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5. "A Rational Approach to Feasibility Analysis", The Appraisal Journal, October, 1972. Reprinted in Chapter 3 of Real Estate Investment Analysis by Cooper, but date not known

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# A Rational Approach to Feasibility Analysis

*by James A. Graaskamp*

## *INTRODUCTION*

A Neanderthal developer once rolled a rock to the entrance of his cave, and created Real Estate, providing the natural void with some additional attribute not found in nature, such as warmth, security, or exclusiveness. He had successfully interfaced land (a finite natural resource) with an artifact (the rock—the first solid core door) to serve an unmet need of a space consumer (a market). Eventually his possession of the cave over many moons became institutionalized as artifacts for the delineation of space became more sophisticated with survey monuments, condominium plots, county records, and equity courts. Real estate is therefore a manufactured product of artificially differentiated cubage with an institutional time dimension (square foot per year, room per night, cave per moon), designed to interface society with the natural resource land. Thus real estate at any level is an organized undertaking whose form is subordinate to the constraints imposed on it by nature and man.

Nature and man, both in their smallest units and in the aggregate, represent variables which the real estate entrepreneur can seldom change and which place demands on the artifacts which he produces to serve a need. Nature and man represent the *context* into which a real estate solution is thrust while the elements of *form* are those variables in the

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physical, financial, legal, and behavioral matters over which the undertaking has some control. In the broadest sense, feasibility is concerned with identifying and measuring the adequacy of fit between context which defines the problem and the form of the proposed real estate solution. Indeed, the objective of the analyst is to search for the possibility of a material and potentially defeating misfit, incongruity, or unpredictable force which would cause a very unsatisfactory outcome for the user, owner, or capital source of a real estate undertaking.

## *THE DECISION PROCESS*

The decision process of any undertaking might be abstracted as follows:[1]

1. Setting goals based on value judgments
2. Converting values to form policy standards
3. Searching for opportunities consistent with policies
4. Selecting opportunities consistent with policies
5. Designing a system for capturing selected opportunities
6. Constructing the system for capturing the selected opportunities
7. Operating the systems that have been constructed
8. Monitoring the operating systems to improve the functions above

Implicit within this basic list of management functions is a *flow of events*, a *feedback mechanism* for modifying policies and solutions based on previous experience, and standards by which solutions must be judged. The feasibility analyst in the real estate field is primarily involved with management functions 1, 2, 3, 4, and 8.

The configuration and performance of a real estate project, or of any enterprise, represents "a negotiated consensus between . . . the power of the environment to dictate the form and the behavior of the organization, on the one hand, and the power of the organization to decide for itself what its conformation and behavior will be, on the other. To be mindful of the inevitable presence of both forces is to be able to penetrate the meaning of organization purpose . . . in every system, every organization."[2] Perhaps the abstractions of a systems approach to enterprise management is too esoteric for the real estate professional. Yet, today, it is critical that the practitioner become aware of the underlying concepts shaping other forms of American management in terms of disciplined problem definition and product design resolution. The appraisal profession has remained insulated in the management dogma of the 1930's, and must redefine its processes in order to return to the mainstream of American management and financial planning. The view of feasibility advanced in this essay is heavily influenced by the systems approach to management recast into less abstract real estate terminology.

1. For a concise statement of evolution of management theory from which this paragraph is abstracted, see *Management Dynamics—The New Synthesis* by John A. Beckett, McGraw Hill, New York 1971.
2. Ibid. p. 180

## *FEASIBILITY DEFINED*

In initially approaching the elusive concept of "feasibility", the following definition is useful:

> "A real estate project is 'feasible' when the real estate analyst determines that there is a reasonable likelihood of satisfying explicit objectives when a selected course of action is tested for fit to a context of specific constraints and limited resources."[3]

Several critical assumptions are contained within this definition:

1. To test for **"fit"** between a course of action and explicit objectives requires a correct statement of the problem, for these objectives are often unique and personal to the client and internal to his own decision rules determining what "his conformation and behavior will be." The form of the real estate must respond to and fit the needs of *all* the parties concerned.
2. **"A course of action"** must also fit the specific constraints imposed by the power of the environment (market, legal, financial and social) to dictate the form and the behavior of the enterprise and these often must be precisely identified.
3. **"Limited resources"** is broadly construed to include not only the equity and credit line of the client but his personnel, public image and energy which may be tapped by the proposal under review.
4. **"Satisfaction"** must be organized to deal not only with the tangible decision points of financial and quantitative ratios, but with the *ethical* responsibilities to the land as a finite resource and man as a victim of his own real estate terrarium.
5. **"Likelihood"** requires explicit recognition that economic forecasting must treat risk *explicitly* and therefore does not produce a single point conclusion but rather involves a statement of reasonably foreseeable alternative outcomes, a *range* of possible results. (For example, the Ellwood graph reveals the impact on yield of alternative resale prices when the appraiser is unwilling to assume just one possible resale price.)

### COLLABORATION AMONG PROFESSIONS—A NECESSITY

In light of these implications, a feasibility study is not in any sense an appraisal, rather it is primarily addressed to the question: "Will it succeed in solving a problem while interfacing with the land and with the community?" Questions of price and value are only *input to a synthesis of many factors* leading to a conclusion. The issue—whether a specific project will serve the objectives of a particular client—is vastly different from the viewpoint of an *economic* man as contemplated by appraisal. "Satisfying" entails more facets than that of simply computing a present value in financial terms greater than cost to construct, it embodies the ability to judge the fit of the project to the land and the irrational needs of man. The feasibility analyst has no license to assume away the critical questions in a "statement of limiting conditions."

The analyst is not expected to have answers but should be capable of asking the right questions of other professions who can offer expertise in

3. *A Guide to Feasibility Analysis* by James A. Graaskamp, page 4, Society of Real Estate Appraisers, 2nd Edition, Chicago, Illinois.

related areas. Feasibility analysis must become a process of *collaboration* among the professions, so that the simplistic and naive concept of "highest and best use" is no longer the prerogative of any single profession. In short, an appraisal is a very narrow-minded form of a feasibility study because market value presently requires a fictional client and limiting conditions which exist only in the deductive logic of appraisal theory. Appraisal methodology must be revised to reflect current competition and be in accord with behavior of the economic enterprise or actor. Only then will the theory of appraisal be compatible with the reality of feasibility analysis.

### *THE FRAMEWORK OF TOTAL FEASIBILITY ANALYSIS*

A logical structure in which to organize all relevant data is necessary to replace the formalities of appraisal and the comfort of knowing the question in advance, i.e., fair market value. With the exception of preliminary studies, the single analyst seldom deals with the total problem. All the objectives, context, and self-imposed limitations rarely appear in a single report. The components of feasibility analysis and report types might be briefly outlined as follows:

1. **Objectives of the enterprise for whom the feasibility study is performed*:**
   - A. Strategic objectives and priorities.
   - B. Tactical alternatives acceptable to the enterprise.
   - C. Decision rules or policies to ultimately make a selection from alternatives.

   * Reports dealing with these problems are properly termed *strategy studies.*
2. **Market trends to identify opportunity areas consistent with objectives*:**
   - A. Aggregate data on population, employment, income, for the appropriate area.
   - B. National economic and political factors affecting priorities, incentive, timing, etc.
   - C. Significant trends in public attitudes and mores which create or delineate submarket motivations.
   - D. Economic innovation relevant to the client.

   * Market analysis reports would include economic base studies, trade area delineation, or broad statistical surveys.
3. **Market segmentation for merchandising targets*:**
   - A. Selection of special micro-markets with unmet space needs.
   - B. Consumer profile analysis to determine product, price, and motivation.
   - C. Determination of capture rates required as a ratio of total micro-market effective demand to achieve required levels of absorption.
   - D. Preferred merchandising methods.

   * Merchandising studies include competitive property analysis, consumer surveys, product mix determination, and amenity product and pricing, as well as retail volume projections and formulas.
4. **Legal-political constraints*:**
   - A. Regulatory constraints on the decision maker.
   - B. Regulatory controls on site and space development.
   - C. Regulatory controls on space users and managers.
   - D. Regulatory constraints on those who supply capital.

E. Outside political forces influencing administration of discretionary regulations.

* These studies include legal opinions, statutes, corporate charters and by-laws, administrative rulings of various agencies, and political briefs.

5. **Aesthetic-ethical constraints*:**
   A. Environmental impact on the physical qualities of the land.
   B. Project impact on the general plans and values of the immediate community.
   C. Project obligations to future space-users.
   D. Project influence on prime contractor-subcontractor relationships.
   E. Project relationship to priorities and self-image of the decision-maker.

   *Reports on these aspects are generally called *impact* or *compatibility* studies.

6. **Physical-technical constraints and alternatives*:**
   A. Design to fit space-user requirements as to location and improvements.
   B. Static and dynamic attributes of the site.
   C. All other space-product engineering considerations.

   * These aspects are treated in engineering studies, architectural schematics and land suitability reports.

7. **Financial synthesis of proposed enterprise form*:**
   A. Specification of selected profit centers.
   B. Definition of time-line for the enterprise forecast.
   C. Capital budget estimate and schedule of outlays.
   D. Pattern of operating revenues and outlays.
   E. Financing plan for source and application of funds.
   F. Tax strategy.
   G. Selected measures of profitability.
   H. Selected indices of risk.

   *Financial studies may be termed financial feasibility, economic modeling, appraisals, sensitivity studies, cash flow forecasts, or income tax impact analyses.

## *A STARTING POINT FOR ANALYSIS*

In carrying out the total feasibility study, the analyst begins to unravel the complex and interrelated issues by carefully defining the point at which he enters the decision process. Essentially only three situations exist wherein the analyst can counsel on the feasibility of a real estate question:

1. *A site with or without improvements in search of a user.* In this case careful recognition of the attributes of the location or of the improvements will greatly narrow its marketing opportunity areas, and generally suggest a limited number of alternative courses of action requiring further in-depth analysis.
2. *A space user in search of a location or a site and specific improvements.* In this case the economics of the intended use or occupant values are the point of departure in order to narrow the logical alternative opportunity areas.
3. *An investor looking for a means of involvement in one of the above.* Here, the investor's objectives, legal constraints and his implicit conclusion that he should be involved in real estate, must be taken into consideration.

LIMITING CONDITIONS

In the early phase of the analysis it is essential to explicitly define some special limiting conditions:

1. The question of feasibility is always based on a particular *viewpoint.* A successful investment for the mortgage lender may not be profitable for the equity investor, the space-user or the community at large. It is not uncommon to lend on the credit capacity of the borrower despite a marginal feasibility report in terms of success of the project.
2. The feasibility process is comprised of *components* provided by others, accepted as *premises* with the explicit permission of the client. Legal, architectural, engineering, or soil reports furnished by the owner should be so identified as satisfying the pertinent components in the outline.
3. The components of *total* feasibility analysis which are the responsibility of the analyst and his associates.
4. Description of the decision models and criteria by which alternative courses of action can be judged or report purposes achieved.
5. The report should specify the *point* along the enterprise time-line from which the analyst is viewing the project. The analyst may begin either at a preliminary point, prior to any transactions, or he may be confronted with construction already in-place and with limited options in the modification of the physical product.

   In the first case, the decision model may require development of objectives and definition of opportunity areas with a conclusion that there is an avenue for a successful course of action. On the other hand, the analyst, confronted with a *completed* design proposal need only test it against a profile of the consumer need or regulatory constraints of a party at interest, to affirm or reject its feasibility.

Often the prospective client does not clearly understand his own objectives and constraints. It is therefore essential that the analyst thoroughly probe the implicit assumptions of his client. Determination of feasibility depends largely on answering the question "Will it succeed?" by focusing on the counterpoint inquiry "For whom?", "By what standards?", "Based on which assumptions and judgments?"

## *THE ECONOMIC FEASIBILITY STUDY*

Some professionals have sought to avoid many of the components of feasibility by classifying their reports as "economic" feasibility studies, a generic title presumably concerned only with certain revenue and expense patterns, inherent in the project. If the present value of these rather narrowly defined costs and benefits exceed some estimate of cost, the project is termed to be feasible. Evidence to support the conclusions in such studies regarding projected revenues and outlays, is usually based on evidence drawn from comparable projects which suggest average market rents, absorption rates and typical appropriate costs.

The professional appraiser has been taught to analyze what has been true in the immediate past rather than what might be possible in the future.

Highest and best use must be nonspeculative and reasonable, yet someone determined that Columbia, Maryland, Disney World, and condominium camper pad clubs were feasible. Obviously information *internal* to the enterprises which created such projects was far more significant than external market data—the feasibility analyst must intelligently interrogate his client as to these internal resources and limitations. It is essential, therefore, that the appraiser entering into feasibility analysis overcome some of his training and viewpoints which run counter to in-depth feasibility analysis.

### A REORIENTATION IN APPRAISAL CONCEPTS

Several of these "hangups" which manifest themselves in "economic studies" are revealed in this short essay:

**1.** *"Highest and best use"* is a moribund concept as presently defined. At the very least Prof. Wendt[4], Singer[5], and others are correct in advocating that "highest and best use" be considered in terms of after-tax spendable dollars, but there is a more insidious flaw. As originally coined by the economist, the concept included benefits and costs to the *society* as well as to the owner and when that facet was *lost* the appraisal profession was evidently excused from considering the *aesthetic* and *ethical* questions previously outlined in Item 5.

This brief essay does not permit a full expansion of the professional's responsibility to consider the ethical elements of a proposal over and beyond society's consensus as expressed through existing building and zoning codes. Nevertheless, during the coming decades wherein authority over land use will be transferred to the public sector, the true professional will be obligated to operate with greater sensitivity than the letter of the law. The concept that whoever can pay the highest cash price for a particular site is the most appropriate user of that site, represented an era of laissez faire land economics, and becomes *obsolete* in a decade when the public is reestablishing its control of land use. Highest and best use, the critical premise of an appraisal, is theoretically and pragmatically untenable as presently defined by appraisers.

**2.** Real estate decision-makers are not interested in economic surpluses but in *cash profits* expressed as after-tax spendable dollars, in *yield* not cap rates, and in *measures of risk*, as opposed to the traditional view that "mortgages" are preferred to "equity" or that motels are "riskier" than moderate rent housing. Such judgments are naive, particularly when they are converted to decision factors by adding an arbitrary .01 to the overall capitalization rate.

**3.** The profits in real estate investment are more likely to be found in its *outlays* than in its net income, and the true test of equity ownership is the degree to which an "owner" can control or *divert discretionary expenditures*

4. "Highest and Best Use—Fact or Fancy," *The Appraisal Journal*, by Paul F. Wendt, April 1972, pages 165-174.
5. "New Methods of Income Analysis," *The Appraisal Journal*, by Bruce Singer, July 1971, pages 327-337.

of the real estate enterprise. Productivity must therefore be redefined to encompass recognition of cash profits in land writeups, construction contracts, management contracts, insurance premiums, lending formulas for indirect costs, not to mention captured markets among tenants and other users for retail services, etc. In short, the feasibility analyst must consider the cash potential inherent in the business environment of the decision-maker, before and after the commitment to the real estate.

4. Many facets of the income approach to appraisal no longer serve as useful tools in feasibility analysis under a *cash concept* of a real estate enterprise.[6] Modern capital budgeting techniques treat the realities of business cash flows on an in-and-out basis, rather than accepting convenient assumptions necessary to the continued use of the income approach with a single capitalization rate. At the risk of possibly raising more questions than can be answered, compare the operational assumptions of the Ellwood approach to modern corporate present value decision models:

| ELLWOOD MODEL | CAPITAL BUDGETING MODEL |
|---|---|
| a. Instant investment | a. Discontinuous series of outlays |
| b. Productivity limited to parcel after debt but before income tax | b. Productivity is net change in spendable cash from all sources after debt and income tax traced to real estate parcel |
| c. Continuous income function | c. Discontinuous series of tax classified receipts |
| d. Recapture from income & resale | d. Payback of equity from after-tax spendable cash and debt from pre-tax net revenue & resale |
| e. Projected for normal turnover period 5-10 years of typical investor | e. Projected for elapsed time of outlays and receipts for specific investor time-line horizon |
| f. Weighted average Inwood discounting | f. Present value techniques selected to fit the cash flow pattern, characteristics of investors, and nature of valuation question to be answered |

5. Risk analysis today recognizes risk, in large part, as a manageable or measurable factor in an enterprise. *Risk* is the variance between one's expectations and realizations, between budget forecast and end-of-the-year profit and loss statements. Risk management is first concerned with conservation of the decision-makers, net worth position just prior to a new commitment, in this case real estate. Risk management is then concerned with realization of the forecast which led to the commitment through a course of action. The techniques of risk management require identification of significant exposures to surprise and financial loss, estimation of the economic consequences, and selection of risk management methods to control and mitigate these consequences, in priority to the severity of the latent impact on expectations.

6. Ibid.

Risks can be avoided, shifted by contract, limited to some maximum as in a corporate shell or a limited partnership, or combined to increase predictability and permit budgeting as expenses or reserves. Modern financial analysis not only provides techniques for sensitivity analysis for the impact of variance in financial inputs or the time-line of the project, but is also exploring the application of probability models and risk preference curves to investment decision. In short, financial decision theory capable of dealing with *uncertainty* is many years ahead of the simplistic decision rules which characterize real estate appraisal.

### THE ANALYTICAL PROCESS

The term "economic study" is a Freudian slip indicating the disorientation that has occurred among appraisers relative to basic premises of appraisal theory. Land economics began with concern regarding the overall productivity of the capital asset which was given an economic rent, normalized expenses and long time reserve for replacement, in order to measure net productivity of the total capital employed. But the tools of economic analysis were *subverted* to serve liability evaluation, to determine the total value of financial claims on the productivity of the assets. As the productivity of real estate capital declined or at least failed to keep pace with alternative capital investment opportunities, the financial opportunities in real estate were found to lie in manipulation of the outlays and the liabilities and the captive businesses inherent in real estate enterprise.

Thus the questions which land economics and its models were designed to serve are not necessarily the questions which a cash oriented enterprise may need answered to determine feasibility. The analytical process must always be subservient to the problem at hand, the data available, and the ability to communicate both the process and its answers. Does the economic methodology and semantics of traditional appraisal effectively communicate the particular project's feasibility to an investment banker, corporate treasurer or developer?

## *CONCLUSION*

Those who act or invest on the basis of a feasibility study are in actuality "buying" *the assumptions* about its future productivity, having been given their investment context and the form the opportunity has taken—*not brick and mortar and ground.* The feasibility analyst must make these assumptions regarding context as explicit as possible and then test the form of the investment to that context, according to the priorities of success from a particular viewpoint.

The essence of a feasibility determination lies in correctly defining the *objectives* which the solution must serve, and the *context* or standards wherein an acceptable solution must be found. Only then can the analyst judge the degree of consensus which exists between the external forces imposing on this decision and the internal capacity to achieve individual objectives in a real estate enterprise.

# Real Estate Investment Analysis



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# 3

# A Rational Approach to Feasibility Analysis

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## *INTRODUCTION*

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