’ or ‘based upon 25 years of practical experience, the value of the subject property is’ to solve the most inquisitive and detailed questions of any budding student appraiser.

Over the decades, this ‘ad hoc’ generation-to-generation method of learning and teaching about the DCA survived quite well. After all, there was no other organization around to question the word of a real estate professional. As well, between 1930 and the 1980s, technology for practicing appraisers was limited to a typewriter. There was also no sharing of information and discovery between academics (who have examined the DCA quite thoroughly over the decades) and the appraisal community (which has done nothing but repeat the same redundant DCA teachings over and over again).

**Leaving the old-world behind**

Appraisers have to realize that the DCA has to change to keep up with changes in the marketplace. It needs to grow and evolve, because the perception of value has changed. A good example is the following graph of average house prices in the US from 1940 to 2000 that was taken from the US Census Bureau. Included in the graph is the change of housing styles, as a result of more modern construction methods and materials, as well as the change in DCA methodology.

The scoring of the median home values was completed incrementally, with the base price 1940 home scored as 1. The changing house styles were adopted from America House Styles by John Milnes Baker, AIA, with the basic style of the 1940 house scored as a 1. The DCA methods were compiled personally by the author from 1930 to 2000. In the year 1940, the base DCA method was scored as a 1, with any noticeable changes to this method given between the years 1940 and 2000. This scoring does not include the use of regression analysis, but is strictly based upon the use of small data sets (comparables between three to eight sales) in a grid format.

The graph below illustrates the point that, between 1940 and 2000, for example, property values had changed dramatically. Housing styles remained fairly constant, with the only notable difference being construction differences and the introduction to a style of architecture known as ‘modernism.’ The DCA made no significant change as far as the appraisal industry was concerned.

One could argue that, based on longevity, the ‘ad hoc’ method of teaching and implementing the DCA must be working. Unfortunately, that is not the case. Appraisers today have great difficulty valuing houses that do not fit the stock housing profile. That is because housing, disposable income, building materials, and environmental awareness have changed the rules by which buyers and sellers interact. Appraisers are trying to solve new-world real estate issues with old-world technology and it is not working. The use of automatic valuation models, the use of MPAC values, and the acceptance of MLS house selling prices under $300,000 without an appraisal, are all signs of cracks in the armor of appraisal buyers regarding reliability and confidence.

**Removing worn out weapons from the DCA arsenal**

In modern times, the appraiser needs to stop dredging up old, worn out tools and find out how buyers...
and sellers are truly interacting in the marketplace. When buyers and sellers interact, they do not talk in terms of dollars or percentages. The wife does not say to her husband that, because House A does not have a deck like House B, she would deduct $3,500 or give a -10% adjustment.

How do buyers talk? They talk in terms of emotions. They use words such as ‘good,’ ‘super,’ ‘crumbly,’ or ‘very nice.’ Why are appraisers not using this language as the basis of adjustments?

We can extend the use of words such as ‘similar,’ ‘better’ and ‘inferior,’ which are found in more modern appraisal textbooks. However, it is not good enough to use these words as comparative explanatory differences between comparable properties. Without converting them into a composite utility score that can explain and reduce variability, these words mean nothing to both the appraiser and the reader of the report.

Another worn out DCA tool is that adjustments can only be made using paired sales. There is no such thing as paired sales. Appraisers still believe in the myth of paired sales. Many appraisers say, “I use paired sales in my analysis all the time.” Not true. What they have are sales that are similar, but not identical to one another. After studying this phenomenon of paired sales analysis for many years, the only true definition of a paired sale is as follows: “Two perfectly matched sale comparables with the exception of one characteristic under study.”

One can repeatedly come across this gospel of the paired sales in real estate appraising literature. A good example is the definition of paired sales in the Dictionary of Real Estate Appraising which says, “Sales or rental data on nearly identical properties are analyzed to isolate a single characteristic’s effect on value or rent.”

What this latter definition is really saying is that, “The sales are not identical because there are no identical paired sales, so just use two nearly identical properties to do your adjustments.”

The words ‘nearly’ and ‘analyzed’ are the two key words in this definition telling you that true paired sales do not exist. No appraiser should use two sales with nearly identical properties and try to extract some meaningful inference about a specific characteristic. That means that more than one characteristic of these sales is different. In order to extract the value of the characteristic the appraiser wants, a ‘mental adjustment’ for the non-critical characteristic is made. The remainder is the characteristic that you want to measure. This is not paired sales analysis. This is using a bias to inject pre-conceived values of real estate characteristics into an equation to get the desired results. This method has no place in appraisal theory and practice.

Measuring variability
Without variability of price in the marketplace, there would be no need for appraisers. Variability in the real estate world causes someone to pick up a phone and order an appraisal. Therefore, appraisers must understand variability and, more importantly, how to measure it.

Measuring variability accurately cannot be achieved by the paired sales analysis. This assumes that single-family residential real estate, for example, can be broken down into all sorts of mini-values that represent the whole. Variability cannot be measured by experience alone. It cannot be measured by making plus or minus dollar and percentage adjustments, if the market does not communicate in that language.

Variability is also known as spread or dispersion of one sale price to another. More importantly, it is best to think of variability as a measure from a common source. The three best measurements of variability are the range of selling prices, the standard deviation (distance from the mean) of the scores, and variance.

Before variability can be included in a DCA, it is important to discuss the DCA’s function and role as a model.

The direct comparison approach as a model
The DCA should not be called an approach. It is a model. What is the difference? The word ‘approach’ means ‘similar to’ or ‘approximate.’ These words can be substituted as the direct comparison similar to or the direct comparison approximate. Approximate or similar to what? That is not what the direct comparison does. The act of finding sales ‘similar to’ or ‘approximate’ does not explain anything about process, comparability, differences, or measuring and testing. The word ‘model’ means ‘a system of things and relations satisfying a set of axioms, so that the axioms can be interpreted as true statements about the system.’ An axiom is ‘a proposition which is assumed without proof for the sake of studying the consequences that follow from it.’ If we substitute the word approach and say the direct comparison model (system of things and relations interpret as true statements about the system) flows a lot better and brings into focus the ‘truths about the system.’ The system that is referenced is the real world.

There is nothing wrong with the underlying premise of the DCA that is shown in appraisal textbooks. The foundation upon which the DCA is based is strong. It is the internal mechanism by which variability is measured that is all wrong. From here on, the DCA will be called the direct comparison model (DCM).

Function of the DCM
The sole purpose of the DCM is to determine a value of a given property. The end result of the DCM is a realistic value for a given property. Long before the result, a good DCM has three specific duties to perform:

1. Explain the variability in the selling prices of the comparables.
2. Reduce the variability in the selling prices of the comparables.
3. ‘Test’ the underlying comparative process.

These are the three laws of the DCM. If your DCM does not match the criteria of the three laws, then you do not have a DCM. You have uneducated guesswork that has no room in the future of the appraisal industry. Technology coupled with experience is the key in aiding the appraiser to achieve good results from a DCM.

The role of technology and experience
Appraisers think that they can analyze every sale in the world because they have experience. Experience
is an integral part of the DCM, but, without using modern technology or higher mathematics, experience is not enough. The use of measuring variability in a data set of sales by standard deviation is a good example of the use of higher mathematics. A small solver or optimizer program found in every spreadsheet is a good technological tool to reduce variability in small data sets.

A prime example of how an appraiser’s experience versus technology would view a similar data set is shown above. The following array is of sales data of vacant land properties.

The experienced appraiser would comment as follows on the data set: “Obviously, there is a size adjustment warranted because the smallest site at 31.9 acres is selling higher on a per acre basis than the site of 125 acres.”

Technology may tell you the following: “There are a number of characteristics that could be causing the variance in the selling prices of the comparables other than size. It could be location, land use, soil type, soil drainage and productivity. Size might be a factor but it may not be the sole defining variable that drives this particular data set.”

Truisms about experience and technology can be summarized as follows:

1. Do not be so quick to rely on experience as your only guide.
2. Technology is available to aid the appraiser in explaining and reducing variation in the selling prices of small data sets.
3. Experience coupled with technology opens more analytical doors for the appraiser than experience and ad hoc methods alone.

The role of data in the DCA

Data is noise. It is nothing more than the interaction of buyers and sellers talking on the phone for illustrative purposes. Appraisers need to listen in on the phone conversations and decipher their own pattern, as opposed to one from the local MLS ‘average’ pricing index, or compiled statistics from a government organization. The problem with listening in on telephone conversations is that, while you have jumped in on one or more conversations, there is no understanding what the parties are talking about. Therefore, you need to break the pattern down into smaller bits of information and then somehow ‘string’ the pieces of information together to form a pattern. Unfortunately, many appraisers are not listening to the conversation and as a result have lost the ability to identify patterns.

All appraisers will agree that, more often than not, data has a tendency to be thin. It would be nice to have 50 to 100 sales for every property under appraisal, but that is not reality. Your four to seven sales database then becomes the population, not a sample. It is the universe in which you are required to analyze and make observations about the marketplace, plus determine an accurate value of the subject property. That is a tough job when you are relying on paired sales that are full of bias and an adjustment process that uses plus or minus dollar and percentage adjustments when the buyers and sellers do not talk in those terms.

Searching for a workable DCM

To this point, we can say that the DCM is a good tool for reducing the variation in the selling prices of comparables. Since the marketplace talks in terms of words, not percentages or dollar adjustments, then the DCM should incorporate some method of expressing those words. Paired sales analysis cannot help because they do not exist. We have also said that we need technology and the use of higher mathematics to solve these variability problems between sales. We also acknowledged that experience is an integral part of the DCM. The author has laid down the ‘law’ regarding the expectations of the DCM.

Unfortunately, the location of a good DCM cannot be found in any appraisal textbook in North America. Bits and pieces of dealings with variability seemed to be touched upon throughout the decades in textbooks, but it went no further than that. The search for a more robust model eventually led to people such as Richard Ratcliff, James Graaskamp, Gene Dilmore and Michael Robbins. These are the real giants of the DCM and only one was not a PhD (Gene Dilmore). Interestingly enough, it was Gene Dilmore who tackled the problem head-on and contributed significantly to the problem of solving variability with small data sets. The rest are academics who spent years studying the problem of small databases and developing qualitatively and quantitatively data processes that greatly enhanced our understanding of the workings of the DCM.

Unfortunately, most appraisers in Canada know nothing of these men. That is the direct result of the appraisal industry and the academics not speaking or sharing information over the last many decades. This is the primary reason why the DCM never rose past Grade 5 mathematics.

Richard Ratcliff, while he was Director of the Urban Land Economics Centre at the University of British Columbia, wrote a fascinating paper in 1972 entitled Getting More From Comparables by Rating and Regression. This paper was written in conjunction with Dennis G. Swan. When Dr. Ratcliff was working in the US, he was approached by the State Assessment Department regarding the problem of impromptu adjustments on single-family dwellings. His work with the assessors contributed significantly to what has become quality point (QP). A suggested read is a paper called Contemporary Techniques in the Market Data Approach to Value written in 1991 by Gene Dilmore, who actually coined the phrase ‘quality point.’ That paper is readily available in Acrobat Reader format from the author.
It became quite clear that QP was the DCM that made the most sense in terms of small database analysis. It is not the only one, but, overall, it yielded the most promise for using a technologically advanced method of real estate analysis in every common appraisal report. However, it was not altogether user friendly and needed to be rebuilt in order to make it more compatible to the general real estate appraiser. Considerable work has been done with this particular type of DCM by the author and Charles Abromaitis, AACI, City of London Realty Division.

**Putting QP on the table**

QP is a DCM that leaves alone the underlying assumptions of the DCM. As a matter of fact, if you compare a QP spreadsheet to the layout of a grid adjustment-type spreadsheet in any given textbook, you would not see much difference.

QP gets around this problem of adjustments by assigning an ordinal scale rating to differences between the comparables and the subject. In other words, it substitutes numbers for buyers’ feelings such as fair, good, very good, and excellent. This assignment is nothing more than placing that specific variable in a membership frame in order to clearly identify a notable difference between the sales data. QP is not interested in the dollar difference of minute items such as garages or basement finishing, but indicates that differences do exist between sale properties.

One of the most difficult adjustments to make in appraising is a size adjustment that may involve either a building or land (a brief example was given earlier). QP has a built-in feature that deals with size adjustments while monitoring the changes (standard deviation) of the sales comparables. The size adjustment incorporated in QP is the same one used at the University of St. Thomas in the Real Estate MBA program.

QP is set up (on the new version) to handle any type of unit of comparison from the selling price per square foot of a building to overall capitalization rates and gross income multipliers. Overall capitalization rates are another unit of measure and any appraiser can use QP to extract an overall capitalization rate from a data set of comparables to the subject plaza or shopping mall under appraisal. These units of comparison are in a drop-down menu format.

QP’s four biggest attributes are as follows:

(A) **Residual test**

In order to determine if your DCA model is working correctly, QP predicts the value of the comparables. Dr. Whipple, who teaches out of Curtin University in Australia, said it best about the residual analysis of the QP model.

“Finally, residual analysis is a most important component of the technique. The assumption underlying the sales comparison approach is that recent buyer behaviour toward comparable sold properties will be the same as for the subject property. Residual analysis shows how well the model replicates the prices fetched for the comparable. If the replication is good, then the expectation is that it will produce an acceptable prediction of price for the subject property if the analogy has been validly constructed. Few valuers test the logic they adopt on actual transactions this method allows them to do so and is a most desirable feature. The ultimate test of any method is the extent to which it produces results consistent with reality.” - Property Valuation and Analysis, The Law Book Company Limited, 1995.

(B) **QP is adaptable to any database**

QP has been used on vacant land, campgrounds, mobile home parks, car washes, apartments, water lots, retail plazas, industrial properties, commercial properties and large, special built truck sales depots. It works especially well in data thin markets. However, it does not work miracles. Poor sales means poor results in any DCA format.—

(C) **It runs on a simple Excel spreadsheet**

(D) **It is free**

QP is not without its problems. No model is perfect. It forces the appraisers to think about the data selected. It can be merciless in terms of finding the right variables or characteristics. It seems to love ratios such as site-to-building ratios and frontage-to-depth ratios, in which appraisers do not have a lot of experience. It requires a balance between the number of sales and the number of characteristics. It can be too accurate in returning only a single point estimate of value instead of a range.

Despite some of its problems, a DCM using QP in an appraisal report is a nice thing to have when preparing for testimony. The courts seem to understand basic scoring such as 1-3-5 that represent words as opposed to making a dollar adjustment for a variety of characteristics that may be superfluous and unsubstantiated. It is professional looking in a report and incorporates an ‘adjustment’ grid, for lack of a better word. It demonstrates to the buyer of the report that serious consideration has been given to the best available data.

**The future of our industry**

The best way to deal with change is to be part of change. Using technology to your advantage is a learned art that has tremendous rewards. The price for this new knowledge is letting slide some of the old ideas and rebuilding a much stronger skill set towards the valuation of real estate. This means taking a look at the grass roots of everything that you do as an appraiser. What better place to start than the DCM?

If you are finding that doing the DCM is becoming a daunting task, it might be time to look for alternative methods of analysis. If you are doing a lot of court work, extrapolations, special use properties or significant income properties, then you should consider QP as a means to help solidify your end result market value. It is time to stop using Grade 5 mathematics to solve data-related and variability problems. After all, it is your professionalism that is at stake, not mine, nor the competing appraiser located in your community.

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