INCONSISTENCIES IN APPRAISAL THEORY AND PRACTICE

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Abstract. This paper points out some inconsistencies in appraisal practice stemming, in some cases, from inconsistencies in underlying theory, and in some cases from applications that are inconsistent with theory. The identification of inconsistencies in appraisal practice is not meant to be a wholesale attack on traditional appraisal approaches. Quite the contrary; the inconsistencies are identified with the premise that their correction would strengthen these procedures. The corollary is, of course, that their continued occurrences weaken appraisal and the appraisal function. They may lead to inaccurate value conclusions, disparities among appraisals, and lowered public confidence in appraisers. Most of the alleged inconsistencies cited in this paper can be easily corrected intellectually. Indeed, some already have been, and the corrections are slowly filtering into practice.

INTRODUCTION

Purpose of the Paper

The purpose of this paper is to point out some inconsistencies in appraisal practice. These inconsistencies in some cases stem from inconsistencies in the underlying appraisal theory, in some cases from incorrect interpretation of the theory, and in some cases from applications that are inconsistent with the theory. Whatever the source may be, inconsistencies result from a breakdown in logic, and they may lead to inaccurate and disparate appraisals.

Since it is difficult, if not impossible, to "prove" that an appraiser's estimate of value is incorrect, it is incumbent upon appraisers and appraisal scholars to develop and apply the most logical, consistent system of value estimation possible. Lapses in logic and consistency weaken both appraised values and the public's confidence in the appraisal function.

Identification of inconsistencies in appraisal practice is not intended to be an attack upon the traditional, three-approach value estimation system. The three-approach system has been criticized by various writers in other forums, and it is not the purpose of this paper to rehash those arguments or attempt to add new ones. Undoubtedly, any system can be criticized, but criticism alone does not justify replacement. The questions must always be asked, Replacement with what? and, Is it an improvement over the existing system?

Perhaps the foremost critic of the traditional system was Richard U. Ratcliff, who contended that the three-approach system does not accurately and realistically reflect the decision-making process of market participants.[1] He regarded the cost approach as irrelevant, the income capitalization approach as misdirected, and the sales comparison approach as misspecified. In

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place of the traditional system, Ratcliff proposed a two-approach system, in which one of the approaches (market simulation) is a flexible, open-end framework that requires an appraiser to replicate the decision-making process of buyers and sellers. The statistical inference approach replaces sales comparison with a system of weights and ratings that are specified by the appraiser.

While Ratcliff's two-approach system contains some advantages over the traditional system, Ratcliff's proposed system can also be questioned. For example, how does an appraiser justify the use of any given technique in the market simulation approach? How does an appraiser determine the proper weights and ratings in the statistical inference approach? And, is it true, as Ratcliff contends, that appraisers must "simulate the buyers' calculus" in order to estimate value?

Ratcliff's criticisms of the traditional system and these queries about his proposed system attack the premises upon which the systems are based. If they cannot be answered satisfactorily, the entire systems can be judged inadequate.

Identification of inconsistencies is a different type of academic exercise. While critics might cite such inconsistencies as further evidence of the corruptness of the system, they cannot by themselves provide the basis for a conclusion of corruptness. Furthermore, if the alleged inconsistencies can be shown to be incorrect, or, if they can be remedied, the present system should be strengthened. Most of the alleged inconsistencies cited in this paper can be easily corrected intellectually. Indeed, some already have been, and the corrections are slowly filtering into practice. Other inconsistencies (such as those cited in the formulation of capitalization rates and in the measurement of functional obsolescence) may require additional theoretical development.

Organization of the Paper

The paper cites nine inconsistencies in no particular theoretical or functional sequence. The first three, however, are probably less important than the remaining six. The first (concerning the sequence of adjustments) is less important because it has been recently recognized by the major appraisal organizations and is now presumably beginning to be corrected in practice. The second and third alleged inconsistencies (concerning the application of percentage adjustments and the date of appraisal) are relatively minor because they probably do not cause significant differences in value estimates, and they pose little intellectual difficulty. They deserve to be identified and corrected, however. The remaining six alleged inconsistencies are more important. They require more theoretical analysis and may produce wider variances among value estimates. Their alleged existence may even be controversial!

INCONSISTENCIES

Inconsistency in Timing of Influences Requiring Adjustments

Most professional appraisals in which the sales comparison approach is used contain no sequence of adjustments. Adjustments for differences between comparable properties and the subject property are made to the actual transaction price, as though the effects of all differences occurred simultaneously. For example, a 5% difference in location between a comparable property and the subject property would be applied to the transaction price, even if the transaction occurred several months ago and market conditions have changed dramatically in

the meantime. Thus, an inconsistency occurs between the timing of the basis for the calculation (sale price) and the impact of the adjustment. Presumably the rated difference in locations applies to the present time, and the adjustment should be based on the transaction price adjusted for any change in market conditions. Similarly, nonmarket financing affects the transaction price at the time of the transaction. An adjustment for financing terms should be made to determine the price for which the property would have sold under normal financing terms before other adjustments are made.

The inconsistency occurs, of course, because the professional appraisal organizations did not recognize until recently the time-sensitive nature of transactional adjustments. Complete emphasis was placed on *property characteristics* — physical and locational differences — with appraisal theorists and practitioners failing to realize that such elements of comparison as conditions of sale, financing terms, and market conditions do not pertain to the property, but to the transaction.

Another major factor in causing this inconsistency is the lack of any sequence required in completing an appraisal on a FNMA-FHLMC form.

Fortunately, the textbooks of the two major appraisal organizations now call for use of a sequence. The *AIREA* text, for example, now calls for use of the following sequence,[2] which is the same sequence proposed in the author's 1976 text:[3]

Transaction price
    Conditions of sale
    Financing terms
Normal sale price
    Market conditions
Time-adjusted normal sale price
    Location
    Physical characteristics
Adjusted sale price

Boyce and Kinnard, in the *SREA* 101 text, now call for a similar sequence, although the intervening price steps apparently are not included.[4] As appraisers become exposed to these more modern applications of the sales comparison approach, this inconsistency should abate in practice.

Inconsistent Application of Percentage Adjustments and Explanatory Statements

Statements have often been noted in appraisal reports that a comparable property is better than (or worse than) the subject property. A percentage adjustment was therefore made and the dollar amount subtracted from (or added to) the transaction price of the comparable property. As an example, consider the following statement for a location adjustment.

> "The comparable property's location is considered to be 10 percent less desirable than the subject property's location."

Since the comparable property sold for $50,000, $5,000 is added to the comparable's sale price of $50,000:

$$\text{Adjusted price} = \$50{,}000 + (.10 \times 50{,}000) = \$55{,}000$$

The inconsistency is between the statement and the calculation. According to the statement

the 10% adjustment should be applied to the price (value) of the subject property. Obviously, however, this value is unknown, and the arithmetically correct adjustment should be made by dividing the comparable's sale price by one minus the percentage:

$$\text{Adjusted Price} = \frac{\$50,000}{1.00-.10} = \$55,556$$

The inconsistency probably occurs because of the emphasis in appraisal texts on the contention that the subject property is the "base". For example, Boyce and Kinnard in the *SREA* 101 text state that "In the adjustment process for physical and locational adjustments, the subject property is taken as 100 percent. The comparable properties are treated as deviations from this norm."[5] This contention is true, but only in the sense that it determines whether the dollar amount of an adjustment is added to or subtracted from the comparable property's transaction price. Many appraisers seem to have misinterpreted such statements by concluding that percentage relationships must be stated relative to the subject property.

The subject property, however, should not serve as the base for determining the amount of percentage adjustments. Rather, each comparable property should be regarded as the base for making percentage adjustments. Thus, appraisers' analysis and calculations would be consistent if the conditions of the subject property are always stated relative to the comparable property. In the previous example, therefore, the statement should read:

> "The subject property's location is considered to be 10 percent more desirable than the comparable property's location."

The simple calculation of adding 10% of the comparable property's transaction price to the transaction price is then consistent with the statement. In effect, the comparable property's price serves as the base for determining the amount of the adjustment and to or from which dollar amounts are added or subtracted.

Inconsistency between Date of Appraisal and Date of Report

Some appraisal texts advocate (and many professional appraisers use) the date of last physical inspection of a subject property as the date of the appraisal. For example, Shenkel states that "usually the date of valuation would be the date of inspection and not the date the report was prepared or signed."[6] Presumably, the rationale is that the physical nature of the property is then synchronized with the final estimate of value.

Many factors other than a change in the physical characteristics of a property, however, could easily result in inconsistencies between market conditions and the appraiser's value estimate. For example, changes in general economic conditions, local market conditions, or legal constraints could cause the value to change. Thus, it makes just as much sense to establish the date of appraisal as the date on which the appraiser performed the economic analysis, the highest and best use analysis, or the zoning check as it does to use the date of last physical inspection. As Boyce and Kinnard state, "it (date of value estimate) identifies the market conditions in terms of which value is estimated."[7]

The most logical date of appraisal would seem to be the date the appraisal is mailed or delivered to the client. The appraiser should quickly check for any changes in economic, market, social, legal, and physical conditions that may have occurred since the analysis was performed. The effect of significant changes in any of these factors should then be included in the appraisal and reflected in the final value estimate.

Inconsistency between Definition of Market Value Cited and Concept Actually Employed

Most appraisal reports cite a standard, traditional definition of market value — often the definition contained in the *AIREA-SREA* joint terminology book, or the ones contained in the *AIREA* text or the *SREA* 101 course text. These definitions are sometimes referred to as the traditional or "semi-perfect" market definitions. They contain a number of conditions and restrictions within which market value must conceptually be formed. The definition and assumptions cited in the *AIREA-SREA* joint terminology book are as follows:

Market Value The most probable price in terms of money which a property should bring in a competitive and open market under all conditions requisite to a fair sale, the buyer and seller, each acting prudently, knowledgeably,and assuming the price is not affected by undue stimulus.

Implicit in this definition is the consummation of a sale as of a specified date and the passing of title from seller to buyer under conditions whereby:

1. Buyer and seller are typically motivated.
2. Both parties are well informed or well advised, and each acts in their (sic) own best interest.
3. A reasonable time is allowed for exposure in the open market.
4. Payment is made in cash or its equivalent.
5. Financing, if any, is on terms generally available in the community at the specified date and typical for the property type in its locale.
6. The price represents a normal consideration for the property sold unaffected by special financing amounts and/or terms, services, fees, costs, or credits incurred in the transaction.[8]

These conditions must also apply to the sale prices of the comparable properties. Or, if they do not, adjustments should be made to reflect the hypothetical notion that they do. Yet, who is to say in any given situation whether buyers and sellers were knowledgeable and acted prudently in their own self-interest? Certainly not an appraiser! Gross violations may be detectable, but most differences between buyer and seller cannot usually be discerned by an appraiser. A psychoanalysis of each party would be required to detect even significant differences.

The meanings of the terms "competitive market," "all conditions requisite to a fair sale," "undue duress," "reasonable time," and "terms generally available for the property type" could be debated ad infinitum. While it is not the purpose of this paper to do that, it should be evident that conditions and limitations exist in the frequently cited definitions of market value. Appraisers therefore would theoretically be required to verify that all these limitations and conditions have been met for all comparable transactions. If they are not met, a conclusion must be made either that the transactions are not comparable, or adjustments must be made for these factors to achieve consistency with the definition cited. Most professional appraisals, however, do not consider definitional inconsistencies.

A definition of market value as the most probable selling price might solve this apparent inconsistency between definition and practice. Ratcliff's concept of most probable selling price places no constraints or limitations on market value. Then, however, the reciprocal problem arises: the comparable properties may all have sold under varying market conditions, and these may vary from current market conditions under which the subject property would sell today.

Consistency between market conditions, either existing or assumed, at the date of appraisal and under which comparable properties were sold would seem to be necessary for meaningful comparisons to be made. It has been shown that the definition and concept of market value

employed by an appraiser can make a difference between value estimates.[9]

A proposed solution would be for the appraiser to describe in detail the market conditions prevailing at the date of the appraisal and to determine whether or not each comparable sold under similar market conditions. If not, adjustments would be made in the "market conditions" category to reflect these differences.

This solution would avoid the relatively strict "semi-perfect market" definition and the completely laissez faire definition of Ratcliff. Furthermore, it would reaffirm the necessity to have comparability between the subject property and comparable property transactions, without binding them to a particular quality or character of the market.

Inconsistency between Timing of Data Used to Estimate Capitalization Rates and Income Data for Subject Property

For the income capitalization approach, appraisal literature indicates that future income should be forecast and "stabilized." As stated in the *AIREA* text,

> *Direct capitalization is used to convert an estimate of a single year's income expectancy into an indication of value in one direct step.* The income is divided by an appropriate rate or multiplied by an appropriate factor. The chosen rate or factor represents the relationship between income and value as observed in the market. The rate is revealed in comparable sales analysis by dividing income, usually annual net operating income, by sale price.[10]

Note that the income to be capitalized is represented by a single year's "expectancy." In other words one future year's income that is representative of all the future years' incomes over the time period to be capitalized (e.g., the expected economic life or a holding period) is the amount of income to be capitalized. This amount presumably must be forecast and adjusted so that it is representative of the income to be realized during the forecast period.

Some questions ancillary to the central issue can be raised about this annual income: How is the amount determined? Is it a forecast of a particular future year's income? If so, which? The first, second, third, tenth, or some average year's income? The appraisal literature is not clear or precise about these questions, and thus we would expect confusion and a wide variety of practices among appraisers about how the income to be capitalized is obtained. Since only one year's income is to be capitalized, prescriptions that call for income to be "forecast" and capitalized are inadequate.

Now consider the capitalization rate. Note in the *AIREA* text quote that "The chosen rate or factor represents the relationship between income and value as observed in the market. The rate is revealed in comparable sales analysis by dividing income, usually net operating income, by sale price." Since only historic relationships from transactions that have already occurred can be "observed in the market," the clear implication is that *historic* NOI is to be divided by the transaction price of a comparable property to obtain an overall capitalization rate. Indeed, historic income for the first full accounting year prior to the date of the appraisal — usually unadjusted to conform to the definition of NOI — is used in most appraisals. Assuming that the transaction prices of comparable properties are consistent (i.e., there are no dissimilar financing arrangements, conditions of sale, or property rights), the historic incomes of several comparable properties are divided by their transaction prices to obtain several overall capitalization rates. An "indicated" overall rate is then derived by reconciliation.

Again, some questions ancillary to the central issue can be raised about the NOI obtained

from comparable properties: Which year's historic income is used? Last year's, the prior year's, or some average year's income? Is the income for each comparable property adjusted to the NOI format? Is it "stabilized"? Again, the texts and teachings are not clear about the income to be used; however, the implication in most appraisal texts is that historic income is appropriate for use in estimating capitalization rates from comparables. Certainly, no clear directive is expressed to use forecast, future income.

The crux of the inconsistency, then, is that historic income for comparable properties is typically used to derive a capitalization rate, while this rate is then divided into a forecast, future income for the subject property. Since appraisal is systematic and consistent comparison, any such inconsistency leads to biased value estimates.

The correction for the inconsistency is, of course, to capitalize the same type of income for the subject property as the type of income used in estimating the capitalization rate. If the income used to estimate the capitalization rate from comparables is NOI forecast for the third future year, the third year's NOI forecast for the subject property should be the income that is capitalized. Or, if the previous year's NOI is used to estimate the capitalization rate, the previous year's NOI for the subject property should be capitalized. If "stabilized" NOI is used in estimating the capitalization rate, the NOI for the subject property should be "stabilized" in the same way.

While the appraisal literature generally contends or assumes that forecast income should be used in the capitalization process, the problems of forecasting could be eliminated in most appraisals of existing properties by using *historic* income. Why should appraisers forecast income, if they can obtain equally valid, or more valid, appraised values without forecasting? After all, as the late Professor Edward E. Edwards of Indiana University often said, "The future is uncertain, highly uncertain." The estimate of the capitalization rate can be based on historic income, and the same year's income for the subject property can be capitalized.

Consider the following example. An apartment building is being appraised. The appraiser finds four comparable properties that sold recently. The most recent full year for which income and expense data are known is 1985. The appraiser reconstructs the operating statements for the comparable properties to estimate NOI for 1985. The 1985 NOIs are then divided by the sale prices to obtain the overall rates:

	A	B	C	D
1985 NOI	$200,000	$285,000	$250,000	$180,000
Sale Price	2,000,000	3,000,000	2,450,000	1,750,000
Overall Rate	.100	.095	.102	.103

The appraiser then estimates the 1985 NOI for the subject property to be $177,500. If the indicated capitalization rate is .100, the indicated value of the subject property would be:

$$V_o = \$177,500 \div .10 = \$1,775,000$$

Note that no forecasting was needed, and the income data are consistent among the comparables, and between the comparables and the subject property.

The same result should be obtained using forecast income data. For example, if the NOI's forecast for 1987 (or 1988 or 1989) are as shown below, the capitalization rates would be those indicated:

	A	B	C	D
Forecast 1987 NOI	$220,000	$325,000	$280,000	$195,000
Sale Price	2,000,000	3,000,000	2,450,000	1,750,000
	.110	.108	.114	.111

If the indicated capitalization rate is therefore .11, and the forecast 1987 (or 1988 or 1989) NOI for the subject property is $195,250, the indicated value of the subject property would be:

$$V_o = \$195,250 \div .11 = \$1,775,000$$

Obviously if the capitalization rate based on 1985 NOIs is divided into the forecast 1987 NOI of the subject property, the indicated value is higher:

$$V_o = \$195,250 \div .10 = \$1,952,500$$

This procedure results in biased estimates — higher during inflationary periods and lower during deflationary periods. The principle of consistency is violated.

Inconsistency between the Timing of Yield Rates and Other Components of Capitalization Rate Models

The inconsistency between an assumed level income stream and forecast property value increases in deriving an overall rate by the Ellwood formula has been addressed by a number of authors, including Ellwood himself. Ellwood provided his famous J factor for adjusting the overall rate to reflect an income stream that would increase by equal amounts each year, proportionately to the forecast increase in property value.[11] Fisher showed that this factor is not quite accurate and developed a modified J factor. He also developed the G factor — a factor that reflects an assumption that the income stream changes geometrically — a curvilinear pattern, rather than an increasing, straight-line pattern.[12] Presumably these factors take care of this inconsistency.

Another inconsistency, similar to the inconsistency in the use of capitalization rates directly extracted from the market, appears to exist in both Ellwood and yield capitalization models. Although the income stream and property reversion are *forecast* amounts, the yield rate reflects historic income and sale prices of competing investments. The yield rate is often typically computed from recent historic transactions of competing investments. For consistency, the yield rate should be an expected or forecast yield over the holding period, not an historic IRR. Again, the NOI for the subject property should be forecast for the relevant period to be consistent with the capitalization rate estimate.

Inconsistency between Theory and Application of Highest and Best Use Analysis

The concept of highest and best use has been under strong attack for a number of years —perhaps with justification. After all, it is derived from Ricardian rent theory, in which a return to land is justified only after the other factors of production are paid. Rent was regarded

by Ricardo as an unearned surplus. Thus, we have today such terms as "surplus productivity" and "residual income" to describe the income allocable to land.

In rejecting Ricardian rent theory, Ratcliff and others have attempted to relegate the term highest and best use to the academic junk pile. In its place they have substituted such terms as "most probable use," "assumed utilization," and "maximum utilization."[13] Whether such terms denote concepts that are essentially different from traditional highest and best use is not clear. They would all seem to involve some sort of residual allocation of income to land or real estate. In any case, the inconsistency between the logic and the practice of highest and best use analysis prevails.

Today, in appraisal texts two types of highest and best use are recognized — highest and best use of a *site as though vacant* and highest and best use of a *property as improved.*[14] The former concept is related to the question of what use should be made of a vacant site or an improved site if it were vacant. It is the potential use of any site, whether vacant or improved, that causes the land to have value; thus, land values tend to be determined by their potential highest and best uses — not their existing uses.

This concept is the basis of the Ricardian-derived method of determining land value. The return to the land is estimated as the residual income after deducting an appropriate return on and of the capital invested in improvements. The residual land income is then capitalized to obtain an estimate of the land's value. Since improvements having any significant amount of depreciation would not produce as much residual income to the land as a new building, most existing buildings are not their sites' highest and best use. As Ratcliff states, "If the structure suffers from any defects and is subject to any depreciation, it is not by definition, the highest and best use, for it would not develop the highest land value."[15]

Since most clients (and many appraisers) did not understand that this concept of highest and best use is simply the basis of a procedure for estimating land value, they interpreted it to prescribe whether or not a building should be demolished to make way for a new use. Thus, many appraisal reports contain statements that the highest and best use of the site is the existing use, even when the improvements are quite old. The confusion over this concept is illustrated by the fact that the FNMA-FHLMC Residential Appraisal Report form has two boxes to check whether the highest and best use is the "present use" or "other." The vast majority of these appraisals simply show a check in the "present use" box. The analysis and statements, even in narrative reports, typically conclude that the existing use is the highest and best use. Very few appraisals address the question of what type of new building should be constructed on the site, if the site were vacant.[16]

The second type of highest and best use has evolved presumably to counteract the confusion about the original type. Highest and best use of the property as improved addresses the question of how the property should be used, given the existing structure. For example, should a property with a large, clear-span building be used as a supermarket, an automobile dealership, or perhaps a skating rink? Also, this concept addresses the question of whether the existing building should be demolished. In other words, is it economically feasible to change land uses?

Since this second type of highest and best use developed because of the incorrect application of the first type, it is perhaps not surprising that confusion has increased, rather than decreased. While a residual technique can be used to solve for any one of the four factors of production, the second type effectively makes a combination of factors residual in the form of an improved property. Thus, the question of how best to use a parcel of real estate comprised

of land, labor, capital, entrepreneurship is framed in terms of residual analysis. Confusion occurs because the character of the residual components differs between the two concepts.

Even if the two types of highest and best use are regarded as appropriate, however, they are treated inconsistently and confusingly by leading appraisal texts. Both the Society's and Institute's texts have discussed two types of highest and best use for approximately fifteen years; yet Shenkel discusses highest and best use only in terms of the land (as though vacant).[17] And Hines seems to mix the two concepts together: "The analyst must be aware of the economics of site development so as to determine the feasible development of the site whereby the site receives its highest present value or the site and improvements receive their highest present value. The highest and best use of a site may be measured either way."[18]

Boyce and Kinnard state in a section on "Highest and Best Use of the Property" in the Society's 101 text that "Present use of the property *may* differ from highest and best use of the site"[19] (emphasis added). Bloom and Harrison make almost the same statement: "Where a site has existing improvements, the highest and best use of the site *as if vacant* may be different from the existing use."[20] While the statements are true, the verb "may" suggests that they usually do not differ, when, by definition, they differ in the vast majority of cases. Besides, the relevant question would appear to be whether the present use differs from the highest and best use of the property (as improved). The previous section of the Boyce and Kinnard text discusses highest and best use of the site.

In the same section, Boyce and Kinnard go on to state that

> the present use of an improved property is presumed to be its highest and best use unless it can be demonstrated that change is imminent through the impact of market demand or legal (land use control) forces. If change is demonstrated to be imminent, then the existing buildings must be razed or substantially altered to put the property (and the site) to its new highest and best use.[21]

The statement seems to miss the point that the highest and best use of a property as improved can change without razing or substantially altering the existing buildings. As examples, large older homes near downtown Orlando have been converted to law offices with no significant changes in the structures. Many large, clear-span buildings have been converted from automobile dealerships to supermarkets, to warehouses, to dance emporiums without significant structural changes. The quote above also seems to mix the two concepts, since the issue of what to do with the site when (or as though) vacant is a question to be addressed under the concept of highest and best use of the site (as though vacant).

The effect of the tendency in both teachings and practice not to distinguish clearly between the two concepts of highest and best use was demonstrated in a study conducted by Smith and Maurais in 1980.[22] The study showed that appraisers do not understand the purpose of most highest and best use analyses in appraisals and do not use their highest and best use analyses in the appraisal process. Most appraisals contain no numerical testing of either highest and best use concept, as demonstrated in the eighth edition of the Institute's text.[23]

In conclusion, it appears that the inconsistency in appraisal practice between the theory and application of highest and best use analysis has resulted from the failure to apply correctly the older type of highest and best use — of the site as though vacant. The second source of inconsistency is the newer type of highest and best use discussed in leading appraisal texts —of the property as improved. The two concepts have been mixed and confused. Furthermore, the second concept may be inconsistent with traditional economic analysis, in that several factors of production are required simultaneously to be residual. The numerical examples for testing

the highest and best use of a property as improved in Chapter 11 of the Institute's text (8th edition) are an attempt to promote the correct type of analysis for this type of highest and best use.

Inconsistencies between Penalties for Curable Functional Obsolescence and Market Realities

In the Cost Less Depreciation approach, a curable element of accrued depreciation is defined as one for which the value added by curing the defect is equal to or greater than the cost of the cure. An incurable element is one for which the value added by curing the defect is less than the cost of the cure. The relationships may be represented symbolically as follows:

Curable $C \leq V$

where C = cost to cure

and V = value added

Incurable $C > V$

Elements of *curable* functional obsolescence are classified as either (a) deficiencies requiring additions, (b) deficiencies requiring substitution or modernization, or (c) superadequacies.[24] For type (a) the amount of accrued depreciation is estimated as the excess of the cost of the addition over the cost if installed new during construction (at the time of the appraisal). For type (b) the amount is estimated as the cost of installing a modern item less the value of the existing item or component. For type (c) the amount is estimated as the reproduction cost less the cost to install a normally adequate or standard item.

While curable functional obsolescence theoretically can exist, it undoubtedly occurs less frequently than implied by the professional organizations' teaching materials and its use in professional appraisal reports. Furthermore, the examples usually cited to illustrate the measurement of curable functional obsolescence are not consistent with market rationale.

The *AIREA* text cites the example of a deficiency requiring an addition as the lack of a lavatory facility for second floor offices. The lack of the facility has caused difficulty in renting space. The penalty is measured as follows:

Cost to install in existing structure	$1,200
Cost to install in existing structure if it were being built on the date of appraisal	−900
Loss in value	$ 300

According to the criterion of curability, the value added to the existing structure by installing the lavatory must be at least equal to or greater than $1,200. Furthermore, an implicit assumption of this calculation is that similar buildings containing adequate lavatory facilities are available in the market. (How else could the appraiser know the penalty is curable?) Yet, is it likely that the market is so inefficient that prospective purchasers would pay $1,200 more for the subject property, if a lavatory facility were added, when they could purchase similar properties having adequate lavatory facilities for only about $900 more than the cost (and presumed value) of the subject property without the facility? The numbers in this example are

relatively small, and it may be tempting to conclude that the market may well be sufficiently inefficient to accommodate the example. Yet the same rationale can be applied to items producing larger differences (such as deficiencies in bathrooms, bedrooms, garages, swimming pools, elevators, et al.).

As another example, consider a house which lacks a bathroom. The penalty is measured as follows:

Cost to install in existing house	$3,500
Cost to install in existing house if it were being built on date of appraisal	−1,500
Loss in value	$2,000

For this to be a curable penalty, the addition of the bath must add at least $3,500 of value to the house. Yet, is this likely when similar houses can presumably be purchased that have the extra bath that costs only $1,500? Is it likely that an identical house having the bath would sell for $3,500 more than the subject property?

Gordon demonstrates that the relevant comparison for determining curability is the cost of curing the deficient item relative to the difference between the value of the subject property and the value of a similar property in the market, otherwise identical except for containing the deficient item.[26] The relevant comparison is *not* between the amount of the penalty ($2,000 in the above example) and the value difference *or* between the cost to cure and some hypothetical, unsubstantiated value increase.

Certainly, one must conclude that a penalty for curable functional obsolescence due to a deficiency must be based on an inefficient market. It results from a difference between current costs and current values — not from the existence of an item or lack thereof in a property.

A similar case can be made for deficiencies requiring substitution or. modernization. As an example, consider an office building that has outdated lighting fixtures. The penalty is measured as follows:

Cost to replace light fixtures	$5,000
Depreciated cost (value) of existing light fixtures	−3,000
Loss in value	$2,000

Is it likely that prospective purchasers would pay $5,000 more for a building identical to the subject property except for having modern light fixtures when the subject property has light fixtures in good physical condition that are worth $3,000? If they would, it is again a case of market inefficiency.

The analysis of curable superadequacies is somewhat different. Again, the example from the *AIREA* text is presented. An office has a special medical sink. Rental to another physician is unlikely, and the sink is not desired by typical tenants.[27] The penalty is measured as follows:

Reproduction cost of item	$550
Less physical deterioration already charged	-275
Plus cost to remove item and refinish space	+ 75
Loss in value	$350

Presumably, the cost to cure the superadequacy is the cost to remove the item and refinish the space ($75). Thus, the penalty is curable if prospective purchasers would pay at least $75 more for an otherwise identical building *not* having the unwanted sink. Suppose, however, the sink can be removed and sold for, say, $400. Would not prospective purchasers be willing to pay *more* for the property having the sink? They would be $325 ahead to purchase the subject property with the superadequacy.

Consider a more dramatic example — gold-plated handles and faucets in the bathroom of a moderate-value home. The penalty would be measured as follows:

Reproduction cost	$5,000
Plus cost to remove superadequate items	+200
Plus cost to install standard items	+400
Loss in value	$5,600

The cost to cure the superadequacy is the cost to remove the gold-plated items and install standard items ($600). Yet, it is unlikely that the property would be worth $600 *more* after items costing $5,000 (and probably worth at least $3,000 or $4,000) were removed. While buyers might not pay the full $5,000 additional for a house having gold-plated hardware, they could be expected to pay some additional amount. After all, the gold-plated items could be removed and sold for $3,000 to $4,000. Thus, the value created by curing the superadequacy would be negative — certainly not greater than the cost of curing it.

Those who agree with the foregoing analysis may conclude or suggest that many items of curable functional obsolescence should more properly be classified as incurable functional obsolescence. The argument might continue to the effect that functional obsolescence certainly occurs, and it makes little difference what type it is called. The type of functional obsolescence does make a difference, however, in that the amount of the penalty is measured differently for incurable penalties than for curable penalties. Incurable functional obsolescence is usually estimated by capitalizing the rent loss or increased expense caused by the functionally obsolescent item.

Gordon demonstrates that for incurable functional obsolescence due to the lack of an item to exist, the difference in values between a property with the item and the subject property without the item must be greater than the reproduction cost of the item in new construction.[28] Thus, it seems entirely feasible that curable penalties (a) and (b) in most cases may be really incurable and should be measured as such.

For superadequacies, however, the rationale breaks down for treating items that are normally regarded as curable in the standard incurable manner. In both of the foregoing examples of superadequacies, there was no rent loss or increased expense caused by their existence in the subject property. The properties were worth *more*, not less, than properties not having the superadequacies.

There is a penalty however. The penalty is simply the market reality that purchasers will not pay the full amount of the reproduction cost of the items contained in the building's total reproduction cost. In the foregoing examples, purchasers will not pay the full amount of the reproduction cost of the medical sink or the gold-plated hardware. They will pay some additional amount, but not the full amount of reproduction cost.

Thus, the measure of such penalties should be the difference between reproduction cost and the market value of the items, if severed from the building. In the case of the medical sink, the penalty would be measured as follows:

Reproduction cost	$550
Less market value of item, say	−350
Plus cost to remove item and refinish space	+75
Loss in value	$275

The penalty for the gold-plated hardware would be measured as follows:

Reproduction cost	$5,000
Less market value of items, say	−3,500
Plus cost to remove items and install standard items	+600
Loss in value	$2,100

These calculations produce considerably different estimates of curable functional obsolescence than the procedure typically prescribed by appraisal texts and followed by appraisers. In general, it appears that many, if not most, items usually classified as sources of curable functional obsolescence are more likely candidates for the incurable category. Curable superadequacies are a special case, in that there is no value loss of a property containing a superadequacy as compared with similar properties not containing the superadequacies. The value loss is solely as compared with the reproduction cost of the property containing the superadequacy and reflects the market reality that purchasers will not pay as much for the superadequacy as its cost.

Inconsistency in the Measurement of Incurable Functional Obsolescence

Incurable functional obsolescence is usually measured by capitalizing the rent loss or increased expense caused by the defect. The assumption of this methodology is that the value of the building is less than its reproduction cost by the amount of capitalized loss. For example, if a house lacks closet space and for this reason rents for $100 per month less than a similar house having adequate closet space, and if the appropriate GRM is 100, the amount of incurable functional obsolescence is usually calculated to be 100 x $100 = $10,000. If the reproduction cost of the house is $74,000 and there are no other elements of accrued depreciation, the value of the building would be indicated as $74,000 - $10,000 = $64,000. However, this calculation is incorrect and overstates the penalty.

The reason that this penalty is incurable is that the cost of adding closet space to the existing house would be more than $10,000. Furthermore, the cost of incorporating adequate closet space into the house, if it were being constructed today, must be less than the cost of adding the closet space to the existing house. This is true because the reproduction cost of the existing house does not include adequate closets, and the value loss must be greater than the

reproduction cost of installing in new construction. This can be shown in the following calculations:

Reproduction cost of house less adequate closets		$74,000
Reproduction cost of adequate closets		+5,000
Indicated value of house with adequate closets		$79,000
Reproduction cost of subject house		$74,000
Difference between house value with and without adequate closets	$10,000	
Reproduction cost of adequate closets	-5,000	
Functional obsolescence		−5,000
Indicated value of subject house		$69,000

Thus, the appropriate market test for incurable functional obsolescence is whether another property, otherwise identical to the subject property, but not containing the functional deficiency, would sell for an amount greater than the value of the subject property plus the reproduction cost of the deficient item in new construction.[30] It is not simply whether there is a rent loss or increased expense, as compared with similar properties. In the example above, if the reproduction cost of adequate closets were $10,000 (instead of $5,000), there would be no penalty. In effect, the increased reproduction cost would offset the value difference. Yet, using the standard test of rent loss or increased expense, a penalty would be assessed.

A different and somewhat easier procedure would be to deduct the full amount of value loss ($10,000) from the reproduction cost of a new house containing adequate closets. The difficulty would be, of course, that the reproduction cost would not represent the house under appraisal and would be a different cost figure than that from which other penalties are deducted. While yielding a correct answer, it would not provide the relevant information to the client about the effect of the defect on the reproduction cost of the subject property.

In conclusion, we might hypothesize that inconsistent theory and application in the measurement of both curable and incurable types of functional obsolescence may account for some of the unpopularity of the cost approach. It is not the purpose of this paper to resurrect or promote the cost approach. Given its existence and fairly widespread use, however, it seems evident that we should try to make it as consistent with logic and market realities as possible. Whether the cost approach, or any of the other traditional approaches, is worthy of acceptance as a major pillar of appraisal theory has been, and undoubtedly will continue to be, an issue of popular debate.

CONCLUSION

The alleged inconsistencies in traditional appraisal procedures and practice included in this paper do not constitute an exhaustive list of defects in logic or application. Neither is their citation meant to be a wholesale attack on traditional appraisal approaches. Quite the contrary; the inconsistencies are identified with the premise that their correction would strengthen these procedures. The corollary is, of course, that their continued occurrences weaken appraisals and

the appraisal function. They may lead to inaccurate value conclusions, disparities among appraisals, and lowered public confidence in appraisers.

Inconsistencies that occur in all three traditional approaches are cited. In most cases, the correction of the inconsistency is evident, or the paper contains a proposed solution. While the inconsistencies cited are not all equally important, they all deserve to be corrected, if there is agreement among scholars and practitioners as to their existence.

NOTES

[1] Richard U. Ratcliff, *Valuation for Real Estate Decisions* (Santa Cruz, Calif.: Democrat Press, 1972).
[2] American Institute of Real Estate Appraisers, *The Appraisal of Real Estate*, 8th ed. (Chicago: The Author, 1983), chap. 11.
[3] Halbert C. Smith, *Real Estate Appraisal* (Columbus: Grid Publishing, Inc., 1976), chap. 3.
[4] Byrl N. Boyce and William N. Kinnard, Jr., *Appraising Real Property* (Lexington, Mass.: D.C. Heath and Co.), chap. 7.
[5] Boyce and Kinnard, p. 193.
[6] William M. Shenkel, *Modern Real Estate Appraisal* (New York: McGraw-Hill Book Co.), p. 115.
[7] Boyce and Kinnard, p. 48.
[8] American Institute of Real Estate Appraisers and Society of Real Estate Appraisers, *Real Estate Appraisal Terminology*, rev. ed., Byrl N. Boyce, ed. (Cambridge, Mass.: Ballinger Pub. Co., 1981), pp. 160-161.
[9] Halbert C. Smith, Value Concepts as a Source of Disparity Among Appraisals, *The Appraisal Journal* 45:2 (April 1977): 203-209.
[10] AIREA, pp. 341-342.
[11] L.W. Ellwood, *Ellwood Tables*, 4th ed. (Cambridge, Mass.: Ballinger Pub. Co., 1977), chap. IV.
[12] Jeffrey D. Fisher, Ellwood J. Factors: A Further Refinement, *The Appraisal Journal*, 47:1 (January 1979): 65-75.
[13] For example, see the following references: David Scribner, Highest and Best Use or Most Probable Use, *The Real Estate Appraiser*, 44:3 (May-June 1978): 23-28; Ratcliff, p. 126; James A. Graaskamp, Comments at 1984 SREA Symposium on Real Estate Market Analysis, Atlanta.
[14] AIREA, chap. 11.
[15] Ratcliff, p. 104.
[16] I am not suggesting that highest and best use of the site as though vacant *should* be addressed in every appraisal. Indeed, in most single-family residential appraisals, an analysis of highest and best use either of the site or of the property as improved serves little purpose.
[17] Shenkel, pp. 119-121.
[18] Mary Alice Hines, *Real Estate Appraisal* (New York: Macmillan Pub. Co., 1981), p. 93.
[19] Boyce and Kinnard, p. 161.
[20] George F. Bloom and Henry S. Harrison, *Appraising the Single Family Residence* (Chicago: American Institute of Real Estate Appraisers, 1978), p. 30.
[21] Boyce and Kinnard, pp. 161-162.
[22] Halbert C. Smith and Mark Maurais, Highest and Best Use in the Appraisal Profession, *The Real Estate Appraiser and Analyst* 46:2 (March-April 1980): 27-37.
[23] AIREA, chap. 11.
[24] AIREA, pp. 482-483.
[25] AIREA, p. 483.
[26] William S. Gordon, Incurable Functional Obsolescence Due to the Lack of an Item: Is it Possible? *The Real Estate Appraiser and Analyst* 48:2 (Summer 1982): 32-35.
[27] AIREA, p. 484.
[28] Gordon, pp. 34-35.
[29] Gordon, pp. 34-35.