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A Review of The Models of Land Development Process: The Equilibrium and Event-Sequence Model

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Abstract

This paper is the first part of a three series paper that provides a comprehensive review of the existing models of land development process. In each of the papers the characteristics of these models are presented and evaluated critically in relation to their clarity, applicability and theoretical underpinnings. This will bring together from various sources the principal approaches in the analysis of development activity and also provides a platform to discuss the key components and the implication of the process. Most importantly the review provides some guidelines for the rejection and adoption of a particular methodology as a basis for undertaking research. In this first paper, it is suggested that the equilibrium models, which are based on the neo-classical parameters of demand and supply, in terms of undertaking research are set-up at a level of abstraction. The problem is that it is difficult to substantiate precisely between the actual investigate events and the affecting structural forces. On the other hand, although the event-sequence models focus on the potential blockages to develop activity, they lack the specification of actors and interests, and so provide little help in explaining why a development process takes the form that it does in a particular case.

1.0 INTRODUCTION

In recent years, there has been a growing interest in understanding the land and property development process. As a result, numerous conceptual models of the land development process have been produced. However, much of the academic literature provides a difficult entry point for those seeking initial access into the study of the development process because the models are typically technical in content and too specialised in focus.

This paper reviews the various models of the development process. The characteristics of these models are presented and are also evaluated critically in relation to their clarity, applicability and theoretical underpinnings. Such a review has the advantage of not only bringing together from various sources the principal approaches in the analysis of development activity but also provides a platform to discuss the key components and the duplications of the process. Most importantly, the approach provides some guidelines for the rejection and adoption of a particular methodology as a basis for undertaking research.

The research models which were devised to suit a variety of contexts are based on different conceptual frameworks and different theoretical underpinnings. They are the products of work conducted within certain philosophical boundaries (such as empiricism, positivism, humanism and structuralism) and are derived from different theoretical frameworks of neo-classical economics, urban-political economy and institutional analysis. These have had an influence on the models constructed in terms of the method of reasoning and the argument as

•A ell as in the number of different forms the models take. The models range from flow diagrams, through to sequences of events and sets of relationships between the agents involved, to overall frameworks or structures

•AJthin which land development occurs. In this sense, as Gore and Nicholson (1991,705) note, ' such models are essentially different ways of representing the same thing: there is no question that one may be considered to be correct, and all the others wrong '. It is important to understand the concepts employed in each philosophical perspective. Hence, a brief discussion of the related philosophies follows.

2.0 PHILOSOPHIES OF SOCIAL SCIENCE

According to Johnston (1983), a researcher of a particular academic discipline undertakes research within a framework provided by a philosophy of that discipline. Such a philosophy may be explicitly stated by the researcher and used to establish certain guidelines before commencing work or it may be implied where there are guidelines but these are not fully recognised.

Philosophy involves the study of the ways in which work is conducted within a particular disciplinary boundaries and the consideration of methods of reasoning and argument (Johnston, 1979). The main element in a philosophy is its epistemology (or theory of knowledge) and associated with epistemology in the philosophical framework is ontology (the theory of existence). Every disciplinary philosophy, therefore, contains both an epistemology and an ontology and together these are used to define a methodology, that is, a set of rules and procedures which indicate how research and argument are to be conducted within the discipline.

To date, the approaches in the philosophy of social science can be categorised under five different types: empiricism, positivism, humanism, structuralism and the structure and agency approach. Table 1 summarises the five different existing approaches in terms of the elements of epistemology, ontology and methodology.

In the empiricist approach, the epistemology is that knowledge can only be gained through experience, therefore, its ontology is that all experiences are those that exist. As such, explanation of knowledge by way of this approach is very descriptive and the methodology is only in the form of presentation of the experienced facts based on collection and organisation of empirical facts and materials.

Positivism, on the other hand, is an approach in which the epistemology is also gained through experience but which requires this experience to be firmly established as verifiable evidence. Its ontology, therefore, is one of agreed evidence and it is often known as scientific or the quantitative approach. Hence, this approach is characterised by a belief that reality is present in appearances which are measured repeatedly to form the basis of laws which can be verified with recourse to empirical facts.

Unlike the scientific positivists, in the humanist approach the epistemology is that knowledge is subjectively created by individuals. In contrast to the positivist approach, which is suitable for the study of natural science, this approach is more suitable for studies related to social phenomena. Its ontology, therefore, is that man is the determining factor, and society, in all its complexity is the dependent product of human interaction. Reality, therefore, does not exist independently of the observer or the observed but is a social reproduction, whose meaning arises out of people's behaviour and attitudes. Methodologically, it involves a shift from the principles of statistical inference based on representative random samples, to those of 'logic interference' (individual sound reasoning based on a convincing and compelling facts of events) based on unique or idiosyncratic case studies.

In structuralism, the characteristic feature is the principle that knowledge or explanation for observed phenomena must be sought in general structures which underpin all phenomena but are not identifiable within them. Hence, its ontology is that knowledge exists in the underlying structures which in general are divided into three levels of analysis. These are the level of appearance or the superstructure, the level of processor or the infrastructure and the level of imperative or the deepstructure. However, according to Johnston (1979), of these three only the superstructure level can be directly understood. A study of the patterns in the superstructure, he argued, should reveal the nature of the deep structure and the contents of the superstructure represents operations of the infrastructure. In turn the nature of the process operating in the infrastructure is a consequence of the imperative or the deepstructure. As such, explanations cannot be produced through empirical study of the phenomena alone but by way of an approach which combines theory and observation analysis.

The structure and agency approach is a product of philosophers who believe that both the social system and the individual actor are equally important in the explanation of social phenomena. It is a relatively new attempt at resolving a great conflict in social theory, and promises a comprehensive explanation that considers how agency and structures come together, in the production, reproduction and transformation of society. This approach is an attempt to overcome a serious problem in social theory by transcending, without altogether dispensing with, the two main approaches employed by social analysts, that is the structuralism and humanism approaches.

Giddens (1979) argued that within the structuralist perspective, to determine social outcomes, the theories focus on the cultural forces and/or economic forces. Giddens (1979) further argued that this omits an understanding of the individual as an active, knowledgeable, reflexively monitoring agent. On the other hand, in the humanism that is the agent -oriented philosophies, institutions are treated as only the background 'to which action is negotiated and its meaning formed' (Giddens,1979,50). Both these philosophies are also not concerned with power relations and conflict in society and very often focus 'attention almost exclusively upon the nature of reasons or intentions in human activity' (Giddens,1979,50). To overcome this problem, Giddens (1979, 53) proposed to develop a position where :

' the notions of action and structure presuppose one another. Therefore, this necessitates a reworking both of a series of concepts linked to each of these terms, and of these terms themselves'.
Hence, the reworking of these concepts results in the structure and agency approach where knowledge is sought in both structure and agency elements .

Approach/Ideas	Ontology	Epistemology	Methodology
Empricism	reality only exists in the thing that is experienced	knowledge is gained through experience	presentation of the experienced facts based on collection and organisation of material which focus on empirical facts
Positivism	reality is independent of the observer that is objective reality	knowledge is acquired through verifiable facts and is observable (observation)	establish empirical facts using the scientific method that is hypothesis testing (statistical) method widely used
Humanism	reality only exists in relation to people	knowledge is created subjectively in a world of shared meanings and through individuals	concentrate on detailed behaviour case study, qualitative methods such as interviews
Structuralism	reality consists of underlying structure which gives rise to empirical facts	critical thoughts are used to derive theories	construction of theories
Structure and agency	reality exists in both the underlying structures of production & regulation as well as in agency relationships	knowledge is derived by linking structure and gents' interests and strategies through the resources they used and the rules and regulation they recognise	construction of a specific model on a specific case study where data of different form of structures and agents' interests and strategies as well as agency relationships and the internal power relations are gathered using structured intereviews & detailed study of past records and analysed using descriptive and historical analysis.

Source : Own analysis

Table 1 : The Theoretical Framework in the Philosophy of Social Science

3.0 CATEGORIES OF MODELS OF LAND DEVELOPMENT PROCESS

In broad terms, the models of the development process can be categorised under five types, according to the different philosophical approach adopted (Healey, 1991). They are :

The equilibrium model which is based on the neo-classical economics theoretical framework within the parameters of a positivist approach.

2. The event sequence model which depicts the development process as a chronological sequence of stages, at each of which certain events occur.
   These models fall within the empiricist theoretical framework.

3. The agency model which falls within the humanist framework, which emphasises the roles of different actors in the process and the importance of the decisions they make in ensuring its smooth operation, .

4. The structure models which portray the development process as a specialised form of productive economic activity, from the perspective of the economy as a whole, that is they tend to be structuralist.

5. The structure and agency models which contend that different types of development are characterised by different institutional, financial and legislative frameworks, as well as the complexity of the social relations involved.

In this paper, these contrasting approaches to the explanation of the land development process will be examined in more detail.

4.0 EQUILIBRIUM MODELS

Equilibrium models of development process are clearly defined within the epistemological and ontological philosophy of positivism. Hence, in these models, explanations are based on structured theory-led observation and its ontology supports this with the arguments that only what is directly observable and measurable is acceptable as evidence.

Implicitly, within the theoretical perspectives, such models can be categorised as those adopted by the neo-classical economists. The assumption of these models, therefore, is that the development process is driven by the demand for new property. Demand, it is assumed will be translated into supply, with the various agencies involved in development working collectively to provide development ' at the right time, in the right place, at the right price' (Lichfield and Darin-Drabkin, 1980).

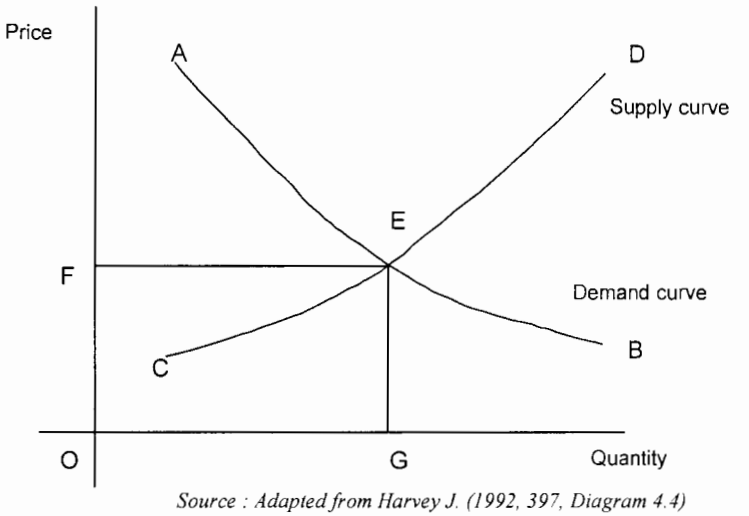
In the past, various urban economists have focused on the built environment, discussing how it is produced. Among them were Harrison (1977), Hallett (1979), Lichfield (1980), Harvey (1981), Hillebrant (1985), Evans (1985) and Balchin (1988). Being positivists, their arguments were from a neo-classical economics perspective that the production of the built environment can be viewed in terms of a demand-supply relationship. In addition, it is assumed that a perfectly functioning free market exists without government intervention. Furthermore, in this market economy, exchange takes place on the basis of prices determined in the market by the interaction of supply and demand. Hence, in the case of landed property, rent is the price of occupation and the level of rental values is determined by flows of demand and supply for property to let.

In these models, development activity itself is seen as relatively unproblematic (Healey, 1991). Land and property prices are generally used as indicators to activate transactions and investments in the property market. The performance of the market is then measured by calculating rents and yields using land and property valuations which are derived either from the assessment of costs and return, with land and property costs considered as a residual, or are based on comparison with established market prices.

One of the most popular models under this category is the classical economic model of demand and supply. Figure 1 illustrates the simple model of demand and supply. It shows that the demand curve slopes downwards left to right. As prices increase there is a decrease in demand. On the other hand, the supply curve slopes upwards from left to right, indicating that when there is an increase in price, supply will also increase.

Point E is the point of equilibrium, where the supply and demand curves intersect. Only at this point, is the producer willing to continue to supply a quantity, in this case buildings, at the price the consumers are willing to buy or rent. At prices to the left of E, producers would make larger profits by producing a lower volume of output. However, the price would be high enough to attract additional output. In other words, at these prices it would be profitable to produce more, so new firms - in this case developers - would enter the market to take advantage of the opportunities presented. On the other hand, to the right of point E, the opposite occurs. The producers or developers could not produce this amount and sell their products profitably. As Harrison (1977.

36) states, 'If by chance they got their estimates wrong then, they would have to cut prices to get rid of stocks and try again'.



Source : Adapted from Harvey J. (1992, 397, Diagram 4.4)

Figure 1 - The classical economic model of demand and supply

This simple model of demand and supply was later improved by Hallett (1979) and Harvey (1981). From the graphical depiction of demand and supply, both went further by producing box-diagram models of the development process. These are shown in Figure 2 and 3. As Hallett (1979) notes, through short term fluctuations, the basic relationship is that between 'demand' and 'stocks'. In such cases demand appears to be closely related to income and price. In addition, the total demand for 'property services' (that is square footage per year) will react with the existing stock of property to determine the demand for new accommodation, including renovated buildings. However, demand is also to some extent dependent on price. In the case of property, this refers to rack rent or sale price. Thus, both rents and prices depend on demand and supply. What happens is that, if there is a glut, rents and prices will be low. If there is a shortage in the market the prices and rent will be high. When new buildings come onto the market and cannot be let at the expected rent, the property boom will collapse followed by a fall in capital values and a rise in yields.

The demand and supply tradition was extended. From the static box-diagram model, Barras (1983) went one stage further by viewing the development process in cyclical terms. In his model, apart from user demand and supply of new buildings from development activities, he also incorporated investor demand. His argument was that demand for floor space tends to exhibit business cycle fluctuations around secular growth trends. Hence, business cycle peaks tend to reinforce major peaks in office development cycles. As Barras (1983, 1392) notes, 'principally cyclical variation in rents and yields, reflecting commodities both in user and investment market, create the cycle of developers profitability'.

He added that, although supply responds to demand, there is a lag between the two due to the time period between the initiation and completion stages. As Barras (1983,1392) states:

'there is a direct relationship between levels of excess demand and capital value of office buildings, and the variations in capital values are translated into variations in developers' profitability and this in turn determines the level of developers' starts'.

The lagged value of developers' starts then represents the main impetus of the development cycle.

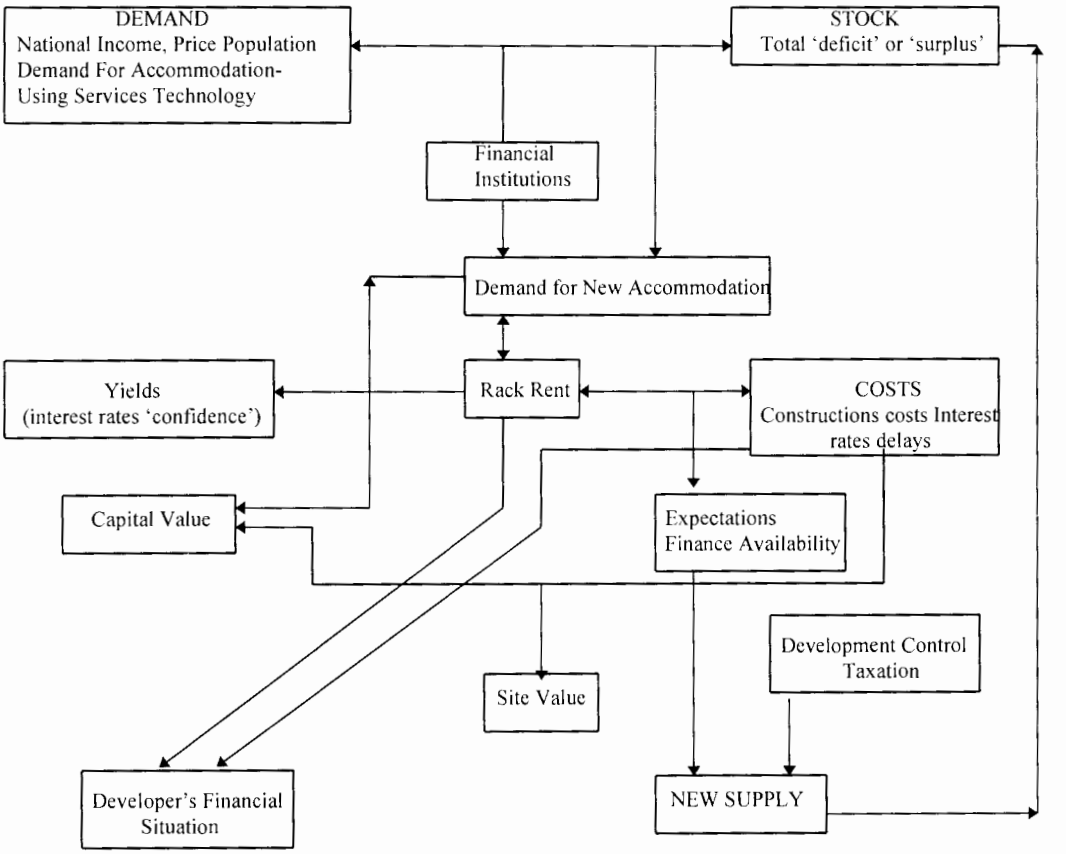


Figure 2 : Hallet's Model of the Development Process
Source : Hallett, 1979

So far, in all these models, price is assumed to be determined by demand and supply factors rather than to influence and determine them (Harvey, 1981). In these models, the development process is, therefore, demand-driven. As Bourne (1976) argued demand is met by the market and translated into supply. In addition, agencies in the development process are assumed to act collectively in order to provide development at the right time, the right place and at the right price.

The model is based on neo-classical economic principles and implies the existence of a perfect market and, as a consequence, any price differences are quickly eliminated. In seeking to maximise utility and profits respectively, both the consumer and producer are assumed unhampered by legal and other constraints. This assumption has attracted attention of many researchers. Among them were Balchin (1988) and Hillebrant (1985) who argued that the actors in the development process act rationally and seek to maximise return in profitability.

Lichfield (1980) argued that developers operate on a profit maximisation basis. This is carried out by considering alternative projects and making a selection based on the most profitable per unit investment. The developer will then estimate the net return of each site by taking the difference between the value of the completed development and the cost of inputs discounted to a common date. This difference or the residue is the maximum the developer would be able to pay for the land, on a rental or a capital basis. As he notes, 'This is the answer given in land economics and valuation theory, in what is known as the residual method' (Lichfield, 1980, 71). Such an argument was elaborated further by Cadman (1983 and 1991) through the residual approach which is a method applied in the valuation theory to carry out initial evaluation of the intended development project. The purpose is to determine the viability of the project.

The next important assumption [illegible] implied above [illegible] in this [illegible] exists whereby buyers [illegible] compete with one another [illegible] so, buyers will be completely [illegible] the buyer to whom they sell [illegible] The behaviour of any one [illegible] because each buyer is [illegible] considered as a small part of [illegible] market. However, this conflicts with [illegible] Britain and the U.S. Studies by [illegible] DF display the increasing [illegible] dominant local land and property [illegible]

Apart from the above assumptions [illegible] assumed to be fully aware [illegible] On the other hand, sellers are [illegible] doing. Apart from that, [illegible] lack of consumers satisfy [illegible] (1981:10) states, there should [illegible] 'washing' advertising'.

Subsequently, under perfect [illegible] whereby the existence of [illegible] different prices in [illegible] might be converted into price [illegible] the forces of supply and [illegible] further assumed that there would be [illegible] after the market conditions [illegible]

However, the above assumptions [illegible] interaction of demand and supply [illegible] market operations can be [illegible] place. As Fraser (1985) and [illegible] practice, it is not only the [illegible] homogeneous and divisible [illegible] different sites each with its own [illegible]

institutional restrictions, therefore giving rise to differential in rents. As argued by Pahl (1976), the development process is problematic in many ways. The property market, he noted, is hampered by social and spatial constraints which reflect the access to scarce development resources and facilities as well as the distribution of power in society as illustrated by agents who make use of the bureaucratic rules and procedures, which he identified as social gatekeepers, who help to distribute and control urban resources.

Consequently, the diversity of property in terms of physical and legal interests results in a uniquely complex market. Interests in land require management and are subject to specific legislation such as planning controls and land ownership. This indicates the need for specialised knowledge leading to the important role of valuers and solicitors in the smooth running of the property market by way of providing information on property performance, price and availability, arrangement of finance, conduct negotiations and so on. As Fraser (1985, 122) notes, 'the cost of these experts, together with the sheer length of time involved in the sale price, discourages short term trading or frequent"in and out" operations'.

Unlike the stock exchange, in the property market, there is no organised market place, where prices are quoted and dealings can be publicly witnessed. In fact, the lack of detailed knowledge points to the existence of an imperfect market. Most dealings are between buyers and sellers who have special relationships. Therefore, although prices are agreed, they do not however reflect market value (Fraser, 1985). While on the other hand, as Healey (1991) notes, the smooth operation of the market may be impeded by a number of factors whereby producers and consumers may have inadequate information about what each offers and needs.

In addition, this problem of imperfect information is worsened by the presence of uncertainties created by legislation, for example, planning, taxation and land tenure. These in a way form a sort of 'supply side' blockages (Healey,1991). Hence, in the 1980s, particular attention was focused on the way planning system limited supply (Evans, 1987; Cheshire and Sheppard, 1989). As Cheshire and Sheppard (1989, 469) comment, 'there is evidence that the implementation of planning system creates "scarcity rents" for land in different uses by acting as a constraint on land supply'.

In other words, the process of development control through the planning system acts as a mechanism of supply restriction for particular uses, which pushes up the price of land and so raises the cost of buildings put on the land. As she further argued (Healey, 1991, 222), ' The rents paid ..... in principle, reflect the process of development control where there is effective supply restriction' .

The problem of imperfect information also arises from the complexity and diversity of interests in property. Further, the problem of estimating rents and prices for a property interest will arise and this is further aggravated by the relatively small number of deals taking place in any sub-market. Hence, changes in property market conditions are difficult to perceive. As Fraser (1985, 122) notes:

' Whereas millions of pounds worth of shares are being bought and sold on the Stock Exchange every day, evidence of only a handful of reliable property transactions might be available per year'.

According to Balchin (1988), property is bought and rented at different prices according to the expertise or lack of experience of the buyer. As a result of market imperfection, therefore, there is an opportunity to make a speculative gain and profit. Since there is limited sales evidence available, bargaining skills are significant in price determination. Thus, once again, market imperfection means that there is a heavy reliance on professional middlemen. Reliance on professional middlemen, for example valuers, has also brought to an additional problem to the property market. Some analysts have claimed that there are cases in which the valuation and appraisal methods used produced distortions in the assessment of risk and reward in property investment. Examples are the different conclusions of the residual and comparative approaches to establishing land prices and the different approaches to calculating property investment yield (Adams et al,1985; Howells and Rydin,1990). As Adams et al (1985) note the comparative method of valuation is unable to cope in cases where there is limited transaction evidence. Similarly, Howells and Rydin (1990) state that the conventional methods of risk and return analysis are misleading when applied to property. This, they argued is because conventional analysis relies upon a quality of data which is not available in the property world, resulting in an overstatement of return and understatement of risk.

In the property market, instead of a large number of buyers and sellers, there is only small number with sufficient funds to invest. This explains why the property market is dominated by financial institutions and

[illegible] investment companies. Private individuals, therefore, have little direct influence in the commercial [illegible] Apart from this, the diversity of property locations may also stimulate monopoly power. Hence, in the [illegible] of close substitutes in the market, together with the imperfect information of rent or price level, sellers [illegible] may achieve a figure higher or lower than the market value. Healey (1991) considered this element [illegible] monopoly as another form of 'supply-side' blockages. Markusen and Scheffman (1977) note that rapidly [illegible] land prices are due to monopoly elements in the land market in which the effect is to slow the rate of [illegible] ment and to cause increases in land prices due to a landowner with market power with holding land [illegible] the market.

[illegible] maximising profits, there are other objectives which developers take into consideration. This is [illegible] true in the case of public agency landowners who may also pursue environmental and social as well [illegible] objectives in their decision-making. As Hillebrant (1985, 35) notes it is the humanists who [illegible] the neo-classical model by stating that, 'objectives of firms are determined by organisational structures [illegible] operations of the firms as much as by purely monetary objectives'.

[illegible] further strengthens this point by arguing that developers defer development even when prices are [illegible] is partly responsible for the scattered form of development at urban fringes even where there are [illegible]. In fact, as Balchin (1988) notes, supply of buildings is relatively inelastic and change is slow due [illegible] of buildings and there is a small proportion of real property of any type coming into the market [illegible] time. The property market, therefore, is said often in a state of disequilibrium.

[illegible] that the actors who played roles as suppliers of properties in the market also do not necessarily [illegible] demand as assumed in the simple demand-supply model. As Harvey (1981) notes development is a [illegible] changes in demand for land resources, sizes, income and taste of population, rate of growth of [illegible] activity, methods of transport, techniques of production and distribution. Further, as Usher (1990) [illegible] traditional economists overlook the nature of the power relations in the supply-consumer framework. [illegible] that the framework of supply and market development is determined by the, ' global finance [illegible] taxation, national interest rates, government policy and subsidies ' (Usher, 1990, 5).

[illegible] nature of supply is determined by the objectives of the suppliers. Hence, the development process [illegible] developers' perceptions of profitability in different market sectors and opportunities for making [illegible] They are not homogenous, acting in unison or responding to demand. Instead as Hallett (1979) observes [illegible] often occurs speculatively preceded by a sharp expansion of money supply. ' There is a surge of [illegible] which is speculative based on euphoric expectations and financed by over-generous credit' (Hallett, [illegible]

[illegible] and Scheffman (1977) argued that besides development control and monopoly power, land supply for [illegible] is also constrained by factors such as speculation and public policy on land development. [illegible] Skaburskis (1988) notes that speculation, almost by definition, will drive up property prices. As [illegible] Markusen and Scheffman (1977, 4), 'a land speculator is an agent who buys and sells land without [illegible] of affecting improvements or using the land as an output in a production process '.

[illegible] Skaburskis (1988) observed that speculation can affect the land market in many ways. First, is that [illegible] not only will drive prices up but also force development activity to go beyond the existing [illegible] urban land. Second, speculation also affects the land market in terms of the allocation of the [illegible] property stock. In his studies on Canadian cities, Skaburskis also concluded that stricter development [illegible] market ability to respond quickly to demand signals and may, therefore, increase the amplitude of [illegible] price cycle (Skaburskis, 1988). Regulations that affect development approval, such as strict zoning, [illegible] intensify the amplitude of the price fluctuations that favour speculation, but these constraints are not [illegible] affect the extent of short term speculation after it had started.

[illegible] interesting finding of his study is that short term speculators help to stabilise market. The results [illegible] changes in the current activity of speculators are associated with price changes. Speculators react [illegible] changes more than they affect them. The speculators' purchases increase as prices drop, and their sales [illegible] as prices rise. The speculators, therefore, increase the supply of property available in the market as [illegible] increase and reduces the supply as prices drop. Such changes in speculative stocks would reduce, rather than exaggerate, price fluctuations.

[illegible] of the development process in a rigid sequential framework, that is with a definite beginning and [illegible] consider the cyclical nature or the diversity and flexibility that characterises the development [illegible] Moreover, the isolation of each subsequent event from the rest of the built environment and from [illegible] such as government policy, availability of finance and demographic change, simply makes the [illegible] comprehensive. In addition, they noted that, most linear models are project based. Hence, their [illegible] various development projects remains an open question .

[illegible] attempt to improve understanding of the development process, Barrett et al (1978) moved a step forward [illegible] the linear model into a cyclical form. In their study of the land policy and development, a [illegible]-pipeline model was devised. As seen in Figure 6, in the model, activities and decisions have been [illegible] three sets of events, each one corresponding to one side of the triangle and whereby the principal [illegible] may be arranged. The first of the three stages is the development pressures and prospects stage [illegible] influences can affect decision towards land development or redevelopment. These include public [illegible] sector activities to external circumstances concerning demand and supply of land and buildings for [illegible] The second is the development feasibility stage which cover events that occur between the [illegible] of suitable sites or profitable projects and the commencement of construction. At this stage there [illegible] of influences and constraints, for example, land use conversion, ownership and finance which [illegible] overcome before construction work can begin. The final stage is the implementation stage whereby [illegible] actually takes place and involves not only the process of construction but also disposal, [illegible] and use of the completed development.

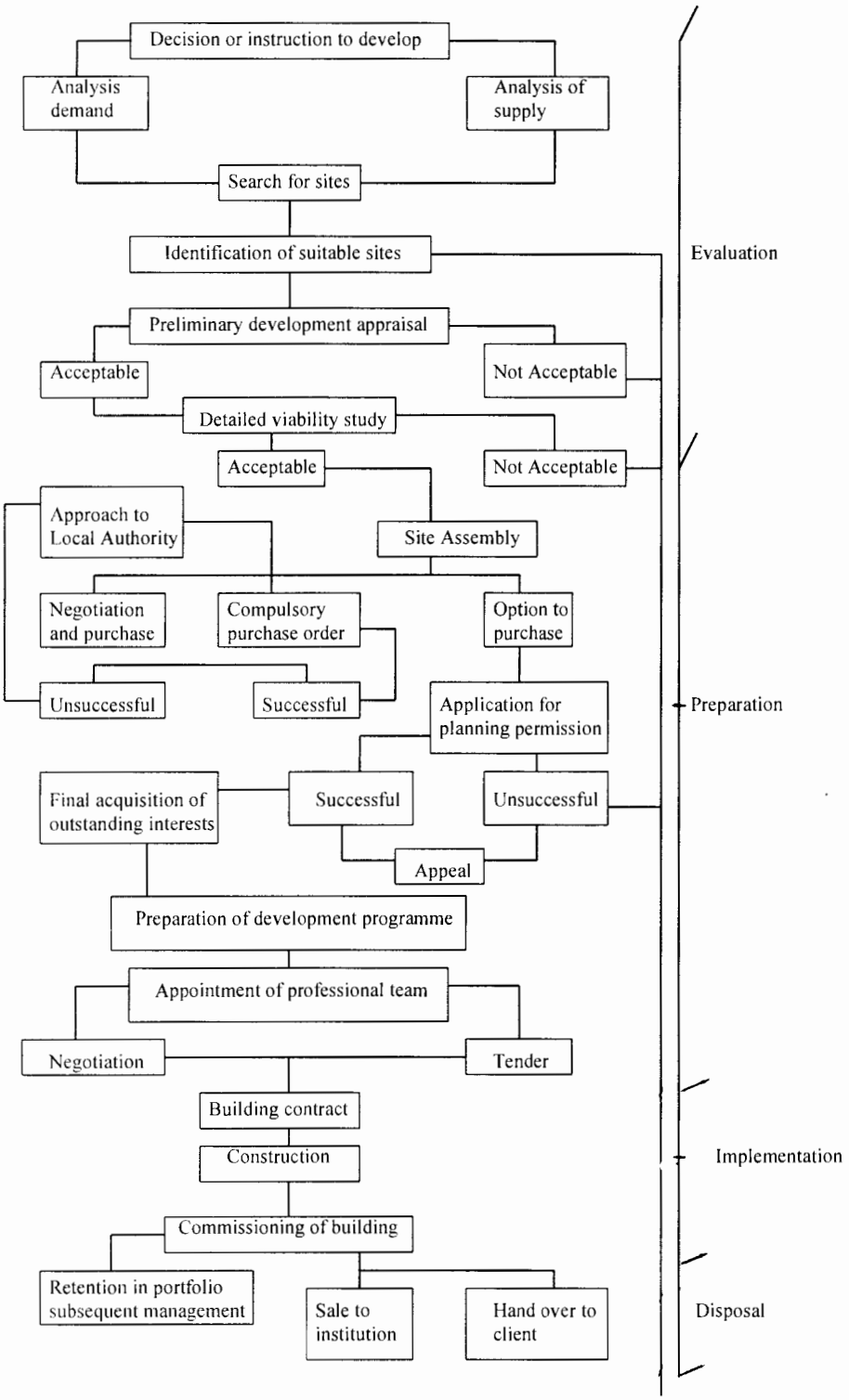
[illegible] pipeline model suggests that the development process operates in a spiral form with a new [illegible] emerging at the end of every cycle. As such, it underlines the fact that the development process is [illegible] and that relationships between the different elements in the model may change over time. Unlike the [illegible] models, it offers additional flexibility where the progress of activities may be traced. Finally, it also [illegible] not only the advantage of showing the points at which the principal external factors affect the process [illegible] also reveals the fact that any difficulty is unlikely to be consistent between developments (Gore and [illegible], 1991).

[illegible] like other models the development pipeline also does not escape from criticism. Although it is more [illegible] and takes into consideration external factors, the treatment of external variable is criticised as being [illegible] sketchy and so the way external factors influence the development process remains unclear. At the same [illegible] other considerations that have some bearing on the progress of the development process are also excluded, [illegible] example, obstacles to development such as central and local government policies, associated public [illegible] programmes, and local reactions of support or opposition (Gore and Nicholson, 1991).

[illegible] from these criticisms, the pipeline model has proved to be useful in particular research studies for [illegible] as a means of tracing the progress of vacant sites towards reuse (Bruton and Gore, 1980). However, [illegible] it focuses on private development, consequently the model stresses the importance of market conditions. [illegible] it is difficult to link all the events and activities included in the triangle to the way that public sector [illegible] proceeds. An associated problem is the lack of detail concerning what happens between the end of [illegible] implementation leg' and the start of the 'development-pressure' leg of the next round.

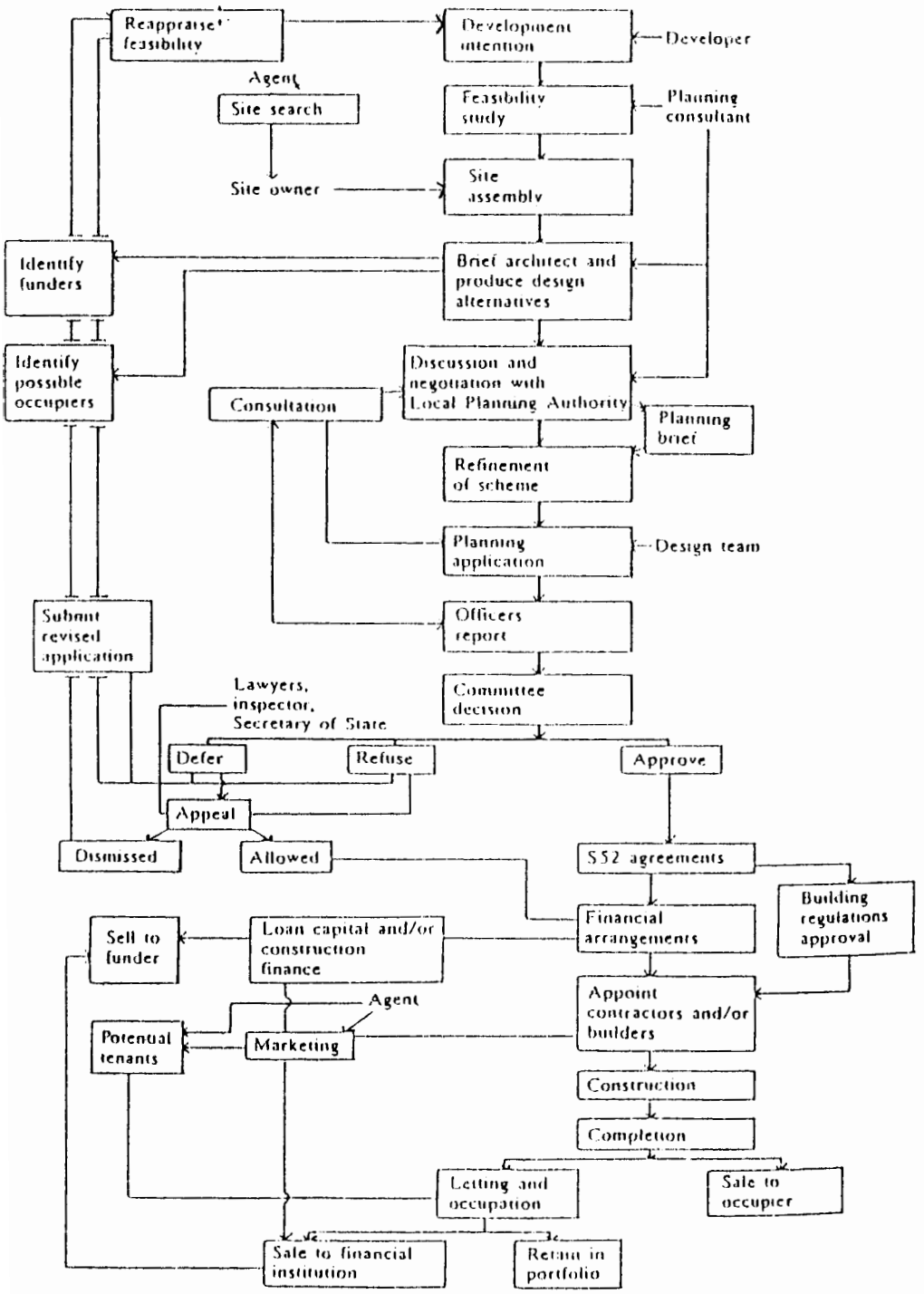
[illegible] (1991) notes that the development pipeline model may be suitable in the study of the problem of land [illegible]. In an attempt towards this, Gore and Nicholson (1985) incorporated a fourth 'vacancy leg' into a [illegible] of public sector development process (see Figure 7). In this model, the differences between public and [illegible] development are taken into account and it also identifies a wider range of possible external influences [illegible] does the original 'pipeline'. However, many of the fundamental criticisms of cyclical flow diagrams still [illegible] with equal force in this case.

Another important model belonging to this category is that of Goodchild and Munton(1985, see Figure 8) who [illegible] attempted to explain an event-sequence model using a more sophisticated version of Lichfield 's work [illegible] 1956). As they note:



Source : Rarcliffe, 1978

Figure 4 : A Linear Model of the Development Process



Source : Punter, 1985
Note : S52 relates to Section 52 of the Town and country Planning Act, 1971

Figure 5 : The Development Process : Speculative Offices

'The development process begins when a parcel of land is considered suitable for a different or more intensive use, and is completed when the necessary changes have taken place and land re-occupied .....

(1) the 'maturing of circumstances' that makes possible a change in the use of land, for example the construction of a new road or the selection of a settlement for expansion.

(2) purchase of the land by a person prepared to develop it.

(3) preparation of the land for development, including both 'physical' construction work and 'abstract' operations such as establishing legal title to the land .

(4) preparation of the development scheme, including obtaining all the necessary consents, especially planning permission .

(5) arrangement of finance to carry out the development.

(6) construction of the development scheme.

(7) its occupation by either the developer, a new owner or tenant.

(Goodchild and Munton, 1985, 65).

The model illustrates that the development process involves potential complexities though 'blockages' could occur at several stages of the development process. As illustrated in the Hebburn case, the most time consuming element were the physical and legal work of preparing the land for development, the negotiation of the development scheme, and the arrangement of finance (Healey, 1991).

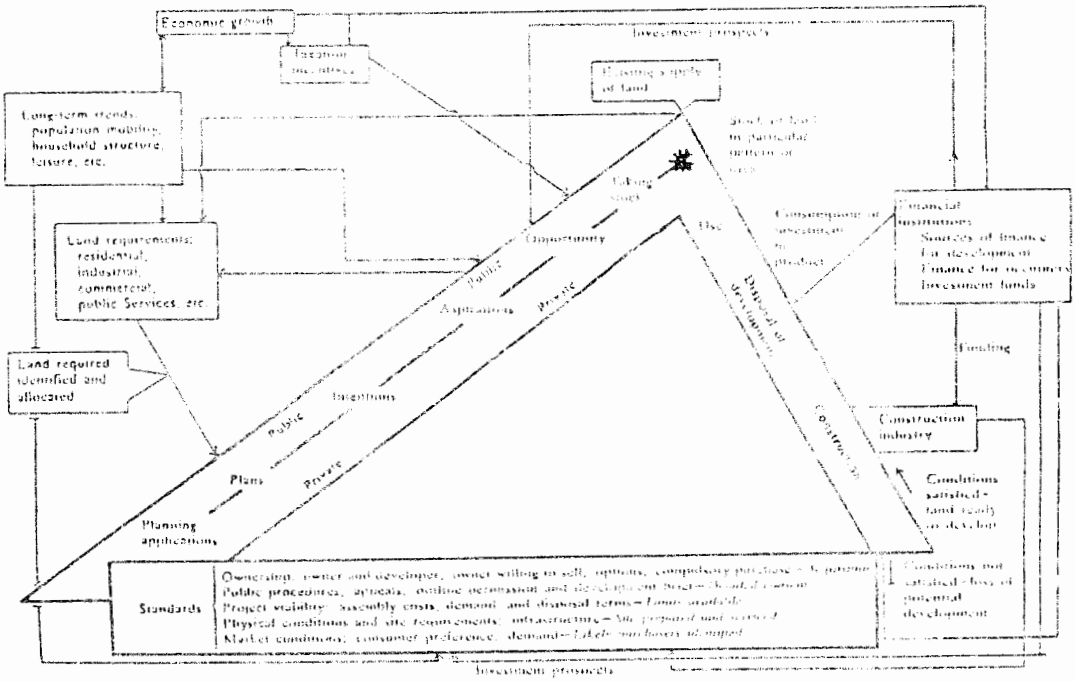
From the above discussion it is apparent that the event-sequence model is commonly repeated in much of the literature. Indeed, it indicates the problems of studying the development process, whereby with every new text, a new model of land development process is formulated. McNamara (1985) attempts to summarise the common views in each of the development process models in which he concludes comprises of three major stages. These models are compared in Table 2 and their common features are identified.

The first stage is where the various opportunities for investment (in property and elsewhere) are assessed and a decision is made by the developer or whether to be involved with a particular development proposition or not. The second stage entails the preparation of a proposal for a site. This requires an assessment and assembly of all the multifarious requirements for a development (labour, machinery, credit, land, planning permission and so on). The third stage is managing the actual construction process and, as can be seen, Cadman and Austin-Crowe (1978) identify the disposal of a finished product as a fourth stage, whilst the others consider it as simply an integral part of managing and implementing development.

6.0 CONCLUSION

The above discussion on the clarity, applicability and theoretical underpinnings of the equilibrium and event-sequence models of the land development process reveal some significant guidelines as to the suitability of each model as a basis for research methodology in explaining aand understanding the land development process.

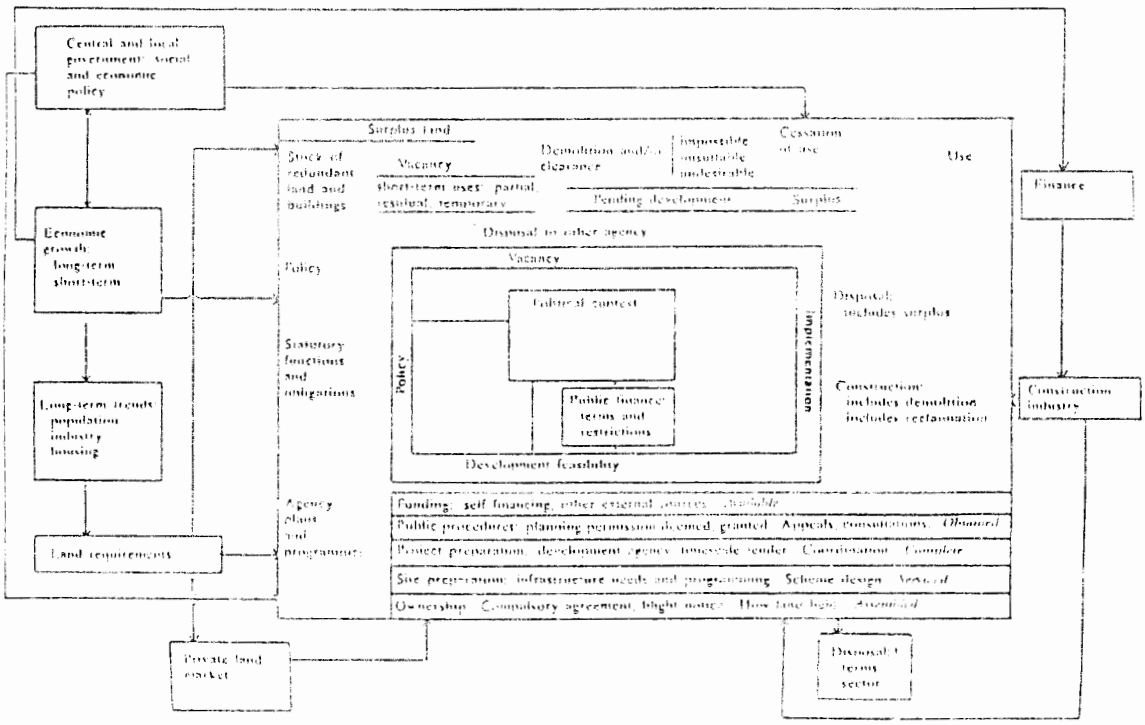
The focus of equilibrium models, therefore, is on the quantities of demand and supply as structured on a 'stock and flows' principle, showing the balance between take-up of stock and additions to stock (Healey, 1991). Since they are based on the neo-classical parameters of demand and supply, in terms of undertaking research, the equilibrium models are set-up at a level of abstraction. The problem is that such characteristics of these models have led to the difficulty in substantiating precisely between the actual investigated events and the affecting structural forces (Healey, 1991).



Source : Barrett et al. 1978

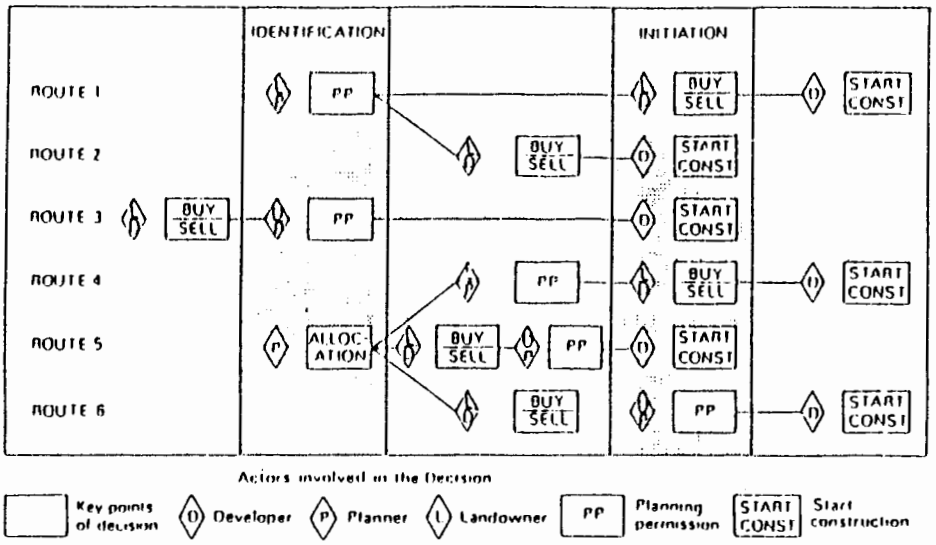
Note : *Link Both 'Stock of Land in Particular Pattern of Users and Existing Supply of Land'

Figure 6 : The Development Pipeline Model



Source : Gore and Nicholson, 1985

Figure 7 : The Public Sector Development Process



Source : Goodchild and Munton, 1985, 89

Figure 8 : A Descriptive Model of The Land Development Process

In the discussion above and as Healey (1991) suggests, such models are only suitable for standard types of projects in relatively stable conditions where an active property market exist and which are not dominated by a few large operators. However, this is hardly the case in reality. As discussed above, there are distortions when the models are applied to the more complex reality. First, they are unable to take into consideration the diverse forms of demand in which the user and investor demand respond to different signals. Second, since they focus on the economic factors of demand and supply, therefore fail to take account of the non-economic interests of those involved in the development process. Third, they are also unable to cope with the considerable uncertainty in assessing future gain, due to the time scale of the development process and the limited number of transactions in land and property markets (Howells and Rydin, 1990). Fourth, it is also difficult to establish the value of land and buildings especially in a destabilised market produced through economic restructuring. Finally, as Healey (1991) suggests, equilibrium models are not suitable for complex development processes involving the realisation of a set of events which occur over a considerable period of time within a set of specified structural forces, with different actors potentially involved at all stages. The balance of power between the agents may vary significantly at different stages of the development process. Hence, as Healey (1991) notes, more attention needs to be given to the institutional dimensions such as the strategies and interests of the production side of the development process and to the activities which constitute it.

Secondly, in conclusion, sequential models do provide some preliminary insights into the workings of the development process, particularly those of the cyclical flow type. Although they focus attention on the potential 'blockages' to development activity, they lack the specification of actors and interests, and so provide little help in explaining why a development process takes the form that it does in a particular case. Gore and Nicholson (1991,711) comment :

'it is their form that presents the severest limitation, making it difficult to capture fully the viability of the development process and its integral relationships within their fairly rigid confines'.

Further, there is ample evidence that there is no standard sequence of events for a development project, which means that the extent of applicability of each model remains an open question.

Cadman and Crowe (1978)	Chapman (1978)	Barrett et al (1978) (Pipeline Model)
Evaluation	Project desirability and prospects	development pressure
Preparation	Project planning	feasibility
Implimentation Disposal	Project implementation	implementation

Source : Mc Namara 1985,120

Table 2 : The three separate views on the stages of the Development Process

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